BRITISH COLUMBIA COPPER MINING DEVELOPMENT: A SIXTY-YEAR ECONOMIC AND POLITICAL RETROSPECTIVE

by

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ABSTRACT

Mining is a significant economic driver in British Columbia (BC). There has been a long history of copper mining in BC and with a strong forecasted global demand for copper it remains an important socio-economic opportunity. In the last 15 years, only one copper project has progressed beyond the federal-provincial review system to proceed into production. Why has it been so difficult for such new mines to be built in BC?

A conceptual framework of political ecology is used to determine the relationship between factors, actors and sectors in order to characterize their influence on mine development in BC between 1952 and 2014. The dissertation is organized in two parts: first, an analysis of economic, social and technological; and, (Part 2) political analysis. Part 2 analyzes seven current copper projects to determine their quality and economic viability. It analyzes the political factors, actors and sectors that are shown to have significantly influenced the development of mineral policy and regulatory frameworks in BC.

This analysis showed that political, economic, social and technological forces (political parties, commodity prices, operating and capital cost inflation, environmental regulations, land access issues, environmental and social movements, and a change in voter values) have driven miners to restart or expand old mines rather than build new ones. It considers the potential consequences of what ultimately could result in a punitive cycle of discovery drought. In addition, factors, and actors need to come together in order for such large, low-grade deposits to be built in BC.

Building a mine in the current climate is shown to be far more complex and regulated than at the height of BC mining development when Premier W.A.C. Bennett (1952-1972) was in power. The research demonstrates that significant development issues relate in particular to: First Nation land claims; the environmental movement and protected areas; regulatory duplication and inconsistencies; and provincial, federal and international relations that hinder mine development in BC. Overall, highlighting the decline in BC's copper industry as being a political-economic issue opens up discussion and debate on how to resurrect the industry and how to make it sustainable for future generations.

PREFACE

This dissertation is original, unpublished, independent work by the author, J. Nelsen.

TABLE OF CONTENTS

ABSTRACT ..... **ii**
PREFACE ..... **iii**
TABLE OF CONTENTS ..... **iv**
LIST OF TABLES ..... **xi**
LIST OF FIGURES ..... **xii**
LIST OF CHARTS ..... **xiii**
LIST OF ACRONYMS ..... **xiv**
ACKNOWLEDGEMENTS ..... **xvii**
DEDICATION ..... **xix**
CHAPTER 1 Introduction **1**
1.1 Why is mining so important to BC? 1
1.2 Why do we need to build new copper mines in BC? 2
1.3 Research questions 4
1.4 Research objectives 4
1.5 Contributions of the research 5
1.6 Thesis structure 5
CHAPTER 2 Methodology **7**
2.1 Introduction: Economics first, politics second! 7
2.2 Conceptual framework: Political ecology 7
2.2.1. Conceptualization of political ecology *10*
2.2.2 Political ecology approach *11*
2.3 Discourse analysis 13
2.4 Literature review 13
2.5 Time series analysis 14
2.6 PEST analysis framework 15
2.7 Factors-Actors-Sectors framework (FAS) 17
2.8 Case study analysis 18
2.9 Political cleavages 19
2.10 Triangulation: Crystallization 22
2.11 SWOT analysis framework 23
2.12 Strengths and limitations of the qualitative and quantitative research 25
2.12.1 Strengths of the qualitative research *25*
2.12.2 Weaknesses of the qualitative research *25*
2.12.3 Strengths of the quantitative research. *26*
2.12.4 Weaknesses of the quantitative research *26*
2.13 Conclusion 26
PART 1 ECONOMIC ANALYSIS **27**
CHAPTER 3 Copper porphyry: What is it? Why study it? **29**
3.1 Introduction 29

3.2 What is a copper porphyry deposit? 31
3.3 Declining worldwide grades attributable to copper porphyry? 34
3.4 Why study greenfield projects over brownfield projects? 39
3.5 Why analyze only projects with economic studies? 40
3.6 Other criterion 40
3.7 Conclusion 40

CHAPTER 4 History of copper porphyry development in BC, 1900 to 2014 42
4.1 Introduction 42
4.2 Small to big pioneers, 1900-1952 42
4.3 The awakening, 1952-1961 45
4.4 The good years, 1962-1972 45
4.5 Political and economic changes, 1973-1981 49
4.6 The recession: An economic importance, 1982-1985 50
4.7 The revival of an industry: Copper-gold porphyry associations and flow-through financing, 1986-1990 52
4.8 The decline, 1991-1997 54
4.9 The Asian crisis, 1997-1999 55
4.10 The rebound and resource boom, 2000-2007 56
4.11 The US financial crisis, 2007-2010 57
4.12 Uncertainty, 2010-onwards 59
4.13 Conclusion 60

CHAPTER 5 Does BC have world-class copper porphyry deposits? 61
5.1 Introduction 61
5.2 What constitutes a world-class deposit? 62
5.3 Does BC have world-class deposits? 66
5.4 The benefits of a world-class mine in your locale or province! 73
5.5 Conclusion 74

CHAPTER 6 Challenges in building greenfield copper porphyry mines in BC! 76
6.1 Introduction 76
6.2 The reliability of feasibility studies (NI 43-101s)! 76
6.3 Costs end up higher than projected in economic studies 77
6.4 Uncertainty and costs in regards to BC tax and exchange rates 79
6.5 Energy costs and the Highway 37 Northwest Transmission Line 82
6.6 Human resources: Skilled labor or the lack of? 86
6.7 BC's 'sunset' industry image: The jobs argument is faltering! 88
6.8 Green religion: The 'big green' came to BC! 88
6.9 A NIMBY state of mind in BC? 89
6.10 No mine waste in our lakes!! 90
6.11 Mining culture and media 91
6.12 BC is no mining state! 92
6.13 Conclusion 92

CHAPTER 7 To invest or not invest in BC copper porphyry projects that is the question! 94
7.1 Introduction 94
7.2 Capital intensity of projects: What is the best rate for BC? 94

7.3 Company market capitalization: Is it relevant to BC project success? 98
7.4 Copper price: Supply and demand 100
7.4.1 World events *101*
7.4.2 Technological innovation *101*
7.4.3 New discoveries and production *101*
7.5 Copper price: Today's price is the best 'indicator' for tomorrow's metal price! 102
7.6 The price of copper versus the cost of production 104
7.7 Copper price and capital intensity 106
7.8 Conclusion: When the "rubber hits the road"! 106

CHAPTER 8 The 'finance-ability' of copper porphyry mining projects in BC 108
8.1 Introduction 108
8.2 What does the market say about each company and project? 108
8.3 Other challenges to the 'finance-ability' of copper porphyry mining projects in BC! 112
8.3.1 Mining investment is a joint venture! *112*
8.3.2 Money is a coward and flees at the first sign of risk! *112*
8.3.3 Mergers and acquisitions: A sign of the times! *114*
8.4 Conclusion 115

CHAPTER 9 How do projects get built in BC? Criteria for success! 117
9.1 Introduction 117
9.2 A window of opportunity needs to be open to build new mines in BC! 117
9.3 Small versus big miners 117
9.4 Building to full size is possibly less expensive than in stages. There are advantages to starting small! 118
9.5 Innovation 119
9.6 Lower processing costs: Is it possible for copper porphyry mining in BC? 121
9.7 Infrastructure 123
9.8 Availability of offsite infrastructure? 124
9.9 Other support services available to BC's mining industry 124
9.10 Government now discourages mine towns! 125
9.11 Politically stable environments 126
9.12 Environmental permitting: "One process, One project?" 127
9.13 Conclusion 128

CHAPTER 10 Part 1 Conclusion 129
10.1 Conclusion 129

PART 2 POLITICAL ANALYSIS 133

CHAPTER 11: The external and internal forces acting on the provincial government 134
11.1 Introduction 134
11.2 The Federal government 134
11.3 The Office of the Ombudsman and Auditor General 135
11.4 Corporations 136
11.5 Party activists or grassroots politicians 137
11.6 Non-government organizations 139

11.6.1 Interest groups *139*
11.6.2 Lobby groups *141*
11.6.3 Think tanks *142*
11.7 Conclusion 143

CHAPTER 12 Who are BC voters? Who are BC mining industry supporters? 144
12.1 Introduction 144
12.2 Materialist and postmaterialist values in BC 145
12.3 Individualistic and collectivist values in BC 148
12.4 Populism in BC 149
12.5 Partisanship in BC 150
12.6 Conclusion 154

CHAPTER 13 Political parties and leaders and their role in BC's mineral development story, pre-confederation to 1972 156
13.1 Introduction 156
13.2 The foundation of the present political system and culture, pre-confederation to 1952 156
13.2.1 The rise of partisanship in BC *156*
13.2.2 First Nations, 1763 to 1952 ..... *158*
13.3 Premier W.A.C Bennett, Social Credit, 1952-1972 166
13.3.1 The growth of environmentalism, pre-confederation to mid-1970's *169*
13.3.2 First Nations and the Social Credit government, 1952 to 1972 ..... *171*
13.4 Conclusion 172

CHAPTER 14 One NDP and two Social Credit governments and their role in BC's mineral development story, 1972 - 1991 174
14.1 Introduction 174
14.2 Premier David Barrett, NDP, 1972-1975 174
14.3 Premier Bill Bennett, Social Credit, 1975-1986 178
14.3.1 Environmentalism and the Social Credit, 1975-1986 ..... *180*
14.3.2 First Nations and the Social Credit, 1975-1986 ..... *181*
14.4 Premier Bill Vander Zalm, Social Credit, 1986-1991 184
14.4.1 First Nations and the Social Credit, 1986-1991 ..... *187*
14.5 Conclusion 189

CHAPTER 15 The four consecutive NDP premiers and their role in BC's mineral development story, 1991-2001 191
15.1 Introduction 191
15.2 Premier Mike Harcourt, NDP, 1991-1996 192
15.2.2 First Nations and the Harcourt government, 1991-1996 ..... *198*
15.3 Premier Glen Clark, NDP, 1996-1999 200
15.3.1 Glen Clark's anti-environmentalist rhetoric *202*
15.3.2 First Nations and Glen Clark, 1996-1999 ..... *203*
15.4 Conclusion: What is good business and what is smart politics? 204

CHAPTER 16 Two Liberal governments and their role in BC's mineral development story, 2001-present 207
16.1 Introduction 207

16.2 Premier Gordon Campbell, Liberal, 2001-2011 207
16.2.1 Environmental issues: A change of heart? *211*
16.2.2 Sustainable development and the mining industry *212*
16.2.3 Social license to operate and the mining industry *214*
16.2.4 First Nations issues, landmarks and the Campbell government, 2001-2011 ... *216*
16.3 Premier Christy Clark, Liberal, 2011-present 222
16.3.1 BC's competing pipeline projects. *226*
16.3.2 First Nation issues: Blockades, treaties and aboriginal rights, 2011+ *227*
16.4 Conclusion 231

CHAPTER 17 Part 2 conclusion 233
17.1 Conclusion 233
17.1.1 Aboriginal rights and title: The BC journey to the treaty process *236*
17.1.2 Environmental movement: What areas will be protected in BC? *238*
17.1.3 Regulation duplication and inconsistencies: The art of a four-year political term! *239*
17.1.4 Provincial, federal and international relations: The power struggle in BC! ... *240*

CHAPTER 18 Part 1 and 2 analysis 242
18.1 Introduction 242
18.2 Is there a relationship between factors and actors? 242
18.2.1 The relationship co-efficient *246*
18.3 PEST metrics 252
18.3.1 Political metrics *255*
18.3.2 Economic metrics *255*
18.3.3 Social metrics *256*
18.3.4 Technological metrics *258*
18.3.5 Discussion *260*
18.4 SWOT analysis 263
18.5 Limitations of the study 278
18.6 Conclusion 280

CHAPTER 19 Thesis conclusion 283
19.1 Conclusion 283
19.2 Future work 287

REFERENCES 288

APPENDIX 1 Modern geographical thought 333

APPENDIX 2 Literature review newspaper discourse results 334

APPENDIX 3 Overview on BC's cordillera porphyry two distinctive suites (petrology) 335

APPENDIX 4 Current BC greenfield and brownfield projects, December 2013 336

APPENDIX 5 'Recognizable' metal mines and projects in BC 339

APPENDIX 6 Mines built in BC, 1984-2013 340

APPENDIX 7 Environmental assessment in BC 342

APPENDIX 8 Case studies 347
A8.1 Case study: Tatshenshini-Alsek Wilderness Park 347
A8.2 Case study: The Galore Creek project, NovaGold Resources and Teck Resources 350
A8.3 Case study: Detour Gold Corporation, Northeastern Ontario, Canada 354
A8.4 Case study: The moratorium on uranium exploration and mining in BC 356
A8.5 Case study: Clayoquot Sound, BC 357
A8.6 Case study: The Mt. Milligan copper-gold porphyry project 360
A8.7 Case study: The Northeast Coal project 365
A8.8 Case study: Foreign relations, constitutional issues and the west coast salmon fishery, 1996-1999 366
A8.9 Case study: The Flathead Valley 368
A8.10 Case study: The BC Jobs Plan and the New Prosperity copper-gold mine project 369
APPENDIX 9 566 Worldwide copper projects, 2013 371
APPENDIX 10 434 Worldwide copper mines, 2012 380
APPENDIX 11 Maps of Northwest BC showing key mining projects and infrastructure 388
APPENDIX 12 The media and their influence on the BC mining industry! 390
A12.1 Introduction 390
A12.2 A brief history on media and politics in British Columbia 391
A12.2.1 Newspapers 391
A12.2.2 Television and opinion polls 392
A12.2.3 Internet: Web 393
A12.3 The role of the media 394
A12.3.1 Objectivity: A dilemma 394
A12.3.2 Cynicism: Is the media an instrument for government? 395
A12.3.3 Media: Agent of socialization! 395
A12.3.4 Priming: The name of the game! 396
A12.3.5 The art of fabrication and over-sensationalizing 396
A12.3.6 Newspapers are businesses: Their job is to sell papers! 396
A12.3.7 Partisanship never left newspapers! 397
A12.3.8 Advertising: Selling audiences to advertisers! 397
A12.3.9 Media audience bias? 398
A12.3.10 News article significance 398
A12.4 A discussion on media and mining in BC 398
A12.4.1 Audience perception and response 399
A12.4.2 Opinion polls 400
A12.4.3 The media as a social agent! 400
A12.4.4 Listening to the people: The power of the vote! 401
A12.4.5 Priming: The scapegoat! 402
A12.5 Conclusion 402
APPENDIX 13 Financial metrics and elaboration 404
APPENDIX 14 The formal structure of the provincial government 406
A14.1 Introduction 406
A14.2 Legislature 406

A14.3 The Lieutenant Governor or Lieutenant Governor in Council 406
A14.4 The Legislative Assembly 406
A14.5 The Premier 407
A14.6 The Cabinet (Ministers) 407

APPENDIX 15 PEST analysis and metrics 409

LIST OF TABLES

Table 1 The five narratives of political ecology 12
Table 2 An example of the PEST analysis framework used in this study 16
Table 3 A sample of FAS analysis framework used in this study 18
Table 4 Annual average molybdenum concentrate price, 1970-1983 50
Table 5 Top 10 worldwide mining companies ranked by copper production, 2012 65
Table 6 The top 10 copper mines ranked by copper contained reserves, 2013 65
Table 7 Schodde's (2006) world-class criterion and BC projects studied 73
Table 8 Electricity rates (Cnd$) by province and kWh 84
Table 9 The long-term copper price used by the BC projects studied 104
Table 10 Market analyses on the BC projects studied 111
Table 11 Capital raising by asset class - proceeds 2007-2012 113
Table 12 The relationship study: BC exploration expenditures (EE), copper and oil prices and specific time periods 247
Table 13 The relationship study: BC exploration expenditures (EE) and copper prices by political party/premier 249
Table 14 Each premier ranked in accordance to their overall PEST score 255
Table 15 PEST metrics (see Appendix 15) 257
Table 16 SWOT analysis. 264
Table 17 Summary of table 16 SWOT analysis 278
Table 18 Highlights Detour Gold's financings from January 2012 to August 2013 354
Table 19 Thompson Creek's events and details on the Mt. Milligan project 363
Table 20 NPV analysis of the Mt. Milligan project 364
Table 21 Mt. Milligan post-tax matrix 364

LIST OF FIGURES

Figure 1 Part one and part two thesis road map 6
Figure 2 Part one and part two methodology road map 9
Figure 3 PEST analysis examples 17
Figure 4 SWOT analysis examples 24
Figure 5 Economic feasibility road map: Chapters 3 to 10 28
Figure 6 The reliable abundances of copper (%), molybdenum (%x10), and gold (g/t) for selected cordilleran porphyry deposits (Modified from McMillian et al 1996, 129) 32
Figure 7 Location of selected cordilleran porphyry deposits in BC in relation to their tectonic settings (McMillian et al 1996, 128) 35
Figure 8 Average percentage copper content of ore milled at five mines, 1905 onwards (Long 2010; CRU International 2009; Raw Materials Group 2011; as cited in Crowson 2011) 36
Figure 9 Regional weighted average copper head grades, 1987 onwards (Modified from CRU International 2009; Crowson 2011) 36
Figure 10 Key technical innovations and estimated average operating costs for copper mines in western world, 1900-2009 (Schodde 2010b) 38
Figure 11 Discovery: Most of the metal found is tied up in a handful of deposits, amount of copper found in deposits >0.1Mt Cu in the world, 1900-2009 (Schodde 2010b) 63
Figure 12 Part two methodology road map 133
Figure 13 PEST metrics outline 253
Figure 14 The different types of environmental assessment under CEAA (Modified from CEAA 2013) 346
Figure 15 Stock chart August 2012 to August 2013 (Detour 2013) 355
Figure 16 BC's provincial government 406

LIST OF CHARTS

Chart 1 Real and nominal annual copper price, 1900-2011 30
Chart 2 A study on worldwide copper grade of different deposit type, 2011 33
Chart 3 A broad snapshot of global shifts in average copper grades, 1870-2008 38
Chart 4 BC copper production and values, 1894-2011 44
Chart 5 Exploration expenditures ($ millions) in BC and CPI (%), 1971-2012 51
Chart 6 566 World copper deposits ranked by size (contained copper 000's Mt) 67
Chart 7 566 World copper deposits ranked by size (contained copper 000's Mt) (a close-up) 68
Chart 8 566 World copper deposits based on copper grade versus cumulative tonne 69
Chart 9 566 World copper deposits based on copper grade versus cumulative tonnes (a close-up) 70
Chart 10 Cash costs ($/lb Cu) of 434 worldwide copper mines 72
Chart 11 Share price performance post capital cost increases 78
Chart 12 Copper mine costs of production 80
Chart 13 New finds are taking longer to bring to market 81
Chart 14 Energy consumption versus head grade for various processes 83
Chart 15 Top 10 copper producing countries and $US cents per KwH for 2006 and 2009 ... 85
Chart 16 Capital cost escalations: Next generation of mines higher cost 95
Chart 17 Global copper projects being delayed or cancelled versus 2007 expectations 96
Chart 18 BC projects copper equivalent capital costs and projected copper equivalent capital costs 97
Chart 19 Latest copper price forecasts, March 2012 103
Chart 20 Mine-site costs at worldwide copper mines, 1980-2012 105
Chart 21 Mining company mergers and acquisitions worldwide: Volume and values of deals by size, 2003-2012 115
Chart 22 British Columbia's political parties, exploration expenditures and real copper prices, 1952-2013 244
Chart 23 The external and internal forces acting on the provincial government, 1900 to 1960 and 1960 to 2014 261
Chart 24 Political party, culture and uncertainty, 1952 to 2011+ 262
Chart 25 Average temperatures and precipitation of porphyry projects studied, 2000 353

LIST OF ACRONYMS

AAC: Annual Allowable Cut.
Ag: Silver
ALR: Agriculture Land Reserve.
ARD: Acid Rock Drainage.
ASEP: Aboriginal Skills and Employment Partnership.
AME BC: Association of Mineral Exploration British Columbia.
Au: Gold
BAJ: Baja Mining
BC: British Columbia
BCAMD: British Columbia Acid Mine Drainage Task Force.
BCEAA: British Columbia Environmental Assessment Act.
BCTF: British Columbia Task Force.
BC METC: British Columbia Mining Exploration Tax Credit.
BC MFTS. British Columbia Mining Flow Through Shares.
BCPC: British Columbia Petroleum Corporation.
BCYCM: British Columbia & Yukon Chamber of Mines.
BILL 31: Minerals Royalty Act.
BFS: Bankable Feasibility.
Bln: Billion.
BRIC: Brazil, Russia, India, and China.
CBC: Canadian Broadcasting System.
Capex: Capital Expenditure.
CCKV: Committee for Clean Kettle Valley.
CEAA: Canadian Environmental Assessment Act.
CND$: Canadian Dollars.
CCF: Cooperative Commonwealth Federation.
CORE: Commission on Resources and Environment.
CSSDSC: Clayoqout Sound Sustainable Development Steering Committee.
CSSDTF: Clayoqout Sound Sustainable Development Task Force.
Cu: Copper.
Cu-Au: Copper-Gold.
CuEq: Copper Equivalent.
DCR: Discount Rate.
EA: Environmental Assessment.
EAA: Environmental Assessment Act.
EAO: Environmental Assessment Office.
EIA: Environmental Impact Assessment.
EPCM: Engineering, procurement and Construction Management.
FAS: Factors, Actors and Sectors.
FLP: Federation of Labor.
FNC: First Nations Congress.
FOCS: Friends of Clayoquot Sound.
FTA: Free Trade Agreement.
GDP: Gross Domestic Product.

GHG: Greenhouse Gas Emissions.
GMI: Global Mining Initiative.
GST: Goods and Services Tax.
HBM: Hudbay Mining.
HPGR: High Pressure Grinding Roll.
HST: Harmonized Sales Tax.
HVC: Highland Valley Copper.
IBA: Impact Benefit Agreement.
ICBC: Insurance Corporation of British Columbia.
ICMM: International Council on Mining and Metals.
IMF: International Monetary Fund.
IMN: Inmet Mining.
IPOs: Initial Public Offerings.
IRR: Internal Rate of Return.
ITA: Industry Training Authority.
Kj/lb: Kilojoule per pound.
KSM: Kerr-Sulphurets-Mitchell.
KwH: Kilowatt per Hour.
LNG: Liquefied Natural Gas.
LOM: Life of mine.
lb: Pound.
MABC: Mining Association of British Columbia.
MARS: Mining Industry Attraction, Recruitment and Retention Strategy.
MC: Market Capitalization.
MAC: Mining Association of Canada.
MEG: Minerals Economic Group
MEMPR: Ministry of Energy, Mines and Petroleum Resources.
METF: Mining Economic Task Force.
MICF: Mining Industry Catalyst Fund.
MiHR: Mining Industry Human Resources Council.
MINFILE: Mineral Inventory.
MMSD: Mining, Minerals and Sustainable Development.
Mo: Molybdenum.
MPTA: Mineral Property Taxation Act.
MREPBC: Mineral Resources Education program.
MRTA: Mineral Resources Tax Act.
MSABC: Mining Suppliers Association of British Columbia.
M/t: Million tonnes.
MTA: Mineral Tenure Act.
MTF: Mining Task Force.
MWE: Ministry of Women's Equality.
M&A: Mergers and Acquisitions.
NAFTA: North America Free Trade Agreement.
NDP: New Democratic Party.
NEP: National Energy Program.
NI 43-101: National Institute 43-101.

NIMBY: Not in my backyard.
NGO: Non-governmental Organization.
NPV: Net present Value.
NTL: Northwest Transmission Line.
oz: Ounce.
PA: Preliminary Assessment.
Pb: Lead.
PDAC: Prospectors and Developers Association of Canada.
PDI: Placer Dome Inc.
PEA: Preliminary Economic Study.
PEST: Political, Economic, Social and Technological.
PI: Probability Index.
PNP: Provincial Nominee Program.
QCI: Queen Charlotte Islands.
ROM Leaching: Run-Of-Mine Leaching.
SABC: SAG Milling.
SAG: Semi-Autogenesis Grinding
SCC: Supreme Court of Canada.
SLO: Social License to Operate.
SX-EW: Solvent Extraction and Electrowinning.
SWOT: Strengths, Weaknesses, Opportunities, and Threats.
t: tonnes.
TCM: Thompson Creek Mining.
T.F.L: Tree Farming License.
TILMA: Trade, Investment and Labor Mobility Agreement.
TRCR: Technical Research Committee on Reclamation.
TSM: Towards Sustainable Mining.
TSX: Toronto Stock Exchange.
UBCIC: Union of British Columbia Indian Chiefs.
U/G: Underground.
UN: United Nations.
UNESCO: United Nations Educational, Scientific and Cultural Organization.
US: United States
VSE: Vancouver Stock Exchange.
VGH: Vancouver General Hospital.
VMS: Volcanic Massive Sulphides.
WMI: Whitehorse Mining Initiative.
WWSD: World Summit on Sustainable Development.
YESAA: Yukon Environmental and Social-Economic Assessment Board.
Zn: Zinc.

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DEDICATION

I dedicate this thesis in honor of my husband,
OLAV LANGELAAR.

And in memory of my best buddy,
LUKE
(June 16, 1999 – September 27, 2013).

Also, to my little (okay not so little) running buddy LYNUS.
An angel was watching over us on March 20th, 2014.

CHAPTER 1 Introduction

1.1 Why is mining so important to BC?

Mining is an important economic driver in British Columbia (BC). The mining sector employs approximately 10,720 people and the gross mining revenue for 2013 was C$8.5 billion (MABC 2014). The mining industry is the largest employer of First Nations people in BC (MABC 2014). The province is home to over 1200 exploration companies, and the exploration and development expenditures for 2013 were C$476 million (MABC 2013b; MABC 2014).[1] Within Canada, "B.C. has the world's largest concentration of mining and exploration companies and mining professionals"(MEMPR 2009).

BC is Canada's largest producer of copper, its only producer of molybdenum and the largest exporter of coal (Fredricks et al 2009). The average grade of active copper mines in BC is approximately 0.31 percent Cu (MEG 2011). BC's copper concentrate revenue for 2012 was $1.7 billion and shipments rose to 884,000 tonnes (MABC 2014). Over 50 percent of all Canadian rail-freight revenues and port tonnage comes from the BC mining industry (MAC 2011). In 2012, mining contributed 4.5 percent to BC's economy (GDP).[2]

Eighty-five percent of the province is open to mineral exploration and has a long history of providing secure mineral tenure (MEMPR 2009). "Actual land usage for a mine is extremely small relative to the area explored – less than 28,000 hectares are currently being used by mining which is less than 0.03% of BC's total land base" (MABC 2009). The total area of the province of British Columbia is 95 million hectares (Mathews and Morrow 1995).

The province of British Columbia (BC) is known for its large "world-class"[3] reserves of the metals copper, molybdenum, lead, zinc, gold, and silver (MEMPR 2009). There are currently 15 proposed metal mines[4] in BC at various stages of environmental assessment (EA) and permitting; however, in the last 15 years only one copper porphyry project has made it past

1 The Mine Life Cycle entails the following stages: Exploration, Assessment, Development, Operations; and, Closure.

2 For additional information on BC voting statistics see the following website: see http://www.votemining.ca/mining-facts/.

3 See section 5.2 for definition and clarity on what defines a world-class deposit.

4 Ajax, Blackwater, Galore Creek, Harper Creek, Kemess Underground, KSM, Kutcho, Morrison, Mt. Milligan, New Prosperity, Red Chris, Ruddock Creek, Schaft Creek, Spanish Mtn, Sustut Copper.

the federal and provincial regulatory system, as well as met technical challenges in order to proceed into production (EAO 2014). The rest of Canada has successfully put significant[5] mines into production since 1997 (MEG 2011). This begs the significant question "*Why is so difficult for new copper mines to be built in BC?"*

1.2 Why do we need to build new copper mines in BC?

Given the last decade's downturn in the global economy, collapse of the United States (US) housing market and the pine beetle infestation, the current economic climate has negatively impacted many rural (and especially First Nation) communities in BC (Nelsen and Scoble 2009). There is a significant incentive to develop new mine projects, not only to replace nearly depleted deposits and support the well being of existing mining communities, but also to counteract the impacts of decline in the other BC resource sectors (Nelsen and Scoble 2009). Former Finance Minister Jim Flaherty states, "Canada's rich mineral resources represent significant economic opportunities. Promoting the exploration and development of these resources offers important benefits in terms of employment, investment and infrastructure, especially for rural and remote communities"(MABC 2010). There is also incentive to develop new mines to lessen investor uncertainty and show that BC is open for business.

BC has faced a decline in the number of metal mines operating throughout the province. This thesis identifies the significance of political, economic, social and technological forces (e.g., political agendas, commodity prices, operating and capital cost inflation, environmental regulations, land access issues, environmental and social movements, and a change in voter values) that have driven miners to restart or expand old mines rather than build new ones. They also curtail their exploration expenditures during times of economic restraint, therefore focusing on established mines to try to maintain reserves. It is clear that it has become increasingly difficult for companies to acquire the much-needed financing by investors to explore and build new mines. 'Discovery drought' appears to be relevant in a BC context,

5 A significant copper mine is defined as having an open-pit design, with a minimum of 30,000 tonnes per day of mined material. As per Britton et al (2011). See http://www.empr.gov.bc.ca/Mining/Geoscience/PublicationsCatalogue/MineralExplorationReview/Documents/EX-OVERVIEW_IC2012-1.pdf, page 17-19.

whereby a cyclical dependence to maintain reserves is on current resources through restarts and expansions, rather than the opening of new mines (Weir 2006).

The opening of new copper porphyry mines in BC is imperative to the long-term health of BC's economy. Therefore, the focus of this thesis is on greenfield[6] copper projects in order to understand the factors, actors and sectors (FAS), along with the political, economic, social and technological (PEST) influences that have hindered or promoted their development from 1952 to 2014 (see Chapter 3).[7]

The significance of this research is that it is longitudinal in nature, as it spans over sixty years, as well as debates the political-economic spheres of copper mine development in BC. In particular, it stresses economics as being the main influence early on within the study, rather than socio-political influences, which have taken main stage in public consciousness in recent years. This shift in values demonstrates the complex nature of mineral development in BC, as well as reaffirms the importance of this research. Without new mines, there will be a direct and indirect impact on BC's economy, labor force and community well being throughout the province, hence contravening premier Christy Clark's BC Jobs Plan (see Section 16.2).[8]

This research is original in nature as it is a comprehensive review of copper mine development in BC from a pragmatic and holistic perspective. It is an "in situ" analysis that utilizes both quantitative and qualitative methodologies; some not commonly used by the mining engineering faculty, in order to bring forth a realistic interpretation on what factors and actors influence copper mine development in BC.

6 For additional information on greenfield projects see Section 3.4.

7 In 1952, W.A.C. Bennett became BC's first Social Credit premier. Bennett was instrumental in 'opening up' the province for resource development as a result of pro-development strategies which included the expansion of hydroelectric power, as well as roads and railways. His strategies changed the face of the province, as well as the inhabitants that resided within it; thereby warranting his term as premier as being a crucial starting point for study in this thesis (See Chapter 13).

8 For highlights on the Mining Association of British Columbia's Economic Impact Analysis see the following websites: http://www.miningfacts.org/Blog/Mining-News/The-Impact-of-Mining-on-British-Columbia%E2%80%99s-Economy/#sthash.BkAh1J1n.dpuf.

1.3 Research questions

In order to answer, "*Why is so difficult for new copper mines to be built in BC?"* the following questions were established:

Does BC have world-class copper porphyry deposits? "World-class" is potentially a subjective term, so what does "world-class" really mean and what does it mean to BC to have "world-class" deposits?

What factors, actors and sectors, along with the political, economic, social and technological influences hinder or promote mineral development in BC? How do they all interact to shape exploration, mine development and the perception of BC as a favorable mining jurisdiction?

What roles does the electorate play in mineral policy development in BC?

How can lessons learned from the development and defined strengths, weaknesses, opportunities and threats (SWOT) framework for the strategic planning of a sustainable copper industry in BC?

1.4 Research objectives

As a result of the research questions the following five objectives were established:

1) To identify 'significant'[9] copper porphyry projects in BC (with published economic studies) in order to determine where these projects rank on a worldwide scale with respect to their economic attractiveness.

2) To investigate the factors, actors and sectors (FAS), along with the political, economic, social and technological (PEST) influences, in order to understand if they have hindered or promoted mineral development in BC from 1952 to 2014.

3) To investigate key political factors and actors whose activities and actions have had an influence on mineral development in BC, either through direct policy changes or by modifying investor perceptions of the province as a favorable mining investment jurisdiction.

4) To research changes in electorate attitudes and values over time, in order to understand how these changes have influenced and continue to influence mineral development policy in BC.

9 A significant copper mine is defined as having an open-pit design, with a minimum of 30,000 tonnes per day of mined material. As per Britton et al (2011). See the following website for additional information: http://www.empr.gov.bc.ca/Mining/Geoscience/PublicationsCatalogue/MineralExplorationReview/Documents/EX-OVERVIEW_IC2012-1.pdf, page 17-19.

5) To discuss the strengths, weaknesses, opportunities and threats (SWOT) framework that could be considered to identify key variables that have had an influence on mineral development in BC.

1.5 Contributions of the research

This work will contribute to the literature and development of sustainable copper mine development in BC. It utilizes business-oriented frameworks (PEST and FAS) not generally used by the mining industry to provide a realistic analysis on the factors and actors challenging the mining sector in BC. It also builds recognition in regards to links between political cleavages, voting behavior by the electorate and the BC mining industry, thereby providing valuable information to industry, government and civil society.

This work also contributes to the quantification of qualitative data obtained from the literature review. For instance, PEST factors identified are ranked on a five-point scale in accordance to a selected time scale (e.g., governing party of the day), in order to facilitate understanding on the PEST themes and challenges faced by the industry over time.

Overall, this thesis will provide greater insight into what is occurring in the BC mining field, whereby the data provided could assist in developing the strategies required to increase investment in BC mining and ensure the long-term viability of the industry.

1.6 Thesis structure

This thesis is organized into 19 chapters. *Chapter 1* provides an introduction, the problem statement and the justification and nature of the research questions. It attempts to clarify the intended contributions that this research makes to the mining engineering and the BC mining industry. *Chapter 2* introduces the methodologies adopted to address the research questions. The remaining 17 chapters are divided into two parts: part one analyzes selected copper porphyry projects to determine their quality and assess whether or not they meet the basic economic criteria (e.g., Net Present Value (NPV>0)), whereas part two analyzes the political factors, actors and sectors that ultimately influence mineral policy in BC. The layout of the thesis is presented in Figure 1.

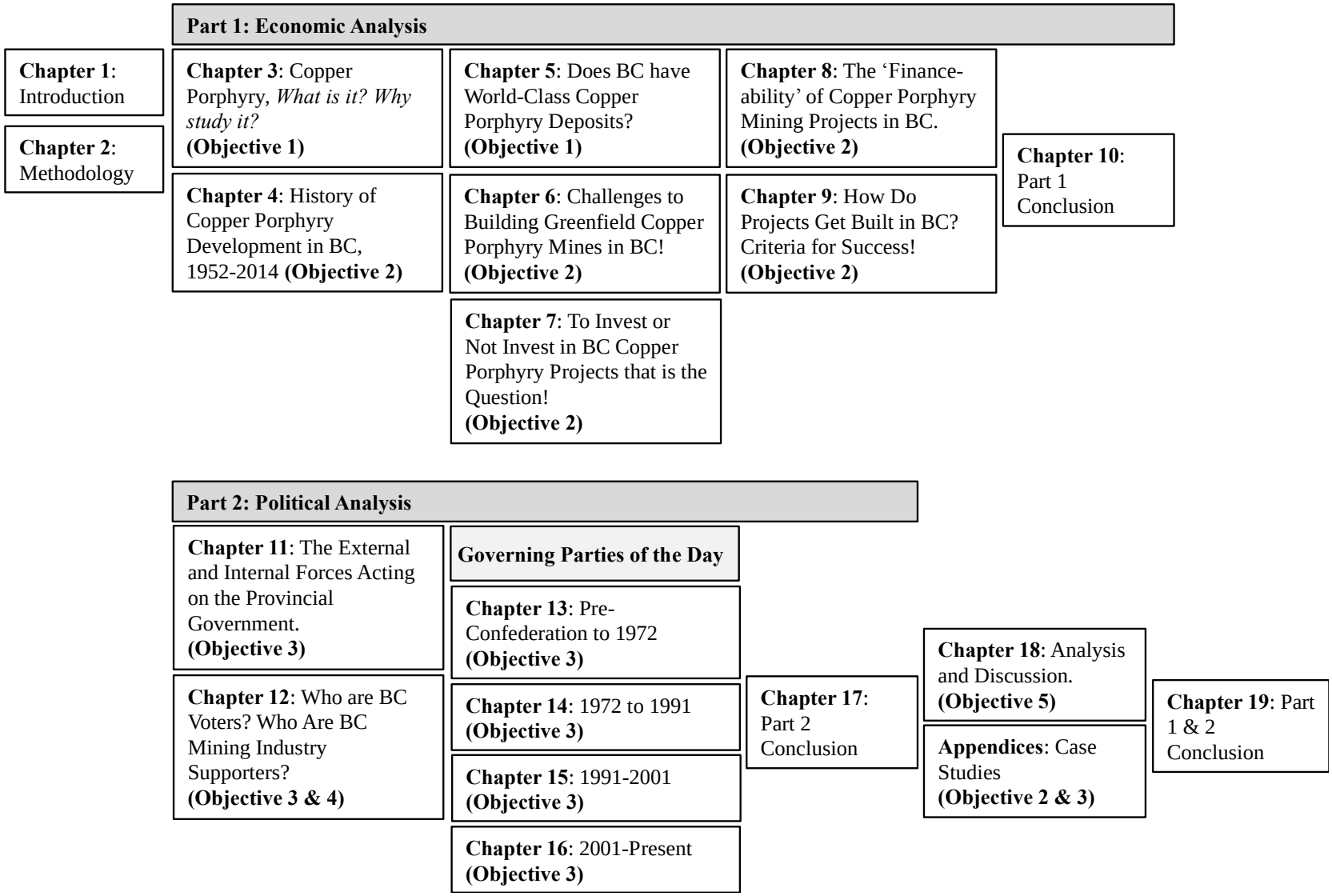


Figure 1 Part one and part two thesis road map

CHAPTER 2 Methodology

2.1 Introduction: Economics first, politics second!

This thesis has adopted a mixed-method approach that is intended to be a holistic natural inquiry with a postmodern[10] perspective, whereby the study data is neither solely qualitative nor quantitative in nature (see Figure 2). In order to acquire an understanding of BC's mineral development landscape over time (1952-2014), it is essential to study both perspectives to account for the interplay between both economic and political forces. As a result, this dissertation is organized into two parts: (Part one) economic and technological analysis; and, (Part two) political and social analysis. This architecture aims to organize the mixed methodology, as well as emphasize the importance of economics because it creates the foundation for the political, social, cultural and intellectual societal spheres found throughout BC's copper mine development story.

In this chapter, political ecology; literature review; discourse analysis; time series analysis; PEST and FAS analysis; case study analysis; political cleavages; and, SWOT analysis will be discussed (see Figure 2).

2.2 Conceptual framework: Political ecology

Political ecology is a traditional contextual approach to viewing problems (see Figure 2). It is not a theory or a method, but rather a "…network analysis of inter-linkages between institutional actors"(Robbins 2012, 85). Robbins (2012) writes,

> Rather than a specific set of overarching categories or claims, political ecology instead mobilizes concepts from broader schools of thought to explain otherwise confounding socio-environmental outcomes. In many cases, moreover, political ecology focuses heavily on case studies that stress idiosyncrasies, contextual outcomes, and local surprises that precisely fly in the face of general theory building. …In short, there are very few techniques, technologies, or analytics not used in political ecology, again suggesting the elusiveness of coherence in the field (pp.84-85).

Since the 1970's, political ecology has emerged into a multi-disciplinary approach whereby it touched on a number of theoretical perspectives such as political economy and systems

10 Postmodernism emerged in the 1980's and a postmodernist researcher looks at the world by encompassing different schools of thought such as structuralism, realism, feminism, etc. (Peet 2001) (see Appendix 1).

thinking[11], as well as dependency theory (Hitch 2006). It arose out of a series of epistemic, as well as world and regional events. It became notarized and well known by the works of anthropologist Eric Wolf, journalist Alex Cockburn and environmental scientist Graheme Beakhurst (Robbins 2012) (Johnston et al 2000) (see Appendix 1). Over time, it has become a 'community of practice' as it has numerous enthusiasts, as well as an inventory of texts (e.g., books, maps, videos, conference presentations, etc.) (Robbins 2012).

Common political ecology methods used are case study and causal chain analysis on factors, actors and sectors (Robbins 2012). Examples of academic disciplines utilizing political ecology in their studies include: anthropology, (Colchester 1994); forestry (Jewitt 1995); development studies (Redcliff 1987); sociology (Bunker 1985); environment (Young 1989); and, geography (Dalby 1992). At some point they all queried the relationship between political, economic, social and technological aspects with the environment. However, the field is best known for the creation of a regional conceptual framework[12] by Piers Blaikie and Harold Brookfield titled "The Political Economy of Soil Erosion in Developing Countries"(Blaikie 1985; Blaikie and Brookfield 1987). The framework is a 'place-based' study that looks at soil erosion as being a political and economic issue, also influenced by social and technical factors (Blaikie 1985; Blaikie and Brookfield 1987). This historical based study looked at diverse levels of uncertainty, as well as the economic deterministic[13] causes of soil erosion throughout various regions of the world. Blaikie's (1985) framework is relevant to this regional study as it outlines how political, economic and social factors are driving forces in policies and actions by various actors.

The BC mining industry is impacted by factors and actors along with political, economic, social and technological forces that influence the sustainability of the industry, in particular the copper porphyry industry. Understanding these factors and actors will highlight the complex nature of the influences on the industry; thereby resulting in the construction of only one copper mine built in BC in the last 15 years. Understanding these causes should help the

11 Systems thinking is a tool to "…develop general statements about the common properties of superficially different systems"(Johnston et al 2000, 819).

12 The framework is a place-based study that looks at soil erosion from a political-economic standpoint.

13 Economic determinism is a doctrine that describes the influence economics (e.g., quality of natural resources) has on social, cultural and political aspects of society.

industry plan for the future, which includes the transferring of knowledge of the industry to the electorate, as well as appreciating the sources of uncertainty including voter dynamics and behaviors in regards to particular political parties, policies and agendas.

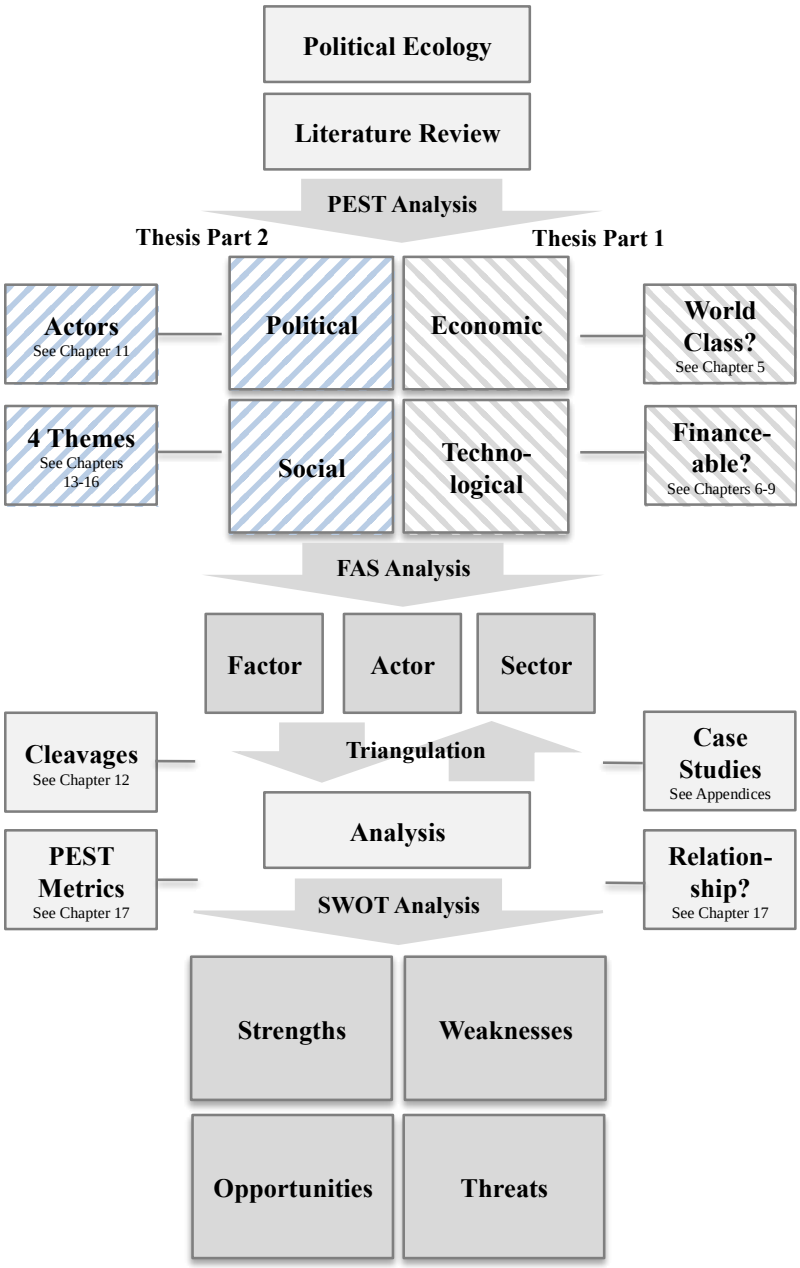


Figure 2 Part one and part two methodology road map

Overall, highlighting the decline in BC's copper porphyry industry as a economic-political issue opens up discussion and debate with respect to resurrecting the industry and how to make it sustainable for future generations to come.

2.2.1. Conceptualization of political ecology

The 'political' in political ecology is an attempt to correct the 1970's deficiencies of early apolitical studies and fields (Bryant and Bailey 1997). Bryant and Bailey (1997) write on the importance of 'politics' in political ecology, they state,

> It seems to us that there are two things that are at the heart of any meaningful understanding of politics: (1) an appreciation that politics is about the interaction of actors over environmental (or other) resources; (2) a recognition that even weak actors possess some power to act in the pursuit of their interests. The former point suggests that politics is a process in which actors partake and play a central role; indeed, that the interaction of actors is the very stuff of politics (pp.25).

'Ecology' is known as "…the relation of organisms or groups of organisms to their environment…"(Russett 1967, vii). However, it has also been identified as being "…no longer a scientific discipline – it's an attitude of mind" or as "…the philosophy of a social movement"(McCormick 1995, 57; Sachs 1993, xv). Harvey (1993) notes,

> …all ecological projects (and arguments) are simultaneously political-economic projects (and arguments) and vice versa. Ecological arguments are never socially neutral any more than socio-political arguments are ecologically neutral. Looking more closely at the way ecology and politics interrelate then becomes imperative if we are to get a better handle on how to approach environmental/ecological questions (pp. 25, as cited in Bryant and Bailey 1997, 5).

"[T]he relationship between politics and ecology is not an equal one", whereby political, economic, social and technological (PEST) factors influence the idea or notion of 'nature;' whereby it becomes known as being 'produced' or no longer 'natural' (Bryant and Bailey 1997, 5). For instance, PEST forces alter society's values and beliefs in regards to nature, which ultimately affects their views on such things as BC's mineral policy. Political ecology is essentially "…something people do"(Robbins 2012, 4). Overall, political ecology is the lens through which to understand power dynamics, in order to discover which forces have the greatest effect and which ones are amendable to change.

The definition of 'political ecology' broadens conceptually throughout various fields, whereby there are numerous definitions that exist, here are a few examples:

> [Political ecology] is confluence between ecologically rooted social science and the principles of political economy (Peet and Watts 1996, 6).
>
> [Political ecology is used] to understand the complex relations between nature and society through a careful analysis of what one might call the forms of access and control over resources and their implications for environmental health and sustainable livelihoods (Watts 2000, 257).
>
> Just as environmental ecology refers to interaction and interdependence among soil, air and water, the peasants' political ecology also refers to the interactive interdependence among spheres - the individual, the community, the natural world, and the national society (Anderson 1994, 6).
>
> [An inquiry into] the political forces, conditions and ramifications of environmental change (Bryant 1992, 13).
>
> "As critical historiography, deconstruction, and myth-busting research, political ecology is a hatchet, cutting and pruning away the stories, methods, and policies that create pernicious social and environmental outcomes" (Robbins 2012, 99).

The commonality shared by all these definitions is that political ecology "…refer[s] to the social and political conditions surrounding the causes, experiences and management of environmental problems…"(Forsyth 2003, 2). However, as an approach it is "…a radical critique of the pressure of population on resources view of environment and points to the need for a rethinking of both conservation and development"(Peet 2001, 97). For the purposes of this study, the following definition of political ecology was utilized: "The phrase "political ecology" combines the concerns of ecology and a broadly defined political economy. Together this encompasses the constantly shifting dialectic between society and land-based resources, and also within classes and groups within society itself"(Blaikie and Brookfield 1987, 17).

2.2.2 Political ecology approach

Table 1 illustrates the five narratives of political ecology and their relevance to society. Not all five of the narratives are used explicitly; however, they are implicit too much of the analysis. The fifth narrative titled "Political objects and actors" goes hand in hand with PEST

and FAS analysis, as it stresses the unequal power relations between actors and their interests (Bryant and Bailey 1997). Hitch (2006) states,

> Of the approaches described, the final one stresses the need to focus on the interests, characteristics and actions of actors to achieve both explanatory and prescriptive ends. An explanatory approach using political ecology analyzes the key political actors related to a particular issue area, in this case, mineral development, in order to assess relative levels of power and influence over ecological and economic resources. By doing so, it can illuminate the nature of the conflicts or barriers to consensus. A political ecology approach can also be prescriptive because it can be used to assess the potential for cooperation between actors in order to achieve a measure of social equity and to redress power imbalances (p.19).

Table 1 The five narratives of political ecology

	Thesis	What is explained?	Relevance
1.	**Degradation and marginalization.**	Environmental conditions (especially degradation) and the reasons for their change.	Environmental degradation, long blamed on marginal people, is shown in its larger political and economic context.
2.	**Conservation and control.**	Conservation outcomes (especially failures)	Usually viewed as benign, efforts at environmental conservation are shown to have pernicious effects, and sometimes fail as a result.
3.	**Environmental conflict and exclusion.**	Access to the environment and conflicts over exclusion from it (especially natural resources).	Environmental conflicts are shown to be part of larger gendered, classed, and raced struggles and vice versa.
4.	**Environmental subjects and identity.**	Identities of people and social groups (especially new or emerging ones).	Political identities and social struggles are shown to be linked to basic issues of livelihood and environmental activity.
5.	**Political objects and actors.**	Socio-political conditions (especially deeply structured ones).	Political and economic systems are shown to be underpinned and affected by the non-human actors with which they are intertwined.

Source: Modified from Robbins 2012, 22.

The fifth approach seems to draw on modern-postmodern geological thought of poststructuralist philosophy [14] and discourse analysis (Peet 2001, 4) (see Appendix 1). Robbins (2012) states, "People, institutions, communities, and nations assemble and participate in the networks that emerge, leveraging power and influence, just as non-human

14 Post-structuralism: (1) "Language is seen as the medium for defining and contesting social organization and subjectivity"; (2) "Post-structuralists also helped to formulate and absorb an anti-humanist critique of a unified, knowing and rational subject, instead interpreting subjectivity as continually in process, as a site of disunity, conflict, and contradictions, and hence potential political change"(Johnston et al 2000, 625).

organisms and communities do"(pp. 23). It is these actors and networks, as well as discourse that influences society; therefore, they are the focus of this thesis.

2.3 Discourse analysis

Discourse analysis is defined as "The study of language, its structure, functions and patterns of use"(Marshall 1998, 162). In this study, discourse analysis was used to understand the BC mineral development landscape. In order to understand this landscape, or the interrelations between nature and society over place, space and time, a set of key words were researched and analyzed by premier from 1952 to 2014 (Blaikie 1985; Forsyth 2003) (see Section 2.4) (see Appendix 2). Ontologically [15] and epistemologically [16] speaking, discourse analysis provides a path and not an answer, thereby evaluating the truth and validity of statements made about reality (Peet 2001). The pioneering work of Escobar (1995, 1996) illustrates how discourses such as development, which was invented by the First World, is an assemblage "…of production, power, and signification, and this in turn is part of western modernity, understood as a form of knowledge and rationality"(Peet 2001, 236)[17]. The poststructural critique of discourses illustrates how "theoretico-practical transformation" could occur, whereby alternative futures such as social movements happen (Peet 2001, 237). Therefore, studying words such as regionalism shows the interrelations between actors and factors, and how they influence copper mine development in BC.

2.4 Literature review

A detailed and extensive literature review was completed which is discussed throughout the body of the thesis. The review included newspaper articles, books, public company and government data, as well as academic literature such as journal articles, books and research studies (e.g., Blake et al 1995). For instance, over 51,000 articles from over 1000 newspapers were found based on selected discourse (e.g., Mining, BC Mines, Mines, Regionalism, Resource, Forestry, Copper Mining, Gold Mining, Environmental Movement, Ecological

15 Definition of Ontologically: "Of or relating to essence or the nature of being". See http://www.thefreedictionary.com/Ontologically.

16 Definition of Epistemology: "The study or a theory of the nature and grounds of knowledge especially with reference to its limits and validity". Reference found (May 14, 2014) at the following website: http://www.merriam-webster.com/dictionary/epistemology.

17 The resume of Arturo Escobar can be found at: http://aescobar.web.unc.edu/written-texts/.

Movement, Indian, Aboriginal, Native, First Nations and Fisheries) (see Appendix 2).[18] For example, under the newspaper search engine found in Google, the following search, "Premier Gordon Campbell+Aboriginal," generated 1,260 newspaper articles. The same formula and discourse were used for each premier between 1952-2014 (see Appendix 2). As a result, a set number of themes: (1) First Nation land claims; (2) Environmental movement and protected areas; (3) Regulatory duplication and inconsistencies; and, (4) Provincial, Federal and International relations were generated and discussed throughout Chapters 13 to 16. Topics discussed per premier were based on relevancy, as well as on the number of articles (>10) found. Also, frequently mentioned case studies were discussed in order to reiterate and substantiate the themes mentioned above (see Appendix 2). Overall, each premier tells a story; whereby unique aspects are highlighted in order to emphasize how politics and politicians influence the BC mining industry.

2.5 Time series analysis

Time series analysis is simply the observation of trends, frequency of trends, changing trends, striking features and/or the defining of historical moments over a period of time. In other words, time series analysis is the evaluation of research questions over time, in order to identify sources of change (e.g., factors, actors and sectors). Part one of this study utilizes time series analysis to identify the trends of porphyry copper mine development from 1900 to 2014. For instance, economic trends such as copper yields, head grade, boom and bust cycles, economies of scale and key technical innovations were identified. Such longitudinal studies are vital to answering research questions that ask who, what, where, when, why and how. Part two of this study utilizes time series analysis to identify trends in social phenomena over time such as voter values, beliefs and attitudes, as well as to identify the key actors and factors in BC's mineral development story from 1952 to 2014. Part two data is organized by year, as well as by the government of the day. For instance, Chapter 13 addresses the period of when W.A.C. Bennett was BC's Social Credit premier from 1952-1972.

18 The discourse was selected from data obtained from the Fraser Institute surveys (1997-2013) (Fredrickson 2003; 2004; Jones and Fredrickson 2002; McMahon and Cervantes 2005; 2009; 2010; 2011; 2012; McMahon and Cust 2006; McMahon and Melham 2007; McMahon and Vidler 2008).

2.6 PEST analysis framework

The PEST analysis framework is an analytic exercise of the political, economic, social and technological (PEST) perspectives of a particular domain, locale, region or nation (Maack 2001) (see Figure 2) (see Table 2). PEST analysis is used in strategic planning to gain an understanding of the macro environmental factors, or acquire the 'big world view' of a subject matter, in this case the BC mining industry (Nelsen and Scoble 2005). In a sense, it is a research trajectory that encourages the researcher to analyze more deeply or be "in-situ" as described in the methodological literature, hence resulting in a more realistic study. In-situ or "[s]ituational analysis is an in-depth process to develop an understanding of the needs of specific audiences in a specific setting. It involves a combination of data gathering techniques conducted from a variety of perspectives (social, economic, environmental, political, etc.)"(Duttweiler 2003). In other words, this thesis is a result of an extensive in-situ study that strives to provide a more realistic interpretation (from multiple sources, e.g., newspapers) of the factors and actors that influence copper mine development in BC.

PEST analysis is a well-established strategic management research tool used in a diverse range of industries, in particular in the fields of strategic change (Grundy 2006; Ward 2005; Frost 2003), economics (Langlois and Csontos 1993), business (Peng and Nunes 2007), service (Pandya 2002), social science (Maximov 2001), sports industry (Cui et al 2007), planning (Glaiser and Falshaw 1999), risk analysis (Kahn 1979) and mining (Nelsen and Scoble 2005, 2007; Nelsen 2006, 2007).

PEST analysis guides the discovery of information about a particular locality, market or idea through questions that stimulate discussion and diagnosis of the external environment. It is also a tool to identify any changes that may occur from the PEST factors effect on one another. Such an 'environmental scan' highlights fundamental regional and local characteristics and attributes in order for the company, government, or researcher to make an informed decision based on the diverse risks associated with copper mine development in BC (Nelsen and Scoble 2005).

Table 2 An example of the PEST analysis framework used in this study

PEST Analysis	Factor	Key Indicators
Political	Land Access	First Nations Treaties, Mineral Tenure Act, Public vs. Private Lands.
Economic	NPV	Financial Capacity.
Social	Political Party preference	Elections, Ridings, Income, Age, Union, Political Cleavages
Technological	Innovation	HPGR, Bioleach.

PEST analysis is based upon a grid template comprising four quadrants: political, economic, social and technological (see Figure 3). Political factors relating to mining development and society include: tax policy; employment laws, and environmental regulations. Economic factors include: trends in commodity prices, interest rates, exchange rate, inflation rates, and exploration potential. Social factors include: cultural aspects; community demographics, resilience and economic diversity; and, workforce availability and skills. The technological factors include: mining, processing and environmental technology trends; energy and water resources; technological receptor capacity and incentives; and, rate of technological change.

All four quadrants are potentially interrelated and governed by socio-political cultural factors (see Figure 3). For example, the Internet (technological factor) has a significant effect on all the other quadrants because of its role as a major driver of globalization. It allows people access to information to which they were once not privy. Globalization has positively and negatively influenced voters' values, beliefs, attitudes and confidence levels associated with mining and government. These changes have empowered voters to influence the timing, direction and process of social, political and economic development in their area. Table 3 illustrates a sample of the PEST and FAS analysis framework used in this study.

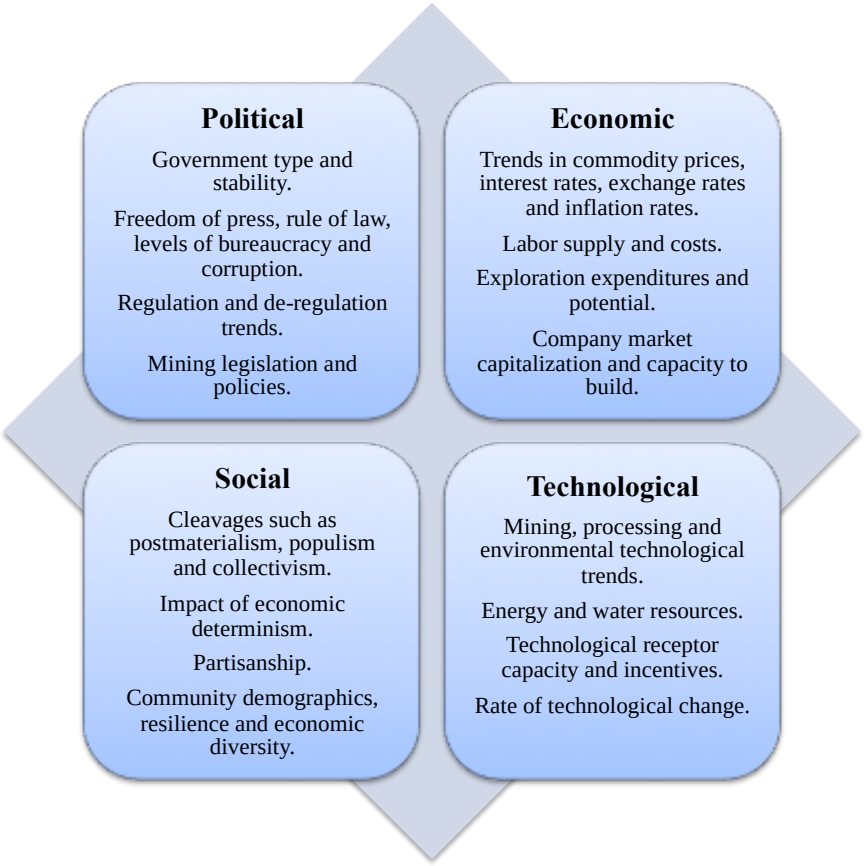


Figure 3 PEST analysis examples

2.7 Factors-Actors-Sectors framework (FAS)

In order to organize large volumes of data, as well as assist in a deeper understanding (e.g., identify actors), the PEST data acquired from the literature review was organized into narratives (qualitative images) using the linear Factors-Actors-Sectors (FAS) framework (see Figure 2) (see Table 3). FAS outlines broad explanations on where, when, why and how PEST forces influence mineral development in BC (see Table 3). Greeuw et al (2001) state, "This factor-actor-sector framework guarantees integration over themes and dimensions (economic, environmental, socio-cultural and institutional)"(p.5). The key elements of FAS are defined below:

- ***Factors/Sub-Factors*** "…represents an aspect of a social or natural system around which cluster broad policy issues of particular interest"(Greeuw et al 2001, 15). For example, political themes such as government mandate, anti-mining policies and years in office are highlighted;
- ***Actors/Sub-Actors*** "…represents an individual or organization of individuals with the capacity to effect and/or influence change"(Greeuw et al 2001, 15). For

example, actors may be governmental bodies, companies, NGO's, investors, voters, First Nations and scientists; and,

- ***Sectors*** "…are arenas in society where factors and actors interact"(van Notten et al 2003, 427). The primary sector studied is the BC mining industry.

Table 3 A sample of FAS analysis framework used in this study

PEST	Factors	Actors	Sub-Actors	Key Indicators
Political	Mineral Policy	Provincial Government	Government of the Day, e.g., NDP, Liberal, Premier. (See Table 3)	Pro or anti-development.
Economic	Commodity Price	Industry, Government, Investors, International Market.	-	NPV Analysis, Other Valuation Techniques.
Social	Political Party Preference	Voters	-	Elections, Ridings, Income, Age, Union, Political Cleavages
Technological	Innovation	Mining Companies, Government, Industry.	-	Decline in Operating Costs, $$ Spent towards innovation.

*Sector is assumed throughout this study to be BC's Mining Industry.

2.8 Case study analysis

Case study analysis has long been utilized by a variety of academic disciplines (psychology, sociology, geography, economic, political science and urban planning) to understand complex social phenomena (Stake 2006). It is both a process and a product of inquiry, which encompasses particular and situational domains, addresses qualitative and quantitative data and brings realism to any study. Schramm (1971) is cited as stating, "The essence of a case study, the central tendency among all types of case study, is that it tries to illuminate a decision or set of decisions: why they were taken, how they were implemented, and with what result"(as cited in Yin 2009, 17). Case studies discussed within this study were used to reiterate and substantiate the four themes discussed throughout chapters 13 to 16, as well as economic data discussed throughout chapters 5 to 9 (see Figure 2). For instance, in this research seven copper porphyry projects were studied to determine their economic viability and worldwide status (see Chapters 5-9).

2.9 Political cleavages

Cleavages originated with the study of democracy in order to understand the structural basis in the voters' political party choice (Bornschier 2009) (see Figure 2) (see Chapter 12). The importance in understanding political cleavages is that voters' choices ultimately have implications in regards to policies, which can either hinder or promote resource development throughout the province. A study on political cleavages should reveal who amongst BC voters are BC mining industry supporters.

Franklin et al (1992) believe that "…a cleavage basically reflects broadly based and long-standing social and economic divisions within society"(p.2). Bornschier (2009) defines cleavage as "…a deep and lasting division between groups based on some kind of conflict". Thomas (2001) states, "Political cleavages within the population are usually based upon differences of circumstance or values…Measureable differences that risk creating tension and perceptions of inequity and that have important implications for public policy are the ones that are considered cleavages"(p.432). For instance, examples of post-industrial or modern cleavages defined by Blake 1985, Elkins 1985 and Thomas 2001 in regards to BC politics are: materialist/postmaterialism; individualism/collectivism; populism; and, partisanship (see Chapter 12). All are long-term and systematic phenomena that differentiate groups based on some kind of conflict who are polarized to either the left or the right.

Cleavages have also been constituted with various adjectives such as social, attitudinal and political; however, as long as they compose the three elements according to Bartolini (1990) they are known as cleavages. The three elements defined by Bornschier (2009) are as follows:

- A social-structural element, such as class, religious denomination, status, or education;
- An element of collective identity of this social group; and,
- An organizational manifestation in the form of collective action or a durable organization of the social groups concerned.

There is much scholarly debate on the definition of cleavage; however, for the purpose of this research Thomas's (2001) definition noted above is applied to this study.[19]

The study on political cleavages originated in the mid-19th century when modern democratic societies developed (Lipset and Rokkan 1967). The work on cleavage politics in the mid-20th century by Lipset and Rokkan highlighted that four cleavages (e.g., religion, economic class, regional antagonism and ethnicity) dominated electoral politics, which set the groundwork for modern cleavages. According to Gosselin (2008), there are 11 potential cleavage lines:

> …gender, age, rural vs. urban residence, social class, religion, ethnicity, socio-economic attitudes related to the traditional left-right divide, non-economic attitudes relevant for the new left vs. new right divide, attitudes relevant for the clerical vs. secular cleavage, attitudinal support for the political system – this should capture the regime cleavage where it exists, and nationalist vs. cosmopolitan attitudes.

Inglehart (1977) defines cleavages into the following variables in order to demonstrate the transition or pace of change in individual values and skills, as well as political structure from pre-industrial to the post-industrial era:

- ***Pre-industrial (1750-1850) variables***:
    - Religion, language group and race;
    - These variables are less ascriptive; and,
    - Transmitted from generation to generation with little change (p.181).
- ***Industrial (1850-1950) variables***:
    - Factors underlying the pattern of industrial class conflict, such as income, occupation, education, membership in labor unions;
    - The emergence of an enfranchised working class, pitting its interests against those of the proprietors and managers;
    - Son's occupations tended to mirror their fathers, however, educational level and occupation reflect and achieved rather than ascribed status; inter-generational changes occur far more frequently here than with Pre-industrial variables; and,
    - Groups with lower income and occupation tended to vote for change-oriented parties, or parties of the Left, in opposition to the middle and upper classes, which tended to be the status quo (pg.181).
- ***Post-Industrial (1950+) variables***:
    - Reflect individual-level variables, especially those based on post-economic needs;
    - Are less likely to take an institutional form;
    - Are deeply internalized by individuals;

19 See the works of Heather Stoll (2004) titled, "Social cleavages, political institutions and party systems: Putting preferences back into the fundamental equation of politics" who pontificates to great length on the discourse and narrative of cleavage.

- Are motivated by an individual's life-style preferences and values rather than by either ascriptive or social class-based cleavages (p.181-182).

As illustrated above, certain cleavages have become somewhat obsolete over time due to a shift in values from material well being and physical security to one that is focused on "the quality of life" (Inglehart 1977, 3). For instance, 'class cleavage' has become a less relevant indicator of conflict in post-industrial BC because of the rise in economic prosperity, which has liberated the growth in income, education, mass communication, technology, travel and cohort experiences (e.g., "...grown up in affluent, communications-rich societies") (Inglehart 1977, p. 6-11). This created a shift in values, which transitioned Western societies from being identified as having industrial ascriptive cleavages to post-industrial lifestyle focused cleavages (Inglehart 1977). This shift according to Inglehart (1977) has had an influence on the electorate's choice in political party, which ultimately has helped to "…shape the policies adopted by Western elites"(p.21).

"The Silent Revolution: Changing values and political styles among Western publics", Inglehart (1977) surmises that this lifestyle transformation is an intergenerational value change, not a result of an aging population who became more materialistic. There are two key hypotheses to Inglehart's notion of intergenerational value change and they are: (1) individual priorities reflect the socioeconomic environment; and, (2) there is a time lag between value priorities and the socioeconomic environment, as it is one's pre-adult years that are reflected in one's basic value priorities (Inglehart 1977, 21-24). For instance, the prosperity experienced in Western societies after WWII (1950-1970), known as 'the fat years,' and the absence of wars (meaning that no Western nation has been invaded in well over 50 years) has influenced one's value priorities as people are safe and have enough to eat (Inglehart 1977, 21-22). Blake (1996a) writes,

> Generally speaking, those who came of age after the war give higher priority to values such as protecting the environment, having a say in governmental decisions and freedom of speech than to the values such as economic stability, law and order, and maintaining strong defense forces. This phenomenon has shown to exist in all Western capitalist democracies. The explanation seems to be linked to the fact that younger age cohorts, having no direct experience of the Great Depression and the war that followed it, have come to take economic and military security for granted and therefore give higher priority to 'postmaterialist' values (p.11).

Today, many British Columbians have been raised in an environment of exceptional economic and physical security, thus allowing for a rise in ideologies such as postmaterialism, populism and collectivism. However, these changes have consequences on Western societies such as the rise in political issues (e.g., demands for public participation, protection of the environment, quality of life), conflict between 'new' and traditional politics and a decline in legitimacy of hierarchical authority (e.g., increased atheism amongst electorate) (Inglehart 1977, 12-18). Inglehart (1977) writes,

> What is changing is their quantitative importance. Conservation of natural resources has been a subject of political controversy for many decades; and students have been politically active for almost as long as there have been students. But it is difficult to find a previous instance of the triumph of environmental interests over major economic interests that are comparable in magnitude to the rejection of the proposed American supersonic transport; or the persisting opposition to off-shore oil drilling and strip-mined coal, in face of an energy shortage. Likewise, it is difficult to find a precedent for the fact that students now make up a larger portion of the American population than does organized labor"(p.13).

In order to acquire further understanding on the nature and consequences of value change in individuals, political cleavages such as materialist/postmaterialism; individualism/collectivism; populism; and, partisanship are studied (see Chapter 12). This understanding is vitally important because voters choose the governing party of the day. Each BC elected party paves the way for a certain type of economic development process, accompanied by policies that are, or not, pro-mining and this has an impact on the health and sustainability of the mining industry over time.

2.10 Triangulation: Crystallization

In the 1970's, triangulation became mainstream as a research tool for applying multiple perspectives into one set of data. "In triangulation, a researcher deploys 'different methods' – such as interviews, census data, and documents – to 'validate" findings' (Richardson 2000, 935). There are four basic types of triangulation:

- ***Data triangulation***: the use of a variety of data sources in a study;
- ***Investigator triangulation***: the use of several different researchers or evaluators;
- ***Theory triangulation***: the use of multiple perspectives to interpret a single data set; and,
- ***Methodological triangulation***: the use of multiple methods to study a single problem (Denzin 1978a, as noted in Janesick 2000, 391).

By the 1990's, triangulation had evolved around the postmodern turn[20] to be known as crystallization. Richardson (2000) writes,

> Crystallization, without losing structure, deconstructs the traditional idea of "validity" (we feel how there is no single truth, we see how text validate themselves), and crystallization provides us with a deepened, complex, thoroughly partial, understanding of the topic. Ingeniously, there is always more to know (p. 934).

In other words, "[t]riangulation is the display of multiple, refracted realities simultaneously"(Denzin and Lincoln 2000, 6). For the purposes of this study, the process of triangulation involves the use of a number of diversified sources of data, as well as multiple methods to validate the key factors and actors that influence mineral policy development in BC (see Chapter 18). For instance, data obtained was from multiple media and academic sources, whereby the shear repetitiveness on key topics or themes illustrates its relative importance in the answering of the research question. Denzin and Lincoln (2000) state, "…the use of multiple methods, or triangulation, reflects an attempt to secure an in-depth understanding of phenomenon in question" (p. 5). For example, the use of statistical analysis, PEST metrics, case studies and studies by Inglehart (1977), Blake (1985), Elkins (1985) and Blake (1996a,b) reaffirm societal changes and resulting shift in electorate priorities, as well as demonstrate a relationship between premier, copper price and the increase or decline in exploration expenditures (see Chapter 18). Also, the shear repetitiveness of the data obtained provides assurance, thereby silencing critics who question the validity of using multiple methodologies to get research results (Fielding and Fielding 1986; Flick 1998; Denzin and Lincoln 2000).

2.11 SWOT analysis framework

SWOT analysis is a subjective micro-environmental assessment of data that traditionally compliments PEST and FAS analysis (SRI 2005). It aims to evaluate the strengths, weaknesses, opportunities, and threats (SWOT) of a potential project of study. It is usually the final stage of analysis, after triangulation has occurred (see Figure 2). Rotmans et al (2000) discuss in "Visions for a Sustainable Europe" that,

> It is important to recognize the weak signals, the so-called seeds of the future, which could be dominant in a future world…All we can do is learn from the past

20 Postmodern turn is a definite move away from modernism into post modernism thought (see Appendix 1).

by drawing analogies between historical and current situations, and use our intuition, imagination and creativity to trace them. Regrettably, many of the more influential scenarios that have been developed over the last decades did not focus on weak signals (pp.811).

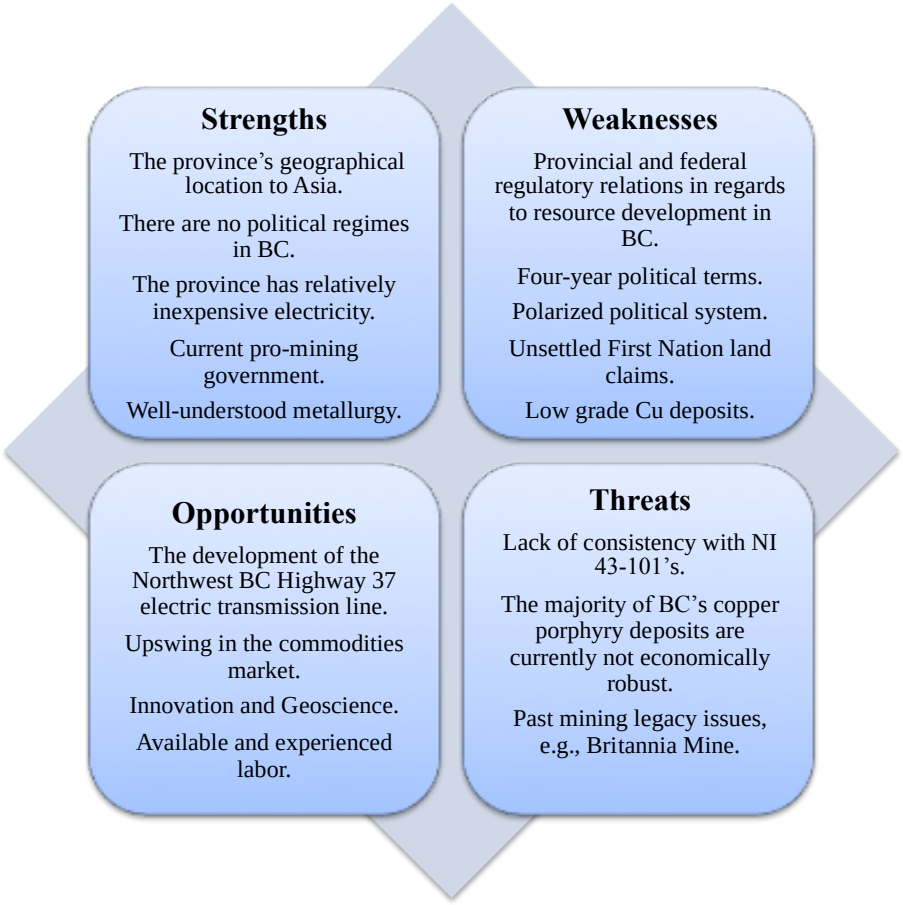


Figure 4 SWOT analysis examples

The SWOT template is usually presented as a grid with four quadrants and was initially developed for business and industry in the 1960's by Albert Humphery (SRI 2005) (see Figure 4). While working with the Stanford Research Institute, Humphrey developed the grid using data from Fortune 500 companies (SRI 2005). Today, the template is used by a variety of organizations and institutions, including community health and education and it is sometimes called TOWS (Weihrich 1982). Strengths and weaknesses include examples that pertain to the province's experiences, resources, originality, efficiency, competitive advantages, infrastructure and labor (see Figure 4) (see Chapter 18). Opportunities and threats usually include examples that pertain to business alliances, technological development, information and research (see Figure 4) (see Chapter 18).

2.12 Strengths and limitations of the qualitative and quantitative research

The following section identifies the qualitative[21] and quantitative[22] strengths and limitations of this research.

2.12.1 Strengths of the qualitative research

The strengths of the qualitative research are:

- The ability to identify, define and analyze factors, actors and sectors that have influence on BC's mining industry;
- The ability to describe the BC mining landscape in detail;
- The ability to look at social process in depth;
- The ability to study "a limited number of case studies in depth";[23]
- The ability to provide information on individual cases;
- The ability to do "cross-case comparisons and analysis"; [24]
- The study being dynamic in nature allowed for the identification of "sequential patterns and change" in industry, governments and voters;
- The data collected (in particular from newspaper articles) allowed for a more realistic study, as the articles represent and overly reiterate the phenomena of the time;
- The researcher was able to be responsive to changes during the study, thereby flexible enough to shift focus as a result;
- The data collected provided answers to what, where, when, why and how questions; and,
- The ability to determine causation of a particular event on BC's mineral policy.

2.12.2 Weaknesses of the qualitative research

The weaknesses of the qualitative research are:

- The data obtained can be influenced by the researcher's biases, than quantitative data;
- The number of media articles studied, cannot be duplicated one month later due to the dynamic nature of the Internet, as well as changes in the search engine;
- The data analyzed in part two of the study is not just focused on the copper porphyry industry; but rather on other sectors who have influence on all aspects of the PEST factors;
- Cross case analysis on the number of media articles per premier and per discourse is limited, as each premier's time in office has varied; and,
- "The study of historical data is seen as being somewhat arbitrary, as history is

21 For additional information on the strengths and weaknesses of qualitative research see the following website: http://www.southalabama.edu/coe/bset/johnson/oh_master/Ch14/Tab14-02.pdf.

22 For additional information on the strengths and weaknesses of quantitative research see the following website: http://www.southalabama.edu/coe/bset/johnson/oh_master/Ch14/Tab14-01.pdf.

23 Reference found (March 15, 2014) at the following link: http://www.southalabama.edu/coe/bset/johnson/oh_master/Ch14/Tab14-02.pdf.

24 Reference found (March 14, 2014) at the following link: http://www.southalabama.edu/coe/bset/johnson/oh_master/Ch14/Tab14-02.pdf.

somewhat a social construction"(Denzin and Lincoln 2005, 13).

2.12.3 Strengths of the quantitative research.

The strengths of the quantitative research are:

- The results of quantitative analysis tend to be "relatively independent of the researcher"; [25]
- Analysis is simplified, as reasoning is guided by numerical logic; and,
- Has higher credibility with a wide range of people.

2.12.4 Weaknesses of the quantitative research

The weaknesses of the quantitative research are:

- The quantitative data becomes somewhat obsolete due to the dynamic nature of the commodities market;
- In mine evaluation a Preliminary Assessment (PA) Scoping Study is only accurate within 25 percent;
- The PEST metrics designed and implemented are subjective in nature; and,
- The data generated from NI 43-101's are full of bias and assumptions, which are difficult to account for in analysis and as a result further assumptions were made.

2.13 Conclusion

The mixed methodologies used in this study consisted mainly of political ecology, PEST, FAS and SWOT analysis, as well as project valuation methods. They provided a tool to organize and analyze data obtained from the extensive literature review, as well as effective tools to acquire knowledge on the economic and political landscape pertaining to BC's mining industry. The interrelations among factors, actors and sectors demonstrates the struggle in regards to power, in particular, on who controls the resources sector, as well as permits land access within BC. Understanding these dynamics, as well as others should create greater understanding on the strengths, weaknesses, opportunities, and threats faced by industry, as well as provide a foundation for building towards a more enduring BC mining industry. The following eight chapters consider an economic analysis of BC's mining industry.

25 Reference found (March 14, 2014) at the following link: http://www.southalabama.edu/coe/bset/johnson/oh_master/Ch14/Tab14-01.pdf.

PART 1 ECONOMIC ANALYSIS

The main objective of part 1 of this study is to analyze industry factors and trends, as well as project economic feasibility (see Figure 2) (see Chapters 5-8). In order to identify PEST factors faced by the mining industry, as well as by companies in BC trying to develop copper porphyry mines, several quantitative valuation methods were used. These methods are based on a due diligence guideline from a major Canadian bank, whereby the structured finance credit manual is fundamental in addressing PEST factors in relation to mine development risks in BC (SFCM 1999). For instance, this thesis analyses the following parameters to assist in understanding the probability of success with respect to advancing the copper projects studied to a construction decision:

- ***Developmental risks***: Ore reserves, environmental liabilities, construction/competition risks (e.g., inadequate infrastructure, insufficient personnel, cost overruns;
- ***Market/Offtake risks***: Price fluctuations, advantages and disadvantages of location, availability of smelters;
- ***Operating period risks***: Unexpected operating costs, climate effect;
- ***Project economics***: Revenue projections, production assumptions, operating cost projects, inflation assumptions, metal price assumptions, ratio analysis; and,
- ***Regulatory/legal frameworks***: Environmental Impact Assessment (EIA), and land issues.

Figure 5 outlines the steps taken to analyze the economic, technical and financial feasibility of the seven copper projects studied (see Chapters 5-9). With each subsequent step, the analysis determines their standing in the development spectrum and highlights the challenges they and the industry face, as well as the criterion needed to successfully build a copper mine in BC.

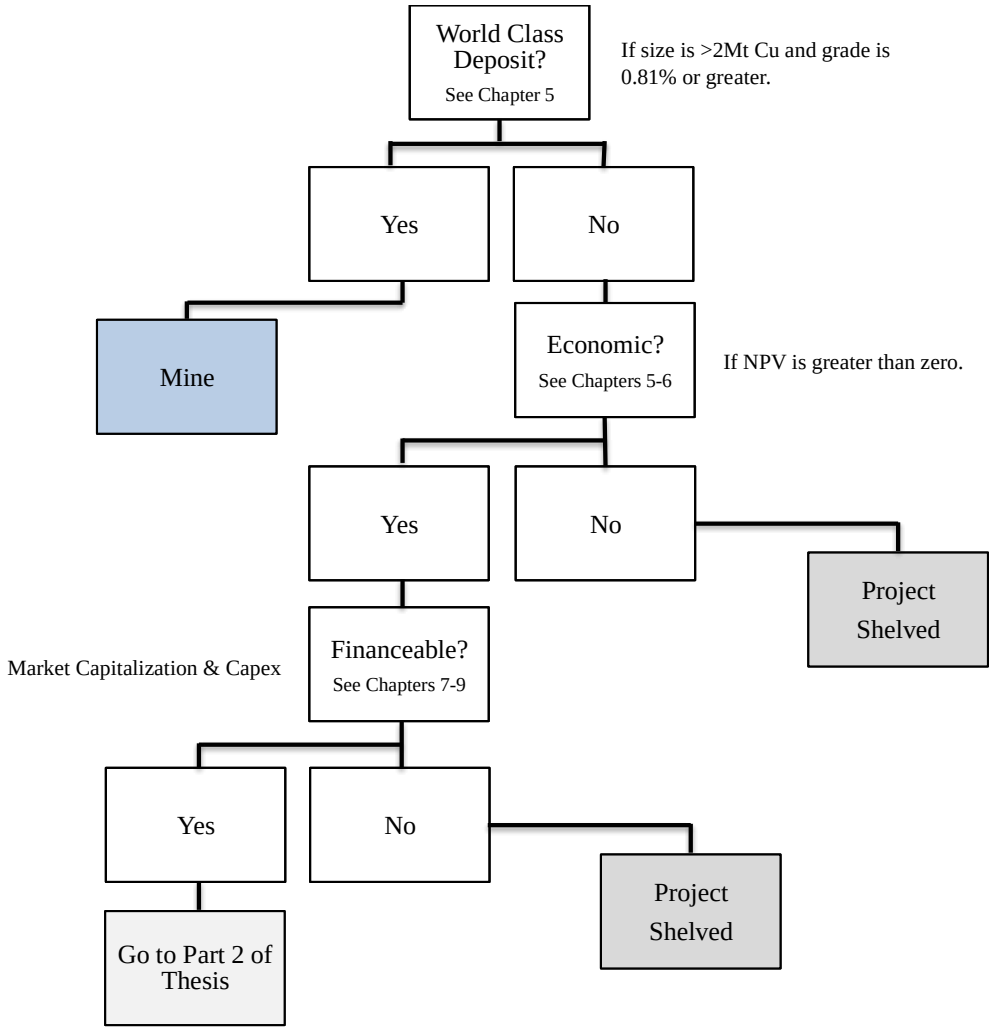


Figure 5 Economic feasibility road map: Chapters 3 to 10

CHAPTER 3 Copper porphyry: What is it? Why study it?

> *An old prospector exploring a logging road in the interior of British Columbia spots the bright green stain of malachite copper oxide on some recently exposed bedrock. Cracking these rocks open with his hammer, he spies some chalcopyrite, or copper sulphide mineral. To that excited prospector, the malachite green oxidization of copper is the colour of money and a big potential payday from a mining company who may buy his new claims. And the colour of money is right, copper has been by far the most important metal mined in B.C. over the past 400 years, contributing billions of dollars to the provincial economy and providing thousands of well-paying jobs (McLeod 2010b).*

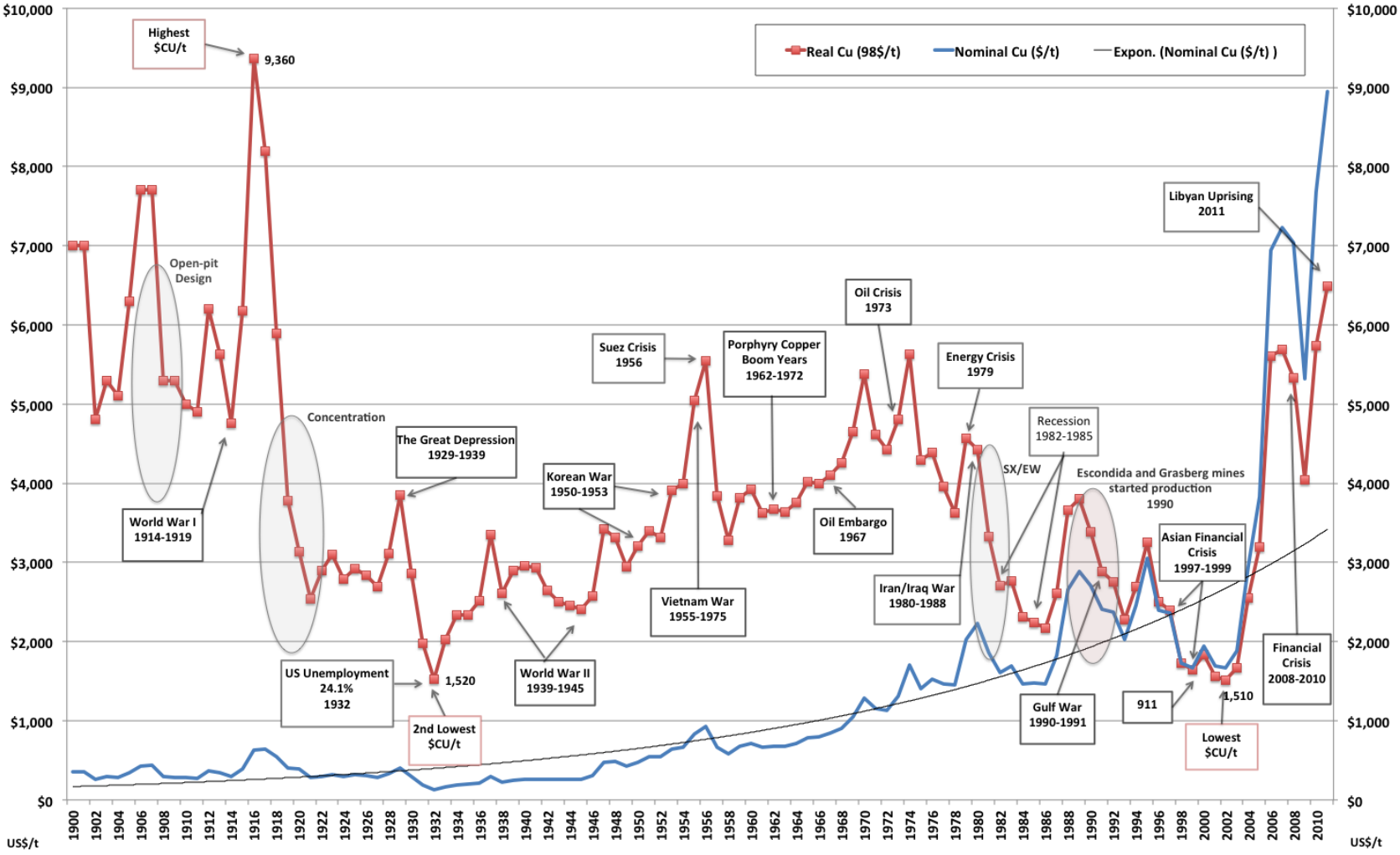
3.1 Introduction

Copper-gold is the primary geology found in BC and the province is Canada's largest producer of copper (MABC 2013a). There has been a long history of copper-gold porphyry mining in BC and with the strong worldwide demand for copper, it is a vitally important natural resource for the future of the province. Copper has been considered to have the ability to predict economic health or turning points in the global economy. Longhurst (2010) states,

> Copper has been called the commodity with a PhD in economics because of its apparent track record as a leading indicator of overall market strength and weakness. Forecasters study its price, and supply and demand activity for signs of larger equity market trends (p.15) (see Chart 1).

For example, copper consumption and stockpiles are closely watched in countries such as India and China in order to try to predict not only their growth, but also global growth (Longhurst 2010). Chart 2 illustrates significant worldwide events along with the real and nominal annual copper prices from 1900 to 2011, confirming copper's sensitivity to worldwide events. Copper is used in almost every sector worldwide including construction, electronics and automobiles, as well as in electrical cable. High copper demand (e.g., infrastructure development, growth and industrialization) usually results in higher prices, reflective of a strong economy (see Chart 1). Low copper demand (e.g., collapse of the US housing market) results in declining copper prices, indicating a slowing economy (see Chart 1). Copper is the third most consumed metal worldwide and is one of the highest recycled metals (Longhurst 2010).

Chart 1 Real and nominal annual copper price, 1900-2011



Source: Generated from Reinkensmeyer 2008; Strang 2007; USGS 2014; Wikipedia 2014

As of May 16, 2014, BC had 624[26] registered exploration projects and mines (MEG 2014). For the purpose of this the study, the following copper mine project criteria were established in order to create a subset for study:

- Cu-Au Porphyry deposit(s) within the province of BC;
- Contain chalcopyrite mineralization;
- Plan to use conventional flotation;
- Greenfield project;
- A valid NI 43-101 Technical Report completed with at least some form of economic analysis (see Section 3.5);
- Open-pit design, with a minimum of 30,000 tonnes per day of mined material; and,
- Development stage, not having been in production prior to June 2013.

As a result of this criterion, the following porphyry projects were selected and studied:

- Yellowhead Mining Inc.'s Harper Creek Project;
- Copper Fox Metals Inc.'s Schaft Creek Project;
- Pacific Booker Minerals Inc.'s Morrison Project;
- Taseko Mines Limited's New Prosperity Project;
- Thompson Creek Metals Corp.'s (formally Terrane Metals Corp.) Mt. Milligan Project;
- Imperial Metals's (bcMetals) Red Chris Project; and,
- Nova Gold and Teck Resources's Galore Creek Project.

3.2 What is a copper porphyry deposit?

Copper is found in many forms and geological settings. During the 19th and 20th centuries, a large share of copper mined worldwide came from massive sulphides, polymetallic veins, copper skarns, replacement deposits and sediment-hosted copper (Crowson 2011). Chart 2 illustrates copper grade (Cu percent) in relation to different deposit types described. For example, Kuroko Massive Sulphides are the most prevalent copper deposits in the world and may contain grades as high as 3.5 percent (Crowson 2011).

By the mid-1970's, 34 percent of the worldwide copper mine output came from porphyry deposits (Crowson 2011, Raw Materials Group 2011). Copper porphyry's share of worldwide output increased to 47 percent in 1988, 62 percent in 1998, but dropped in 2009 to 55 percent (Crowson 2011). For much of the 20th century, copper has been the most prolific

26 There are 624 exploration and mining projects in BC, of which 159 have copper, 96 have copper-gold, 31 are porphyries and 15 are in development stage (MEG 2014).

metal produced in BC and by 1991 approximately 80 percent of BC's copper came from copper porphyry deposits (McMillian et al 1996).

Copper is defined as a mineral, whereas porphyry is defined "…as intrusion-related, large-tonnage, low-grade mineral deposits with metal assemblages that may include all or some copper, molybdenum, gold and silver"(Titley and Beane 1981, as noted by McMillian et al 1996, 126). The genesis of this type of deposit is associated with "…the emplacement intermediate to felsic, hypabyssal, generally porphyritic intrusions that are commonly formed at convergent plate margins"(Sawkins 1990, as noted in McMillian et al 1996, 126). Accretion is the natural but a gradual process of the layering of materials to form land or tectonic plates. Pre-accretion is the "…subduction related tectonic processes in discrete island arcs…" whereas post-accretion involves older terranes[27] and emplacement during the Cretaceous and Tertiary era (McMillian et al 1996, 129) (see Figure 6 and 7) (see Appendix 3).

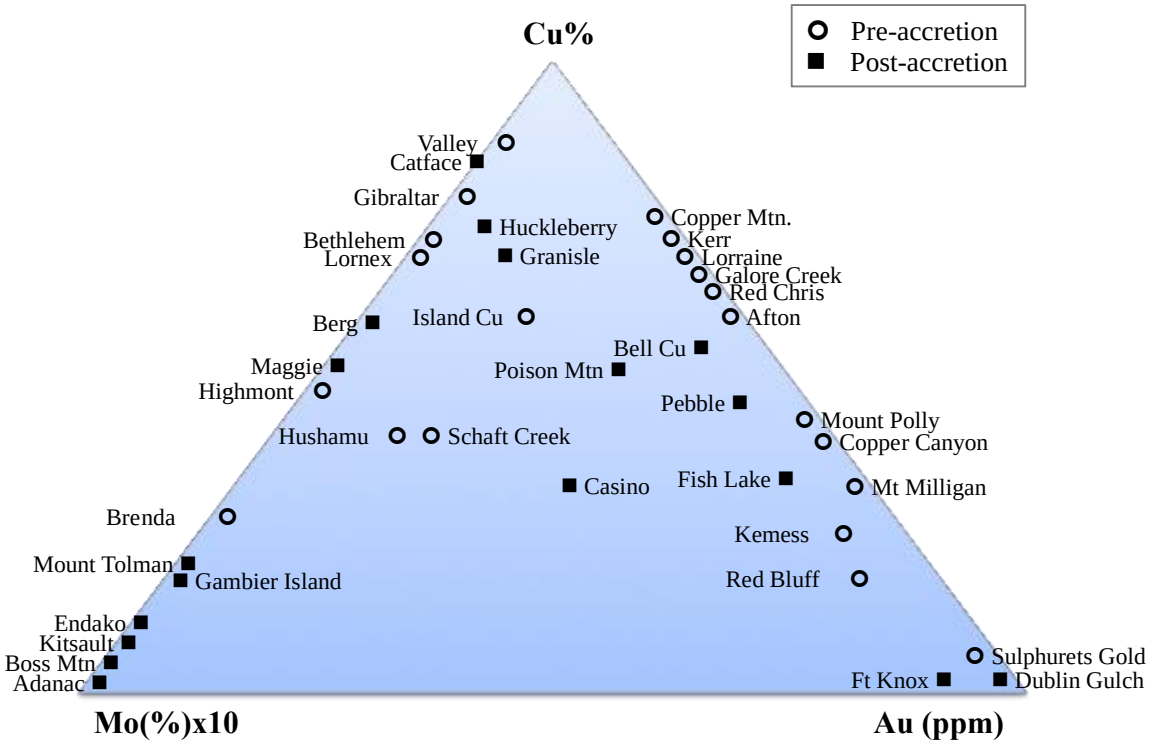
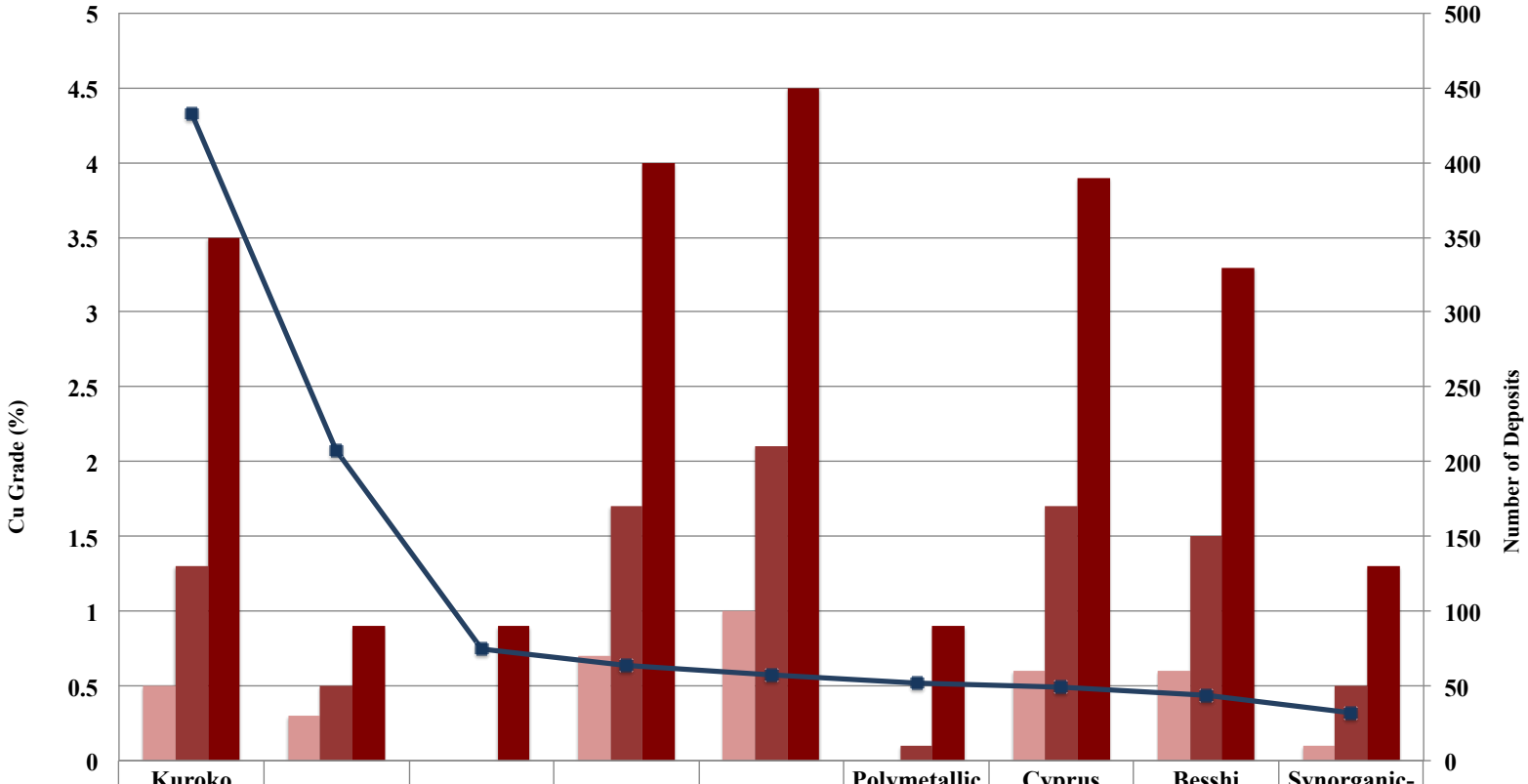


Figure 6 The reliable abundances of copper (%), molybdenum (%x10), and gold (g/t) for selected cordilleran porphyry deposits (Modified from McMillian et al 1996, 129)

27 A terrane is "…the area or surface over which a particular rock or group of rocks is prevalent"(AGI 1976, 429).

Chart 2 A study on worldwide copper grade of different deposit type, 2011



	Kuroko Massive Sulphides	Porphyry Copper	Polymetallic Veins	Cu Skarn	Sediment-Hosted	Polymetallic Replace-ment	Cyprus massive sulphides	Besshi Massive Sulphides	Synorganic-Synvolcanic Ni-Cu
Lowest Cu%	0.5	0.3	0	0.7	1	0	0.6	0.6	0.1
Median Cu%	1.3	0.5	0	1.7	2.1	0.1	1.7	1.5	0.5
Top Cu%	3.5	0.9	0.9	4	4.5	0.9	3.9	3.3	1.3
Number of Deposits	432	208	75	64	57	52	49	44	32

Source: Generated from Cox and Singer 1996; 1998, as cited in Crowson 2011

Figure 6 plots the relative abundances of copper, molybdenum and gold for selected Cordilleran porphyry deposits. Figure 6 illustrates that all the deposits containing molybdenum or gold deposits related to granite occurred post-accretion, whereas porphyry copper-gold deposits occurred prior to or during accretion (McMillian et al 1996). Figure 7 illustrates the location of selected Cordilleran porphyry deposits in BC in relation to their tectonic settings. There are four key tectonic terranes (i.e., Wrangellia, Stikinia, Cache Creek and Quesnella) in BC, of which the largest portion of BC's copper porphyry deposits are located along the Stikinia tectonic terrane.

3.3 Declining worldwide grades attributable to copper porphyry?

The value of a porphyry copper deposit is based on a number of factors such as the type of mineralization associated with the deposit, size and grade of the resource and the operating and capital costs required to extract the minerals. "Historically, the most profitable mines have been large scale porphyry deposits, with chalcopyrite mineralization extracted via open-pit mining"(CIN 2012). Chalcopyrite deposits tend to be sufficiently large to allow for economies of scale to offset their lower grades (0.3 percent to 0.9 percent) and higher processing (froth flotation versus heap leaching) costs (CIN 2012; Crowson 2011) (see Section 6.5). The copper porphyry projects studied in detail throughout this thesis all contain chalcopyrite mineralization (see Section 3.1). As illustrated in Chart 2, the average worldwide copper grade of porphyry deposits is 0.6 percent copper whereas BC averages only half of that at 0.30 percent (as noted in Chart 3, 0.30 percent is amongst the lowest grade for this type of copper deposit) (MEG 2013).

The average grade of producing copper mines worldwide has steadily declined; however, not evenly (Crowson 2011). Each country has its own reason for their overall decline in global copper output; however, consistent themes emerge including economies of scale, grade, and deposit type. Crowson (2011) writes, "…a rising share of copper production from porphyry deposits has contributed to falling weighted-average yields of copper"(p.4). Crowson (2011) studied five world-class copper mines (e.g., Bingham Canyon, Chino and Ray in the USA, and Chuquicamata and El Teniente (u/g)[28] in Chile) and discovered that the overall average

28 u/g = underground.

copper grades are decreasing with time (see Figure 8). He selected these mines because of their extremely long life, ability to work the same deposit and hence was able to plot overall declines in grade as the mines matured. This also illustrates how the expansion of operations, rather than the development of new mines, as well as technical innovation resulted in the decline of head grades (Crowson 2011).

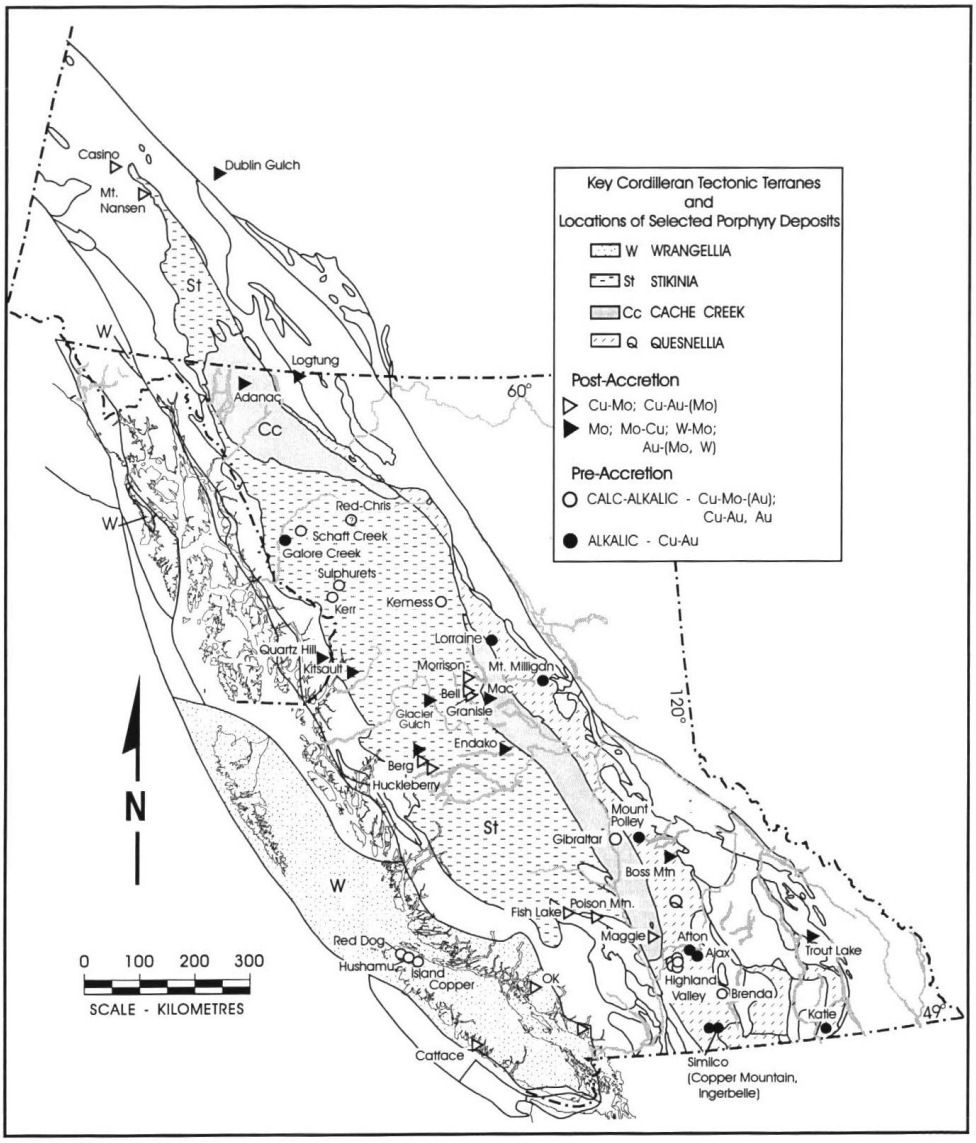


Figure 7 Location of selected cordilleran porphyry deposits in BC in relation to their tectonic settings (McMillian et al 1996, 128)[29]

29 Figure 7 from 'Regional geological and tectonic setting of porphyry deposits in British Columbia and Yukon Territory' published in CIM Special Volume 46. Reproduced with permission of the Canadian Institute of Mining, Metallurgy and Petroleum.

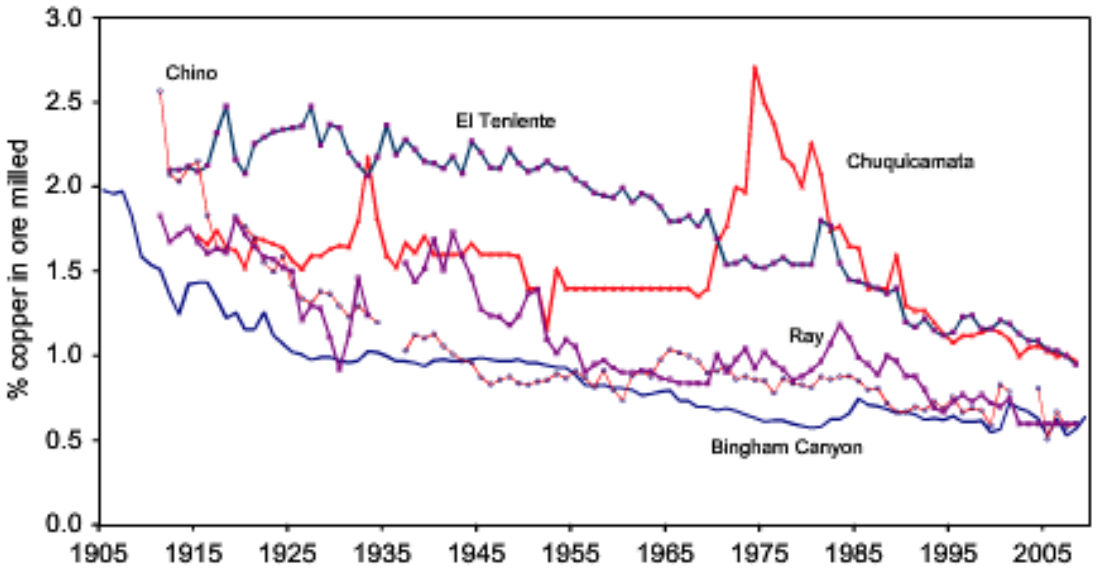


Figure 8 Average percentage copper content of ore milled at five mines, 1905 onwards (Long 2010; CRU International 2009; Raw Materials Group 2011; as cited in Crowson 2011)

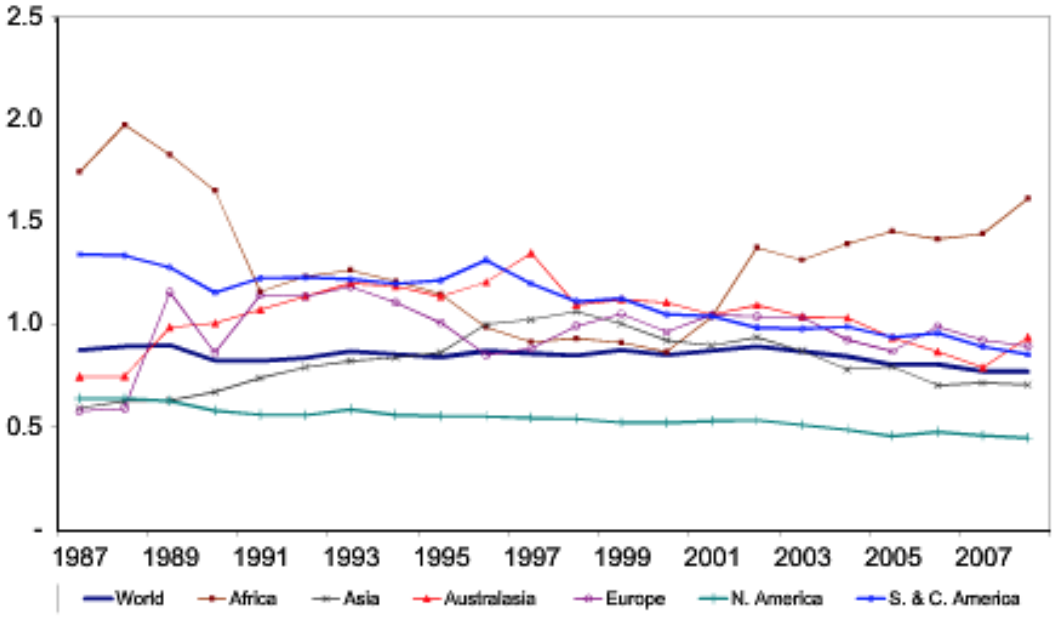


Figure 9 Regional weighted average copper head grades, 1987 onwards (Modified from CRU International 2009; Crowson 2011)

In BC, few mines if any can show their average yields over such an extended period of time, as they tend to be low-grade with shorter lives. Figure 9 highlights the overall lower copper

grades in North America (green symbol) as a result of the relatively higher percentage of copper porphyry deposits. The BC mining industry has a history of focusing on brownfield expansions, rather than new greenfield discoveries, which contributes to the decline in head grades (see Appendix 4). Appendix 5 combined with Figure 9 illustrates that no 'new' big discoveries have been made in BC since 1988.

As illustrated in Chart 3, the worldwide copper grade has declined over time; however, since 1970 it has remained relatively constant, resulting from technological improvements allowing for economies of scale. For instance, Charles et al (2012) note,

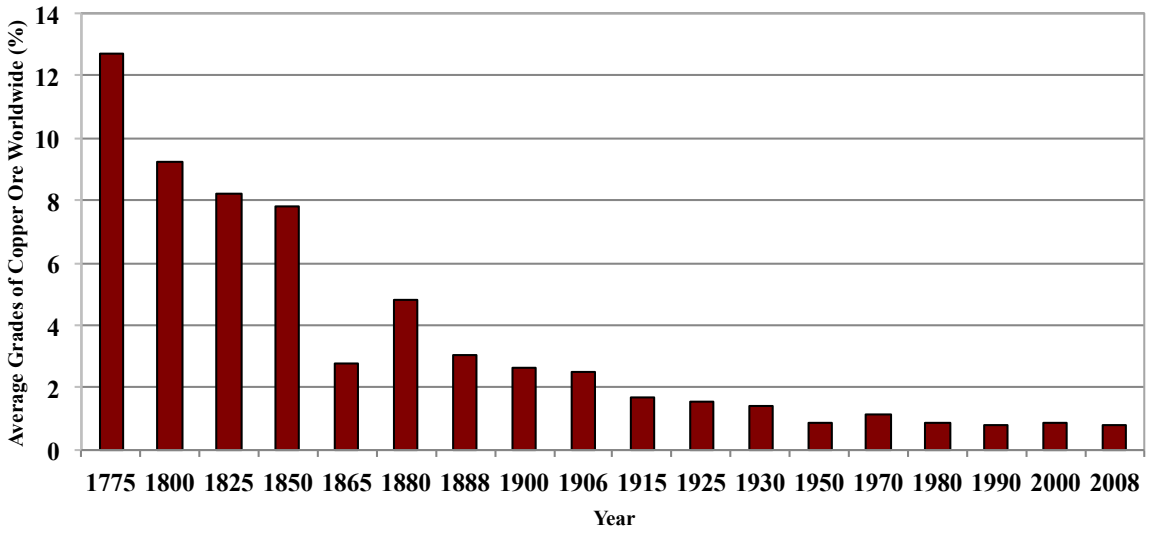
> Since the 1980's, the likelihood of making a near surface discovery of base metals has declined significantly. Since the beginning of this century over 75% of new discoveries are blind at depths of 300 m or deeper. Deep deposits are very difficult to find but this has not prevented global miners from spending on exploration. In 2011, World exploration expenditures hit record $18 bln according to Metals Economic Group. Unfortunately the record spending did not lead to many new discoveries (p.9).

This is reflective of the increased proportion of relatively abundant, but lower grade copper porphyries.

Less accessible deposits with lower grades and 'metallurgically' complex ores have become economic over time with technological advancements and increased economies of scale, as well as improved commodity prices. Lower head grades have resulted in larger mines in order to offset the costs of mining the lower grades. However, larger mines can result in a decrease in the average life of a mine, affecting the overall global copper output over time. There has been a significant decline in the average global reserve life from 111 years in 1920 to 36 years in 2010 (Schodde 2010b). Technical improvements such as solvent extraction and the use of mining planning software (to enhance mine plans) have helped improve the supply of copper. Figure 10 illustrates the key technological innovations that helped to drive down operating costs[30] for copper mines in the Western World. These improvements allowed for flexibility in the extraction of "…higher-grade ore when prices are high in order to maximize net present value…"(Crowson 2011). However, these improvements could ultimately result in lower-grade ore not so easily accessible or is too expensive to extract especially when commodity prices drop (Crowson 2011).

30 According to Schodde (2010b), operating costs include transportation, smelting and refining, as well as marketing costs.

Chart 3 A broad snapshot of global shifts in average copper grades, 1870-2008



Source: Generated from Barton 1978; Skelton 1934; Hunt 1855-1881; HMSO 1884-1887, 1888-1896, 1897-1895; Harvey 1981; Butler and Burbank 1929; McMahon 1965; Rio Tinto 2003; CRU International 2009; as cited in Crowson 2011

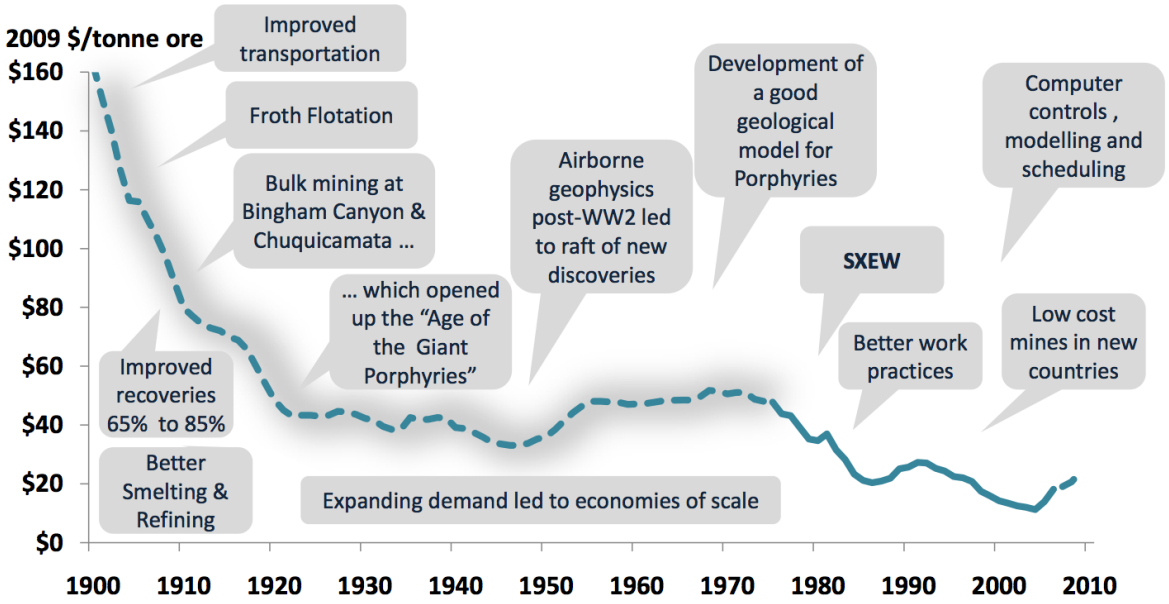


Figure 10 Key technical innovations and estimated average operating costs for copper mines in western world, 1900-2009 (Schodde 2010b)

Economies of scale and technology significantly contributed to the decrease in operating costs. From 1905 to 2007, cost savings attributable to new technology provided 70 percent of the savings, whereas economies of scale provided the remaining 30 percent (or 1 to 50 mtpa

ore)[31] (Schodde 2010a). As operating costs decreased, so did cut-off grades. As a result, the resource tonnage grew at lower ore grades with the net result being an increase in recoverable metal (Schodde 2010a, b). Overall, over the last 100 years the world's copper resource base has increased 25 fold as a result of increased discovery, reduced costs through technological innovations and economies of scale, as well as reduced cut-off grades (Schodde 2010a, b).

3.4 Why study greenfield projects over brownfield projects?

In the last 30 years, BC has faced an overall decline in the number of copper mines operating throughout the province (MEMPR 2013). However, as a result of economic forces such as commodity prices, operating and capital cost inflation, as well as environmental regulations and land access issues, many companies have chosen to restart or expand old mines rather than build new ones. In times of declining commodity prices, mining and exploration companies tend to curtail their exploration expenditures to maintain their short term profitability, if not their very existence (e.g., on average, it costs US$50 million in exploration per discovery), focusing on already established mines to try to maintain reserves (Schodde 2010a) (see Section 5.2). 'Discovery drought' can thus occur, resulting from a cyclical dependence to maintain reserves by enhancing current resources through restarts and expansions, which ultimately displaces the discovery of new mines (Weir 2006).

A greenfield or grassroots project is a newly discovered mineral deposit with no previous mining activity (e.g. mills) in the immediate vicinity. Brownfield projects are in areas with some existing infrastructure, whereby companies expand current operating mines, or restart old mines in order to maintain reserves. Appendix 4 illustrates the BC greenfield and brownfield projects as of December 2013. As this study focuses on the development and construction hurdles facing new mine construction, only greenfield projects with known development plans, public disclosure and economic reports will be studied.

31 Costs savings derived from Bingham Canyon, Ray, Chino, Morenci, Robinson, Potrerillos, Chuquicamata and El Tentiente mines. mtpa = million tonnes per annum (Schodde 2010a).

3.5 Why analyze only projects with economic studies?

Mineral projects transition from the geoscience stage to production decision if the project meets all the political, economic, social and technical criteria. In order to reach the development stage and ultimately production, a variety of studies (e.g., environmental, technical and financial) on the project have to be completed. Almost all projects progress through the following economic study stages before going into production; preliminary economic study (PEA) or scoping study, feasibility study and final or definitive feasibility study also known as bankable feasibility study (BFS). As all of the projects being studied are owned by public corporations, they are required to file their technological and economic studies under National Instrument 43-101 and make them available to the public. It is quite conceivable that a private company could own and build a copper porphyry mine without publically disclosing their studies, however, we are not aware of any in BC.

3.6 Other criterion

Copper porphyry deposits are large-tonnage, low-grade mineral deposits that likely require an open-pit design. The majority of copper porphyry mines or projects in BC are designated as open pit mines designed with a minimum of 30,000tpd mill throughput (MEG 2013). The Mt. Milligan project commenced operations in September 2013; however, since it is the first copper porphyry project to reach the production stage in the last 15 years, as well as meeting all the case study criteria, it warranted a space in the study as it provided some valuable insights.

3.7 Conclusion

Copper is a unique and versatile metal of great economic significance worldwide. Copper porphyry deposits are increasingly important sources of copper worldwide and BC has an abundance of them, although seemingly unable to build and develop greenfield projects. Technological innovations, as well as enhanced economies of scale have significantly reduced cut off grades to the point that many copper porphyry deposits in the right circumstances are economic and being built into mines. As Canada's largest producer of copper and as a province with a long history of copper mining, it is important to ask and try to understand why is it so difficult to build a copper mine in BC (MABC 2013a)? With

readily available and publicly disclosed technical and economic studies of the most advanced copper porphyry projects in BC, a comparative analysis was conducted to try and determine why these projects are not being constructed.

CHAPTER 4 History of copper porphyry development in BC, 1900 to 2014

4.1 Introduction

This study utilized time series analysis to identify key economic trends in copper porphyry development in BC from 1900 to 2014. However, the primary focus of this chapter will be from 1952 to present.[32] By identifying these trends, the groundwork for understanding who, what, where and why only one new copper porphyry mine has been built in BC since 1997 is established. Part two of this thesis will look in more detail at the political actors that supported and implemented anti-or-pro-mining policies that influenced mineral development in BC.

4.2 Small to big pioneers, 1900-1952

At the turn of the century, small pioneers had built and operated numerous small copper mines throughout the province; however, three mining operations: Cominco's Sullivan Mine (1916); the Consolidated Mining and Smelting Company's Copper Mountain Mine (1927); and, Howe Sound Company's Britannia Mine (1904), stood out as providing the majority of the province's metal production (Newell et al 1995). McLeod (2010) writes, "Britannia was the largest copper mine in the British Empire for many years, including supplying copper for the Allied effort during the Second World War"(p.17). Chart 4 illustrates the production and value of copper in BC from 1894 to 2011, clearly illustrating the boom and bust cycles of the copper industry. For instance, there was an increase in BC's copper production during the First World War (WWI) (1914-1918) and Second World War (WWII) (1939-1945), however, a decline during the Great Depression (1930's) whereby mines such as Copper Mountain and Britannia closed until 1937 (Carson and Walker 1943). Chart 4 also illustrates the significant drop in copper production in 1957 when Copper Mountain's high-grade metasomatic[33] orebodies were depleted (Newell at al 1995).

32 In 1952, BC started to experience a significant resource development boom under Social Credit premier W.A.C. Bennett, thus making it a relevant starting point for the focus of this study.

33 Definition of Metasomatism: "The process by which the chemical composition of a rock is changed by interaction with fluids; replacement of one mineral by another without melting". Reference found (March 11, 204) from website: http://www.thefreedictionary.com/metasomatic.

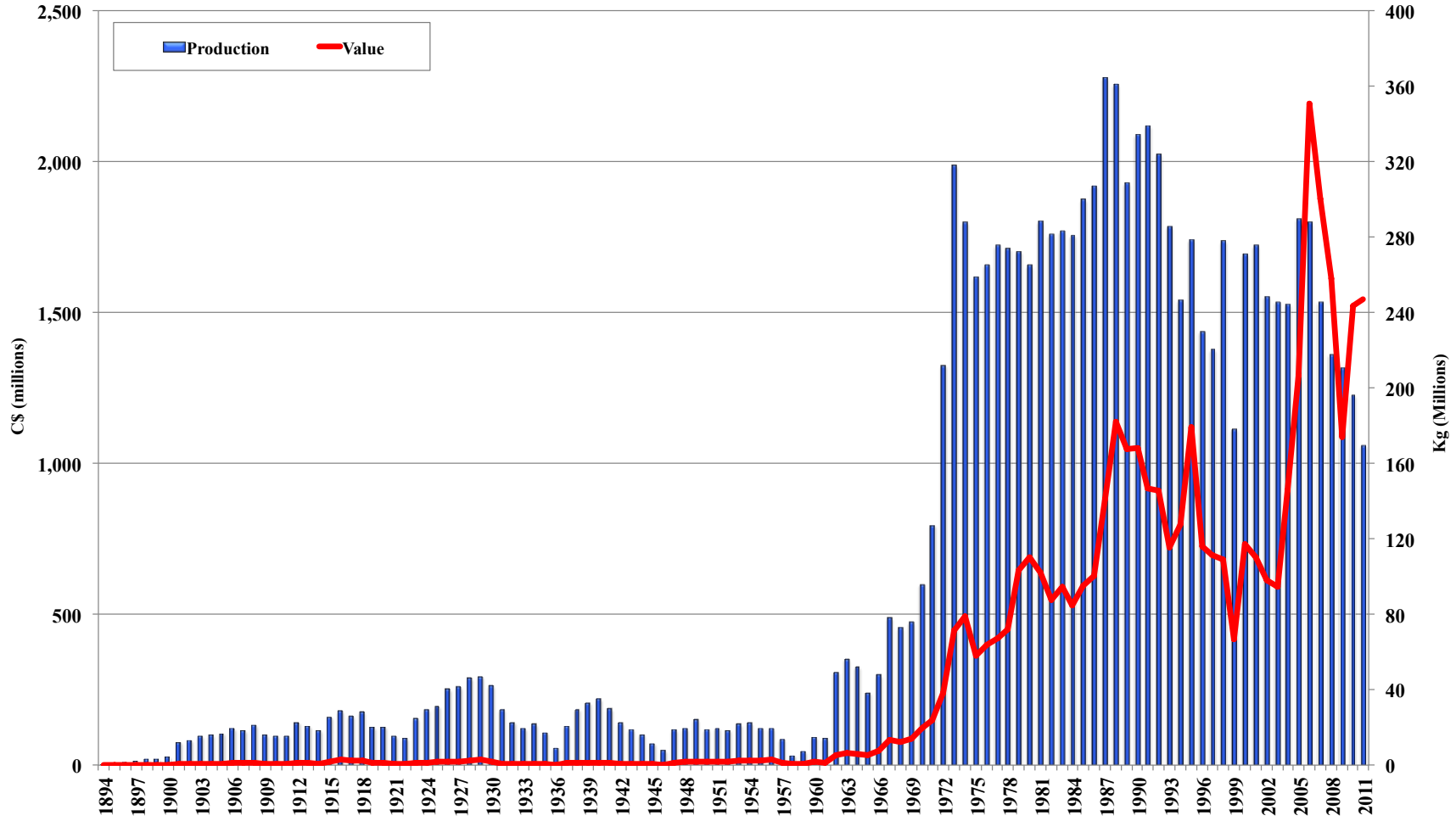
During this period, exploration increased significantly; however, the costs associated with working in remote areas and low-grade ore bodies made them uneconomic (see Figure 10). However, with the development of the Grand Truck Railway to Prince Rupert, the large Anyox copper mine was brought into production from 1914 to 1935 (Carson and Walker 1943). However, copper porphyry mining began in the US, with the development of the Bingham Canyon Mine in 1906 and was dominated by the 'Big Six' US mining companies until after WWII; therefore, margins for BC producers were further reduced (Newell et al 1995).[34]

By 1939, BC's metal production was dominated by the Consolidated Mining and Smelting Company of Canada (Newell et al 1995). The company was formed in 1906, as result of the amalgamation of the Centre Star, St. Eugene and War Eagle Mines, as well as the Rossland Power Company and the Canadian Smelting Works (THS 2013). In 1916, the company completed its electrolytic zinc plant in Trail, as well as acquired control of the West Kootenay Power and Light Company (THS 2013). Throughout the years it diversified into a number of fields and by 1966 changed its name to Cominco Ltd (IDCH 2001). Subsequently, in 2001 Cominco was acquired by Teck Corporation to form Teck-Cominco and in 2009 the name was legally changed to Teck Resources (IDCH 2001).[35] From its initial roots consolidating small miners and diversifying into power and smelting, Teck remains a world leader in mining and is one of the few international mining powerhouses remaining in BC. Teck also owns (at the height of the mine's production) the world-class Highland Valley Copper Mine located near Logan Lake, BC (HVC 1999). In addition to Teck, only a handful of large mining firms remain headquartered in BC with the capacity to undertake a billion dollar capital project. They are Goldcorp (gold and silver miner with some by-product credit copper production) and Eldorado Gold (with most of its assets in Europe). NewGold is more focused on gold, although it operates the New Afton copper project in Kamloops, BC. KGHM International has a significant presence in Vancouver and they are currently partnered with Abacus Mining on the brownfield Ajax copper project near Kamloops, BC.

34 The 'Big Six' American mining companies were: Phelps Dodge Corporation, Newmont Mining Corporation, Kennecott Copper Corporation, Anaconda Company, ASARCO Incorporated (American Smelting & Refining Company) and the American Metal Company (Amco) (Newell et al 1995).

35 For additional information on Teck Resources see: http://www.teck.com/Generic.aspx?PAGE=Teck+Site%2FAbout+Pages%2FHistory.

Chart 4 BC copper production and values, 1894-2011



Source: Generated from MEMPR 2012

4.3 The awakening, 1952-1961

Between 1952 and 1972, premier W.A.C Bennett (Social Credit) was largely responsible for promoting resource development throughout BC (see Chapter 13). However, a group from the 'Big Six' American copper companies[36] was responsible for opening up porphyry mining in BC, in particular in the Highland Valley area (Newell et al 1995). It was the work of Spud Huestis who held old claims in the Highland Valley that ultimately proved the area was rich in copper resources (Newell et al 1995). Huestis and two others formed the Bethlehem Copper Corporation in 1954 (Newell et al 1995). Unable to negotiate an option deal with ASARCO, Bethlehem negotiated a deal with Sumitomo Metal Mining Company for financing and to buy 10 years of concentrate (Newell et 1995). In 1963, the Bethlehem mine began production, with three open-pits eventually being developed (Huestis, Jersey East/Jersey and Iona). In 1963, the Lornex deposit was discovered and began production in 1972. In 1964, the Valley deposit was discovered and production began in 1986. Huestis was an important figure in the development of Highland Valley, as well as in the successful opening of the first low-grade, high tonnage open pit copper mine in Canada (Whitehead 2009). Huestis's persistence to develop the Highland Valley sponsored a significant influx of interest by other prospectors who staked claims throughout the area.

4.4 The good years, 1962-1972

During the 1960's, large American copper companies were the first in BC with sufficient experience and expertise to build copper porphyry mines. The much smaller juniors lacked experience, and also relied heavily on contractors for various aspects of the feasibility studies, mine design, etc. and as a result questions arose in regards to their accuracy. However, it was companies with little porphyry experience such as Teck, Cominco and Noranda that got projects off the ground in BC. How?

Advances in technology (e.g., geological models) and engineering combined with inexpensive power (created by the development of new hydroelectric plants) allowed for a

36 The 'Big Six' American mining companies were: Phelps Dodge Corporation, Newmont Mining Corporation, Kennecott Copper Corporation, Anaconda Company, ASARCO Incorporated (American Smelting & Refining Company) and the American Metal Company (Amco) (Newell et al 1995).

boom in the bulk mining of low-grade copper deposits (see Chart 4 and Figure 10). Also, "…an improved understanding in the genesis of porphyry copper" spawned significant growth in the number of copper porphyry deposits during this period (Crowson 2011, 8) (see Appendix 5). As a result, in 1972 four new copper porphyry mines started up in BC: Gibraltar, Ingerbelle (Copper Mountain), Lornex (Highland Valley Copper (HVC)) and Bell Copper (see Appendix 5). To provide context, BC has not even cumulatively built four greenfield copper mines in the province in the past 30+ years (see Appendix 5). Many of the copper porphyry mines were also built during the Japanese economic super-cycle (early 1960's to early 1980's), as well as financed by Japanese off-take contracts and loan guarantees (Chapman 2012; Newell et al 1995). Chart 4 illustrates, the significant spike in copper production in BC with the peak being in 1972.

In 1917, the Gibraltar deposit was discovered, although not reaching production until 1972. The historically high commodity price and the mining of high-grade ore for the first two years allowed for a quicker payback period (Newell et al 1995; Taylor 1995). Crowson (2011) states,

> The percentage copper content of the upper portions of porphyry copper deposits is typically higher than the deposits average as a result of weathering and supergene enrichment. That results from the copper being dissolved, percolating down below the water table and precipitating (p.5).

Timing in relation to commodity price, project development and deposit enrichment, as well as geography are paramount to copper porphyry project-to-mine success in BC. Also, there was growing competition from large Chilean copper porphyry mines (e.g., Andina Copper Mine) that were flooding the market with copper. By the 1980's, Chile would become the largest producer of copper in the world (Crowson 2011).

Despite the increase in copper porphyry discoveries and mines, many of the deposits in BC would not be developed. Newell et al (1995) write, "It is ironic that two of the earliest porphyry discoveries, Galore Creek and Schaft Creek, are among the deposits that remain undeveloped almost 40 years later"(p. 9) (see Appendix 5). Figure 7 illustrates that a large concentration of mines and projects are located in the south central and central BC regions. Their success is partly due to their proximity to infrastructure such as roads, rail, natural gas,

electricity and available skilled workforce. Newell et al (1995) write, "Like Galore Creek, the Berg deposit would probably have been developed if not for its remote location"(p. 10)(see Figure 7). Access to deep-sea ports (e.g., Vancouver and Prince Rupert) is an important part of mine development in BC, as a large portion of BC's mineral product (copper in the form of concentrates and metallurgical coal) is exported to the Pacific Rim region. There were no copper smelters in BC until 1977, when the Afton mine and smelter went into production.[37] The Afton mine was unique, as it had high quality, low sulphur ore, therefore amenable to direct smelting (Newell et al 1995).

In the late 1800's to early 1900's, various smelters were scattered throughout the province. The first two smelters in BC were located in Trail and Nelson, to serve the boom in south central BC (Carson and Walker 1943). By the early 1900's, smelters were located at Boundary Falls, Northport, Grand Forks, Marysville Greenwood, Ladysmith, Crofton and Texada Island (Carson and Walker 1943). Carson and Walker (1943) write,

> Most of the earliest developed base metal ores were amendable to direct smelting and the mines could be worked only if they were large enough to support a smelter of their own or if the ore could be cheaply transported to some smelter nearby (p. 5).

Throughout the years, there were 20 smelters operating throughout BC at one time; however, today only the Trail (lead and zinc) and Kitimat (aluminum) smelters remain in operation. The challenges faced by smelters in BC result from the boom and bust commodity cycles, as well as the mineral admixtures and contaminants such as sulphur (Carson and Walker 1942). For example, the Marysville smelter (Kootenays) had difficulties in treating a "…fine-grained admixture of lead and zinc minerals" found in ore from the Sullivan mine (Carson and Walker 1943, 4). Today, there are no dedicated copper smelters in BC. This lack of smelters and their downstream processing abilities has a negative effect on copper porphyry development in BC because producers must pay extra to process concentrates elsewhere. According to Taseko's disclosure, the approximate cost in 2009 dollars to ship copper concentrate from the Port of Vancouver to Asian smelters was \$0.13/lb[38], which is an additional cost the producers must bear just to refine their metal (Taseko 2009). In addition,

37 For additional information on the history of smelters in BC, see the following websites: www.knowbc.com and http://costs.infomine.com/costdatacenter/smeltingcosts.aspx.

38 (US\$22.50(Port Charges)+US\$60.00(Ocean Freight/Assaying)/(2204x28%) Assumed 28% concentrate grade (Taseko 2009, 151).

BC mines must ship their concentrates to a port from their interior locations (sometimes remotely located and 'infrastructurely' challenged) to get the metal refined. The challenges in building a copper smelter in BC are: the costs to build and run; BC's environmental regulations and restrictions; BC's strong environmental movement; and, the negative environmental legacy created by Teck Resources' smelter in Trail, BC. In 2012, the smelter was designated under the US Superfund Law[39] making Teck Resources liable for resource damages and clean up of the Columbia River downstream from the smelter.

From 1962-1972, this period was also known for increased environmentalism. Public values were changing the focus from job creation to "the destruction of the environment by irresponsible miners". BC was one of the first provinces in Canada to enact mine (including exploration sites) reclamation legislation (Errington 1992). Since 1969, companies are required to reclaim land disturbed by mining and exploration, obtain a reclamation permit, as well as posting a security bond to ensure the ultimate cleanup of the site (Errington 1992, 1). Since 1977, the Technical Research Committee on Reclamation (TRCR) recognizes excellence in mine reclamation in BC with annual awards.[40] Companies such as Teck Resources Ltd. (Cominco, Teck Cominco) have received the Jake McDonald Reclamation Award seven times. Teck Resources Ltd. also received BC's Mining and Sustainability Award for Highland Valley Copper in 2005.[41]

By 1991, 22 percent of the land disturbed in BC by mining had been reclaimed (Errington 1992).[42] Projects such as the Britannia mine (prior to 1969) do not fall under this legislation. The mine is infamous for long-term acid rock drainage (ARD) into Howe Sound.[43] Despite some efforts by the owner Anaconda, the provincial government was forced to lead a remediation campaign to treat contaminated water from the mine. Since 2002, the cleanup of contaminated soils around the mine and the treatment of water have occurred at the cost of

39 For additional information on Teck Resources and the Super Fund see the following website: http://www.mineweb.com/mineweb/content/en/mineweb-sustainable-mining?oid=167030&sn=Detail).

40 For a list of TRCR award recipients see the following website: http://www.trcr.bc.ca.

41 For additional information on the Sustainability Awards see the following website: http://www.empr.gov.bc.ca/Mining/Sustainability/Award/Pages/default.aspx

42 In 1991, 18,260 hectares in BC has been disturbed by metal mining, of which 3,937 hectares (22%) has been reclaimed (Errington 1992).

43 For additional information on the Britannia mine see the following website: http://www.britanniaminemuseum.ca.

$237 million (Carman 2012). Legacy issues from such projects have helped foster a negative reputation in regards to metal mining and ARD in BC. In 1987, BC was the first province in Canada to set up its own ARD task force, the British Columbia Acid Mine Drainage (BCAMD) Task Force (Errington 1992). BC is in a leadership role in regards to mine reclamation, ARD and the promotion of sustainability.[44]

4.5 Political and economic changes, 1973-1981

In 1972, the NDP (Premier Dave Barrett) enacted arduous mining tax and royalty legislation changes (see Chapter 14). As a result, professional expertise, as well as exploration and development capital fled BC for the Yukon and the US causing mineral exploration and development expenditures to drop by 1975 (Newell et al 1995) (see Chart 5). Also, the capital and operating costs of mining in Canada during the 1970's increased between two and three percent above the typical rate of inflation (Taylor 1995). Costs that were once held by the introduction of larger and better-quality mining equipment would succumb to inflation, as well as high oil prices as a result of the OPEC cartel (Taylor 1995) (see Chart 1 and Figure 10). With the exception of the Afton mine (1977), no new copper porphyry mine was built over the next 10 years (Newell et al 1995; Price 1991) (see Appendix 5). During this period the industry saw the growth in lobby groups such as Association of Mineral Exploration BC (AMEBC) and Mining Association of BC (MABC) (see Chapter 11 and 12).

By the mid-to-late 1970's, there was a resurgence of copper porphyry exploration in BC due to an influx of oil companies keen to enter the BC market to diversify (Newell et al 1995). High molybdenum prices also encouraged exploration (Newell et al 1995) (see Table 4). The spike in molybdenum prices between 1970 and 1980 was a reaction by consumers who felt a molybdenum shortage was imminent after the US government imposed price controls from 1970 to 1974 (Blossom 1998).

44 See IISD Report on BC's Placer Dome Inc. (now Barrick) in regards to sustainability and sustainable development at the following website: http://www.iisd.org/business/viewcasestudy.aspx?id=112.

Table 4 Annual average molybdenum concentrate price, 1970-1983

Year	Average (US$/Kg)	Year	Average (US$/Kg)	Year	Average (US$/Kg)
1970	$3.80	**1978**	$10.40	**1986**	$5.60
1971	$3.70	**1979**	$13.60	**1987**	$5.70
1972	$3.70	**1980**	$20.10	**1988**	$6.00
1973	$3.60	**1981**	$17.80	**1989**	$7.10
1974	$4.40	**1982**	$14.80	**1990**	$5.70
1975	$5.50	**1983**	$7.60	**1991**	$4.60
1976	$6.50	**1984**	$7.10	**1992**	$4.90
1977	$8.00	**1985**	$6.90	**1993**	$3.80

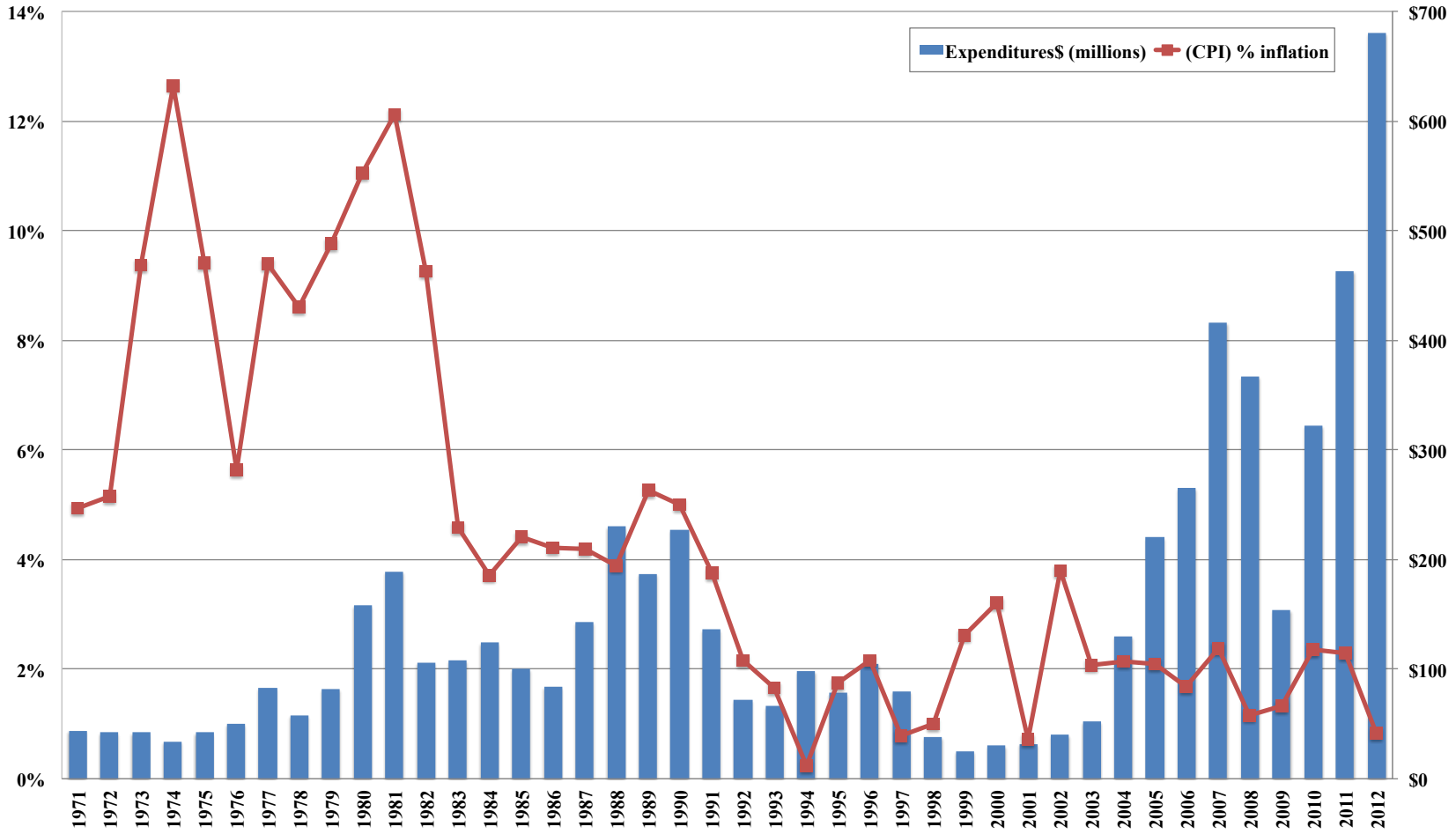
Source: Generated from Blossom 1998.

4.6 The recession: An economic importance, 1982-1985

The base metal industry in BC was hardest hit during the recession from 1982-1985. Copper producers such as Afton, Bell, Gibraltar and Granisle mines initiated long-term closure plans (see Appendix 5 and 6). It would take concessions by trade unions, as well as by the provincial government in regards to taxation and the cost of electricity to allow for subsequent mine re-openings (Newell et all 1995). Although a significant drop in fuel price helped to decrease operating costs; therefore, the mines that did survive became more efficient by reducing their cost structures. With increased efficiency and the use of larger mining equipment, the labor component was significantly reduced. Labor is one of the highest operating costs for mines in BC (Fellows 2010).

Chart 4 illustrates a dip in BC's overall copper production during the recession. However, during this period of time precious metal credits became fundamental to the survival of many operations, as secondary metals were a necessity when "…working the lowest grade copper ores anywhere in the world…"(Newell et al 1995, 16). Prior to the recession, there was very little need for economies of scale and little regard for the benefit of secondary metals; however, this quickly changed considering that over half of the porphyry deposits in BC contained gold (Newell et al 1995, Schroeter et al 1989).

Chart 5 Exploration expenditures ($ millions) in BC and CPI (%), 1971-2012



Source: Generated from EMPR 2012, and Inflation.eu 2013

4.7 The revival of an industry: Copper-gold porphyry associations and flow-through financing, 1986-1990

The discovery that copper porphyry deposits were enriched with gold caused an explosion in the exploration for alkalic[45] copper-gold porphyry deposits throughout the province (see Chart 5 and Appendix 5). Not only were copper producers interested, but gold miners were as well. In 1987, the Mt. Milligan Cu-Au porphyry deposit (in particular zone 66) was discovered (Sketchley et al 1995). This discovery led to resurgence in porphyry exploration, putting BC on the worldwide map in regards to copper-gold porphyry exploration and production (Newell et al 1995). BC was politically stable and now geologically endowed, thereby garnering interest from miners worldwide.[46]

During the 1980's, flow-through financing changed the nature of the mining industry in BC because it allowed junior companies with no income to transfer exploration expenses and depletion allowances to their shareholders who could then deduct them from their taxable income (Newell et al 1995; Baruffaldi 2013). This encouraged precious metal exploration in BC; however, it also pulled small investors away from copper porphyry projects and into gold (Newell et al 1995; PWC 2011). Newell et al (1995) write, " A modest but profitable gold mine could generally be brought to production much faster, and at much lower cost than most base metal mines"(p.16).

Throughout the 1990's, gold-rich calc-alkalic[47] porphyry deposits became an exploration focus (Newell et al 1995). Discoveries were made at Kemess, Sulphurets Gold and the Kerr deposits in northwestern BC, at the Huckleberry deposit in central BC and at the Husuamu (Expo) deposit on Vancouver Island (see Appendix 4 and 5). Re-evaluations also occurred on projects such as Fish Lake (aka New Prosperity) in southwestern BC (see Figure 7). By 1991, approximately 50 percent of BC gold reserves and more than 80 percent of copper reserves were contained in BC porphyry deposits (McMillian et al 1996, Schroeter and Lane 1991).

45 Alkalic is a rock or mineral that contains a larger percentage of sodium and/or potassium than what is usual for this type of rock or mineral (AGI 1976). They usually have a number of smaller deposits.

46 British Columbia was politically stable during this period especially when compared to areas such as Africa (e.g., Apartheid, civil wars), Chile (e.g., Chilean coup d'etat), thereby making it a desirable region to explore and develop mineral projects.

47 Calc-alkalic is a rock or mineral that has an alkali-lime index of 55 to 61 (AGI 1976).

Figure 6 illustrates the relative abundances of copper, molybdenum and gold for porphyry deposits in BC.

The confirmed 'gold association' propelled the importance of copper-gold porphyry deposit economics, especially in BC where high costs and low-grades required a secondary commodity to assist in enhancing the viability. However, it must be noted that there is a relative difference in regards to deposits defined as copper porphyry or as gold porphyry. The latter classifies a porphyry deposit with gold as the primary economic commodity (based on contained metal value) and there may be only minor amounts of copper. For instance, the KSM (Kerr-Sulphurets-Mitchell) and Snowfield projects are examples of gold-copper porphyry deposits (McMillian et al 1996) (see Figure 6). Another example is the Galore Creek project, which is classified as a copper-gold porphyry project; however, it is deemed by some as a gold deposit due its 10.7Moz of contained gold (Sebag 2012). According to Sebag (2012), the Galore Creek project ranked 26th out of the top 50 undeveloped gold projects by global in-situ resources, whereas the KSM project ranked 2nd, Snowfield's ranked 6th and Brucejack ranked 19th (p.6). The Snowfield and Brucejack deposits were discovered in the 1980's and have yet to enter the BC environmental assessment phase of the process (see Appendix 4 and 5). In 2014, Seabridge Gold Inc. received both provincial and federal environmental certificates for their KSM project. It took the company approximately six years to complete this process. McMahon and Cervantes (2009) state, "The gap between exploration and production typically spans five to 10 years"(p. 6).

The recent breach in the tailings pond at the Mount Polly mine, which ultimately released 5 billion cubic meters of waste, may further intensify BC's environmental assessment process.[48] If the New Prosperity project (a project that has been involved in the BC environmental process since 1993) and the Mount Polly incident is any indication, the above projects may need more time than five to 10 years to go through the environmental assessment process (see Appendix 6 and 8). Additionally, all the gold-copper porphyry projects discussed above are located in one of the most remote and geographically challenged areas of BC (known as the Golden Triangle) and face significant infrastructure costs to

48 See the following website for additional information on the Mt. Polley disaster: http://news.nationalpost.com/2014/08/05/mount-polley-mines-tailings-pond-breach-of-five-million-cubic-metres-of-contaminated-waste-called-massive-environmental-disaster/?__federated=1.

develop. The lack of infrastructure vastly contributes to increased transportation, capital and human resource costs to efficiently build and operate a mine. The Highway 37 Northwest Transmission Line (NTL) is under construction to alleviate some of those costs (BC Hydro 2013) (see Section 6.5 & 16.1). Despite these challenges, these projects seem to be the future of mining in BC, as no other 'significant' deposits have been discovered in the last 10 years (see Appendix 5).

4.8 The decline, 1991-1997

In the early 1990's, there was a steep decline in BC exploration (see Chart 5). For instance, the mining industry's aggregate tax losses in 1990 were $95 million and this was a direct result of a drop in commodity prices, as well as a slowdown in coal shipments (MABC and PWC 1991) (see Chart 1). Investor uncertainty increased from the implementation of a new Environmental Assessment Act (EAA) in 1994 and when combined with increased environmentalism (under the Harcourt government, 1991-1996) companies were driven to invest a large portion of their exploration budgets outside of BC and Canada (MABC and PWC 1991) (see Chapter 15 and Appendix 7). Also, the environmental pressure in regards to the Windy Craggy project in northern BC, as well as the US cross-border political influence contributed to investor uncertainty in BC (see Section 6.8) (see Appendix 8: Case Study Tatshenshini-Alsek Wilderness Park).

Stock scandals such as Bre-X[49] in 1997 promoted the creation of the National Instrument 43-101,[50] which helped to protect investors from unsubstantiated mineral disclosures (see Section 6.1). A "Qualified Person" who has the necessary education and experience is now required to verify the accuracy and completeness of information filed in NI-43-101's. As a result of the Bre-X scandal, the industry faced scrutiny by the public and became more regimented, as well as faced long-term fear by investors who became more educated in regards to the risky nature of the industry. Other resource estimates called into question

49 The Bre-X group falsely disclosed that the gold reserves for their Busang project was 200 million ounces (or 8% of the world's gold reserves) and as a result the company overnight became to be worth US$6 billion. However, the core samples were tampered with and there was no actual gold at the Busang site, which resulted in the collapse of the Bre-X stock, which resulted in the loss of billions of dollars by investors. Bre-X became the largest stock scandal in Canadian history. For further information on Bre-X see the following website: http://www.washingtonpost.com/wp-srv/inatl/longterm/canada/stories/brex051897.htm.

50 For further information on NI 43-101's see the following website: http://www.bcsc.bc.ca/For_Companies/Mining/.

include Peter George's work on Barkerville[51] (2012), Rubicon (2011) and San Gold (2010), as well as AMC Mining Consultants work on Canada Lithium (2010), which were quickly sorted by the British Columbia Security Commission (BCSC).[52]

As illustrated in Appendix 6, many mines were started, suspended, reopened and/or closed between 1984-1993. However, key players with seasoned expertise such as Placer Dome Inc. had an influence on exploration expenditures (Newell et al 1995). In 1990, Placer Dome Inc. acquired the Mt. Milligan project from Continental Gold and BP, but less than two years later, determined that the project was not economic and wrote off their investment (Newell et al 1995). This had a significant influence on exploration in the province, since the government had granted approval (thru a mine development certificate) for the project in 1993. The Mt. Milligan project was a high profile project with copper-gold and if Placer Dome Inc., with all its expertise couldn't justify a production decision, then what company could? It would take another 20 years and a team of past Placer Dome Inc. employees, as well as higher copper and gold prices to get the Mt. Milligan project up and running by late 2013 (see Sections 5.3 & 9.3).

4.9 The Asian crisis, 1997-1999

The Asian financial crisis was initiated in July 1997 with the collapse of the Thai Baht. This resulted in an era of fear, whereby market participants believed a worldwide economic meltdown would occur. As a result, many Asian currencies collapsed, stock markets devalued, commodities slumped and private debt rose (Corsetti et al 1999). The price of copper dropped from around $1.07/lb in 1997 to $0.75/lb in 1999, as Asian countries were

51 See the following websites for additional information on the following projects: Barkerville: http://www.barkervillegold.com/s/News_Releases.asp?ReportID=589212; SanGold and Rubicon http://agoracom.com/ir/SanGold/forums/discussion/topics/538064-peter-george-same-old-tricks/messages/1698872; and, Lithium Canada http://www.canadalithium.com/i/pdf/2011-12-06_NR.pdf.

52 The BCSC founded in 1996 is cracking down on companies who publicly disclose inadequate information in their technical reports, as well as what they have posted on their websites, in emails and in corporate presentations (see http://www.bcsc.bc.ca). They are responsible for approximately 1150 reporting mining companies in BC. With mining's intensive capital nature, as well as the need for timely access to funds, BCSC regulation helps to inspire investor confidence, as well as "…supports fair, efficient and innovative capital markets"(BCSC 2012, 6). In 2011, BC mining companies raised more money than any other jurisdiction in Canada (BCSC 2012).

the largest importers of copper worldwide (see Chart 1).[53] Currency stabilization techniques were instigated by governments and the International Monetary Fund (IMF) to try to stabilize currencies in South Korea, Thailand and Indonesia (Corsetti et al 1999). Between 1998 and 2003, many mining companies struggled to remain economically viable during an extended period of historically low metal prices. In fact, the lowest real copper price to date of US$1,510/t ($0.68/lb) occurred in 2002 (see Chart 1). Exploration in BC dropped to an all time low and between 1998 and 2000 the mining industry operated at a loss (PWC 2009) (see Chart 1 & 5). In 1998, the last copper porphyry project (i.e., Royal Oak's Kemess South mine) was brought into production (see Appendix 5). It would take another 15 years before another greenfield project (i.e., Mt. Milligan) would be built in BC (see Appendix 5).

4.10 The rebound and resource boom, 2000-2007

In 2000, a significant increase in commodity prices, as well as an increase in demand from Asia and other developing nations for goods, led to a resurgence in the global economy and resulted in a resurrection of exploration expenditures in BC (Cross 2013) (see Chart 5). Cross (2013) states, "The increased output of these countries lowered the price of manufactured goods while their rising incomes and rapid urbanization helped to fuel the boom in commodity prices"(p.5).

During this period, mining companies experienced lower production costs and were able to acquire financing to explore and/or develop existing projects (see Figure 10 & Chart 5). Mcphie (2009) states, "Given spending over the past several years, the hope is that several world class mineral deposits will be found in BC in the near future"(p.13). In light of all the success, in 2005 the newly elected Liberal government developed the BC Mining Plan.[54] The plan focused on "…four Cornerstones as guiding principles for a strong healthy industry"(British Columbia 2005, v). The four Cornerstones are: (1) Focus on Communities and First Nations; (2) Protecting Workers, Protecting the Environment; (3) Global Competitiveness; and, (4) Access to Land (British Columbia 2005, v). Langelaar et al (2007) state, "Recent political stability and government support for revitalizing the B.C. mining

53 See the following website on export/import of BC Copper Ore/Concentrates (current and historical data): http://www.bcstats.gov.bc.ca/StatisticsBySubject/ExportsImports/Data.aspx.

54 See the following website for additional information on BC's Mining Plan: http://www.gov.bc.ca/em/down/mining_plan_jan_17_05.pdf.

sector appear to have been significant factors in a resuscitation of the province's mining sector"(p. 59). [55]

The resuscitation of the industry created a new demand for skilled labor; however, long-term 'under-investing strategies' in the 1990's resulted in a shortage of skilled labor and infrastructure throughout the province (Cross 2013). The federal government's focus on the rapid growth of the manufacturing industry, rather than natural resources created a competitive and costly labor environment. BC mining projects (with already high capital and operating costs) were unable to compete with wages and benefits offered by the booming Alberta oil and gas industry.

4.11 The US financial crisis, 2007-2010

The rapid decline in the US and the dramatic falling stock prices rocked the mining industry worldwide. Exploration companies found it difficult to acquire "…capital to finance growth or strengthen their balance sheets…" as a result of diminishing investor confidence (METF 2009, 5). The prices for copper and other commodities significantly dropped. For example, the price of copper dropped from US$4.00/lb to a low of US$1.30/lb (METF 2009) (see Chart 1). The decline came on the heels of a 'supercycle' - a cycle sponsored by the rapid growth in BRIC (Brazil, Russia, India and China) countries (Lewis et al 2009). As a result, the industry was completely caught off-guard by the crisis.

By mid-2008, there was a significant slow down in exploration activity and mining companies started showing restraint (see Chart 4 and 5). Mines closed[56] or scaled back[57] and projects [58] (e.g., restarts, expansions and new mines) were put on hold, as exploration companies could not raise the needed capital due to low prices, low liquidity and a dearth of investors (see Appendix 6). Company stock prices suffered serious declines forcing significant restraining measures, including workforce reductions. Big fears emerged throughout the industry, as miners expected decreases in investment plans and an increase in

55 The Liberals were in power during this period and their political mandate included pro-development and pro-mining philosophies (see Chapter 16).

56 Mines that closed were: New Afton, Greenwood and Willow Creek.

57 Mines that were scaled back were: Gibraltar and Mt. Polly.

58 Projects that were put on hold were: Blue Pearl, Ruby Creek, Galore Creek and Mt. Milligan.

bankruptcies (McMahon and Cervantes 2009).

Companies who once headlined sustainable development or social license initiatives on the front page of their websites now were turning to shareholder values and economic constraints. When things are good, companies focus on sustainable development initiatives and when they are bad, companies focus on shareholder value. Company websites are beacons to the 'signs of the times' in the mining industry.

The Mining Economic Task Force (METF) comprised of industry personnel was started on December 5, 2008 in order to provide advice to government in regards to stimulating and supporting the mining industry during the downturn. The METF made 13 recommendations[59] that would help assist the industry in the following areas:

- To bridge the current industry downturn and liquidity crisis;
- To stimulate mineral exploration and development; and,
- To position British Columbia for the recovery and long-term growth of the industry (METF 2009, 3).

Of the 13 recommendations, the top four recommendations are:

1. Lower government taxes in exceptional times and ease the administrative tax burden;
2. Create a Job Protection and Critical Industries Commission with a finite lifespan;
3. The province should advocate to the federal government that it expand flow-through eligibility to include brownfield exploration and development expenditure on a temporary two-year basis; and,
4. Create a British Columbia Government-sponsored Mining Industry Catalyst Fund (MICF) (METF 2009, 4).

The provincial government had taken steps to ensure the industry's viability by providing tax incentives for companies, investing $37.5 million dollars into a state-of-the-art Earth Science Education and Research Facility (known as the Earth Systems Science Building) at the University of British Columbia, as well as supplying more than $36 million dollars to Geoscience and $3 million dollars to British Columbia Geological Survey programs (PWC 2009; Lewis et al 2009). Other initiatives helping ensure the viability of the industry in BC are: (1) Mineral Titles Online; (2) MapPlace; (3) Geochemical and Geological Surveys; (4)

59 For further details on the 13 recommendations see the following website: http://www.mining.bc.ca/sites/default/files/resources/metfreportfinal.pdf).

Industry Exploration Reports; and, (5) the Mineral Occurrence Inventory and Property File (MINFILE) (PWC 2009; Lewis et al 2009).

4.12 Uncertainty, 2010-onwards

The US financial crisis was truly unexpected by the BC mining industry. There was no time to prepare, thereby creating a great level of uncertainty in regards to the industry and market. Charles et al (2012) write,

> Capital spending for the Top 40 Mining companies amounted to $98 b in 2011 and capital spending plans were in place for $120 b in 2012, a roughly 20% increase over the record levels in 2011. However, it's safe to say that miners will spend less than planned in 2012 in response to on-going economic uncertainty…Clearly miners will remain disciplined on their capital expenditure programs as they try to balance shareholder expectations with growth plans (p.15).

The uncertainty also stems from short spurts in booms and busts whereby the metal prices fluctuate. Cross (2013) states,

> …the price of metals and minerals rose a mere 39 percent up to 2005. After 2005, however, the price of metals more than doubled (108 percent), even as energy prices leveled off. When the prices of metals faltered in 2012 and 2013, prices of agricultural goods set new records. Finally, forestry prices began to pull out of a prolonged slump in late 2012. The increase in resource prices since 2000 has been sequential, not synchronized - with each sector passing the baton to another as their own price leveled off (p.7).

In 2009, the mining industry began to recover with increased commodity prices; as well as demand for our natural resources from outside of Canada. Cross (2013) states,

> Exports of natural resources use to dominate Canada's exports: they accounted for almost half in 1988 (46.2 percent). This share fell steadily in the 1990's, slumping to a low of 33.7 percent in 1999, largely due to falling prices. By 2012, the resource boom had recouped all of these losses, raising their share to just over half (51 percent) (p.8).

However, in the last year despite some recovery there have been declines in exploration spending, as well as in metal prices (MEMPR 2013; Kitco 2014). BC's mining industry has been slow to recover, especially considering there was a 13 percent drop in the price of copper from December 20, 2013 to March 19, 2014 (Kitco 2014).

4.13 Conclusion

BC's copper mining industry emerged during the 1960's with the advent of resource development promoted by WAC Bennett and the influx of large American copper producers with sufficient expertise and financial capacity to build copper porphyry mines. Many of the projects were partially funded by foreign investment capital and built during the Japanese economic super-cycle. The mines were funded in exchange for Japanese off-take contracts, and loan guarantees. The firms were extremely active in the Highland Valley area and this led to the construction of the Highland Valley mine along with numerous other deposits in the vicinity. The 1970's saw the construction of four new copper mines in BC; however, no smelting capacity was constructed, or exists today.

Fluctuating commodity prices (sometimes with wildly unexpected swings such as in 2008) create a great deal of financial risk and therefore uncertainty. Price risk is of even greater importance to BC's copper porphyries given their relatively low grade and higher capital commitments due to their geographic isolation and more complex metallurgy. Anti-development philosophies such as under-investment in skills training, resource development, and infrastructure increase both operating and capital costs.

A review of the history of copper porphyry mining in BC illustrates that 'timing' is vital to project-to-mine success. Numerous factors must come together in order for a large, low-grade copper porphyry deposit to be economically viable. Their success relies heavily on the following variables: high commodity prices; byproduct credits; medium to large-cap experienced miners; the use of economies of scale to minimize costs; use of available infrastructure such as roads, rail and ports; and, political support, whereby the ruling political party's philosophy is pro-development.

The following section looks at what constitutes a world-class project and determines if BC has world-class copper projects. It also discusses benefits of world-class projects in your province or region.

CHAPTER 5 Does BC have world-class copper porphyry deposits?

5.1 Introduction

There is a perception that BC has world-class copper deposits. If they are truly "world-class", a rather subjective description, why are they not being developed into mines? Prominent organizations, including the premier of BC have declared that BC has world-class mineral deposits. In the Williams Lake Tribune, Premier Christy Clarke (2011) is cited as stating, "British Columbia's world-class resources can help India fuel their growing economy"(Williams Lake Tribune 2011). According to Statistics Canada (2013), India is BC's largest importer of copper. Other examples referencing BC's "world-class" deposits include:

- "The province of British Columbia is known for its large world-class reserves of copper, molybdenum, lead, zinc, gold, and silver"(MEMPR 2009);
- "BC has world-class mineral deposits"(MABC 2013a);
- "The Persistence Claims occur within the highly prospective 'Stikine Arch' area of northwestern British Columbia, host to a number of world-class copper gold porphyry deposits"(Orex 2013).
- "The Galore Creek project is one of the world's largest undeveloped copper-gold deposits, with quality, long-life reserves and excellent geologic potential to extend the mine's life. This world-class project will be developed as a partnership between NovaGold and Teck Cominco in a cooperative arrangement with the Tahltan Nation"(Teck Resources 2007).
- "World class mineral deposits in B.C."(Chapman 2012, 5);
- "BC has world-class mineral deposits and world-class mining expertise"(Gratton 2010).

In the last 15 years only one 'new' copper mine (i.e., Mt. Milligan, 2013) has been built in BC, despite the numerous copper deposits discovered (e.g., Galore Creek, 1955) (see Appendix 4, 5 and 6). It seems that many companies struggle to move these 'world-class' BC deposits past the discovery phase and into development. Why?

The purpose of this chapter is to quantifiably gauge the quality of selected representative BC copper porphyry projects in order to determine if they are world-class and/or economically viable. The objective is to characterize the factors, such as geology and economic feasibility that are paramount to project success, whereby the quality of the natural resource ultimately determines its role, power and outcome in BC's economy and society (Peet 2001). The more

economically attractive a deposit is the more likely it will attract the financing it needs to be built. Robert Friedland states, "World class orebodies finance themselves, in fact, people fight to finance them"(as cited in Bonner 2014). If the economics alone don't meet the minimum requirements for an investment decision, a project will not be built. The following sections compare the size, grade and costs of BC copper porphyry deposits to other competing deposits worldwide.

5.2 What constitutes a world-class deposit?

It seems everywhere you look (e.g., company websites, newspaper and journal articles) a mining company at one time or another has alluded to their projects as being "world-class". Part of a company's job is to 'sell' the attributes of their projects to investors to continue to raise the financing needed to advance them. World-class is a subjective term, but does attract investor's attention. That being said, what exactly is a world-class project?

World-class is a subjective ranking, whereby the project is superior to all others and amongst the World's best. World-class has different meanings to different people. For instance, the general public defines it as "[s]omething of outstanding quality", whereas investors define it as something whereby "[t]hey make lots of money for a long time!"(Schodde 2006, 5). Peter Laznicka (1999) defines world-class as

> An informal term applied to ore deposits with the exceptionally large tonnage of economically recoverable metals. …The term attests to an exceptional economic benefit these deposits provide, or potentially provide, and consequently this class of deposits is eagerly sought by the industry (as cited in Schodde 2006, 6).

In 2006, Richard Schodde from MinEx Consulting Ltd. devised criteria to assist in defining world-class with respect to copper deposits.[60] He defined a world-class project as having a long life span (30+years), large-scale (e.g., >2 Mt Cu), high-grade (e.g., >0.8 percent Cu), low production costs[61], a minimum $250 million NPV threshold and with a large footprint (e.g., >1km^2), as well as ranking amongst the top 15% of base metal mines/projects in the

60 Schodde's (2006) study is based on the analysis of 143 significant mineral discoveries.

61 Schodde 2006 notes that the quality of a deposit may count more for the operations ability to obtain low costs, rather than project grades.

world (Schodde 2006; 2010a).[62] [63] However, these variables are always evolving with the continuous change in inflation rates, commodity prices and increased size of corporations, as well as with an increase in production.[64] Other things to consider are the depth of the ore and overburden, which radically affects the overall costs of production. Much debate and research has occurred to determine what these values would be today. However, for the purposes of this exercise, Schodde's (2006; 2010a) criteria is used.

Examples of world-class copper mines include: Escondida, Chile; and, Chuquicamata, Chile (Schodde 2013) (see Figure 11). Figure 11 illustrates that most of the world's copper production comes from a handful of deposits, which are world-class in accordance to Schodde's (2006) criteria. Deposits such as El Teniente in Chile have been operating since the early 1900's.

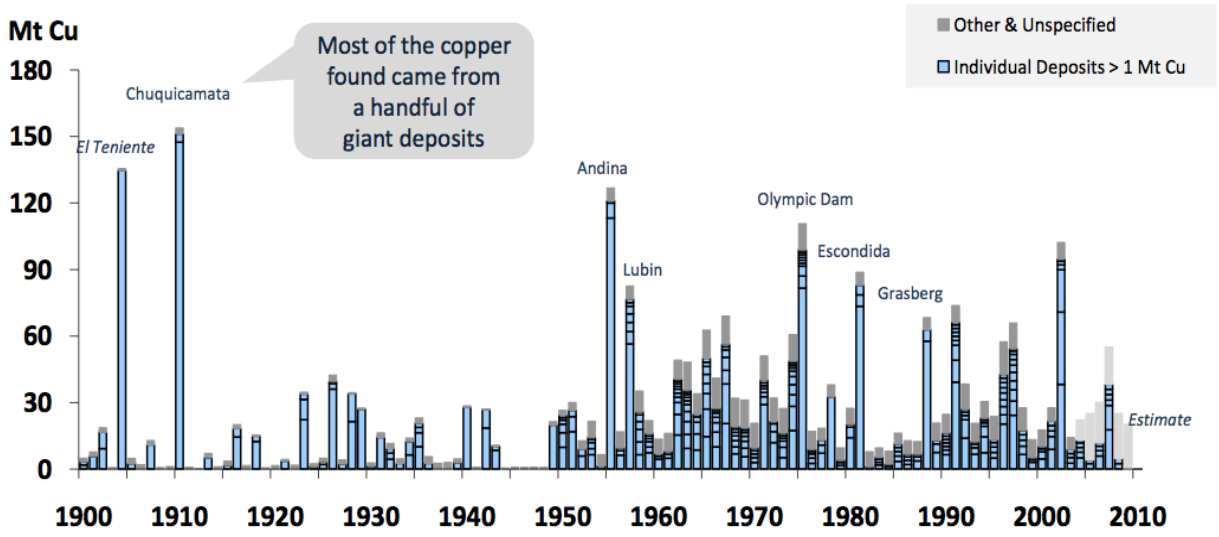


Figure 11 Discovery: Most of the metal found is tied up in a handful of deposits, amount of copper found in deposits >0.1Mt Cu in the world, 1900-2009 (Schodde 2010b)

62 Based on 143 significant mineral discoveries from the low risk Western world between 1985-2003 (Schodde 2006). The world-class projects (14 percent of the 143) with a NPV greater than $50 million contained 32 percent of the metal, as well as had 59 percent of the taxes paid and 67 percent of the NPV worldwide (Schodde 2006; 2010).

63 Includes large geochemical and geophysical signatures (Schodde 2010).

64 Chart 1 illustrates that the price of copper in 2006 was at almost its all time lowest value; therefore, what does today's price mean for defining world-class deposits?.

Schodde (2010a) discussed at the Theo Murphy High Fliers Think Tank 2010 Session that over the last 35 years (up to 2010) $US154 billion was spent on mineral exploration and only 59 'world-class' or Tier-1 discoveries were found. This equates to $2.6 billion spent per discovery and less than two discoveries found per year. A Tier-1 discovery would be Olympic Dam, whereas a Tier-2 discovery would be Prominent Hill.[65] [66] For instance, Tier-1 or world-class deposits (e.g., Chuquicamata, Andina, Grasberg) are significantly larger in regards to contained copper than Tier-2 projects such as Prominent Hill which contains 3.45 Mt Copper. The cost for a Tier-2 discovery is approximately US$50 million (Schodde 2010a).[67] World-class deposits tend to "cluster together" therefore pushing many companies to invest their exploration budgets into their "easier" brownfield projects in order to generate value (Rio Tinto 2011). Table 5 illustrates the top 10 copper mining companies in 2013. It should be noted that none of these companies currently own or operate any copper projects/mines in BC and there is not a single Canadian company in the list, although KGHM Polska does have a meaningful corporate presence in Vancouver.

World-class projects/mines are large with a long life span, which provides for economies of scale (e.g., lowers the cut-off grade) and an overall increase in the resource (Schodde 2006) (see Figure 11). As a result, they have the flexibility to expand when commodity prices are good, as well as build on their social license to operate[68] and lower costs through the development and utilization of new technologies (Schodde 2006; 2010b). World-class deposits are known to grow significantly after their initial discovery (e.g., the Escondida mine in Chile has had four expansions, growing from 35,000 tpy in 1970 to 600,000 tpy in 2008) (SME 2011, 15). These are also known to set the price for the industry and to generate a majority of the industry's wealth (Schodde 2006; 2010a,b) (see Chart 1). The top 10 world-class copper deposits combined provide approximately 43 percent of the world's copper

65 Prominent Hill Mine has .95 Mt Cu and 1.4 Moz Au reserves and 2.5 Mt Cu and 7.4 Moz resources. For additional information on Prominent Hill see http://www.ozminerals.com/operations/mining-operations/prominent-hill.html.

66 Both projects are located in Australia.

67 In Rio Tinto's Exploration Fact Sheet (2011) their exploration strategy involves focusing on only Tier 1 deposits. They state, "Our focus is on only the largest and highest value mineral deposits, which we refer to as Tier 1 deposits. This prevents distraction of people and financial resources onto lower value projects, enabling us to deliver maximum value to the shareholder"(p.3). The Fact Sheet states further that, "Tier 2 deposits are smaller or lower quality than Tier 1 – they are the 80 per cent of deposits that contribute 20 per cent of global production"(p.9). Rio Tinto's objective is to discover at least one Tier 1 project a year (Rio Tinto 2011, 9).

68 See section 16.1.3.

supply (Schodde 2010a,b). Table 5 illustrates the top 10 copper mines in 2013. None of the projects are located in North America. Overall, the world-class criteria is a yardstick (e.g., size, grade, costs) for comparing the quality of BC's copper projects to worldwide projects.

Table 5 Top 10 worldwide mining companies ranked by copper production, 2012

Company	Production	Mines	Company	Production	Mines
1. Codelco	1,750 kt	e.g., Chuquicamata, El Teniente and Andina Mines	**6. Antofagasta plc**	710 kt	e.g., Esperanza, and Los Pellambres Mines
2. Freeport-McMoran Copper & Gold Inc.	1,662 kt	e.g., Grasberg Mine, Cerro Verde, and Candelaria/Ojos del Salado Mines	**7. KGHM Polska Miedz Group**	-	e.g., Lubin Mine, and a large number of worldwide holdings.
3. BHP Billiton	1,163 kt	e.g., Escondida, Escondida, Olympic Dam Mines	**8.Anglo American**	660 kt	e.g., Los Bronces, Collahuasi and Mantos Blanco Mines
4. Grupo Mexico	826 kt	e.g., Buenavista, Cuajone, and Ray Mines	**9. Glencore Int'l plc**	566 kt	e.g., Mutanda and Katanga Mines
5. Xstrata[69]	747 kt	e.g., Antamina, Alumbrera, Collahuasi, Altonorte, Tintaya, Ernest henry, and Mount Isa Mines.	**10. Rio Tinto**	549 kt	e.g., Escondida, Northparkes, Kennecott Utah Copper, and Grasberg Mines.

Source: Generated from Basov 2013

Table 6 The top 10 copper mines ranked by copper contained reserves, 2013

Mine	Reserves	Mine	Reserves	Mine	Reserves
1. Escondida, Chile	33Mt Cu	**5.** Toquepala, Peru	17.65Mt Cu	**9.** Lose Bronces, Chile	11.13Mt Cu
2. Cananea, Mexico	26.874Mt Cu	**6.** El Teniente, Chile	15.2Mt Cu	**10.** Grasberg, Indonesia	10.47Mt Cu
3. Collahuasi, Chile	25,895Mt Cu	**7.** Cerro Verde, Peru	12.9Mt Cu		
4. Andina, Chile	18.8Mt Cu	**8.** Raclomiro Tomic, Chile	12.1Mt Cu		

Source: Generated from Mining 2013.

The definition of world-class is very dynamic and subjective in nature and requires up-to-date industry and company economic data to stay relevant. However, a world-class deposit

69 Xstrata and Glencore merged in 2013.

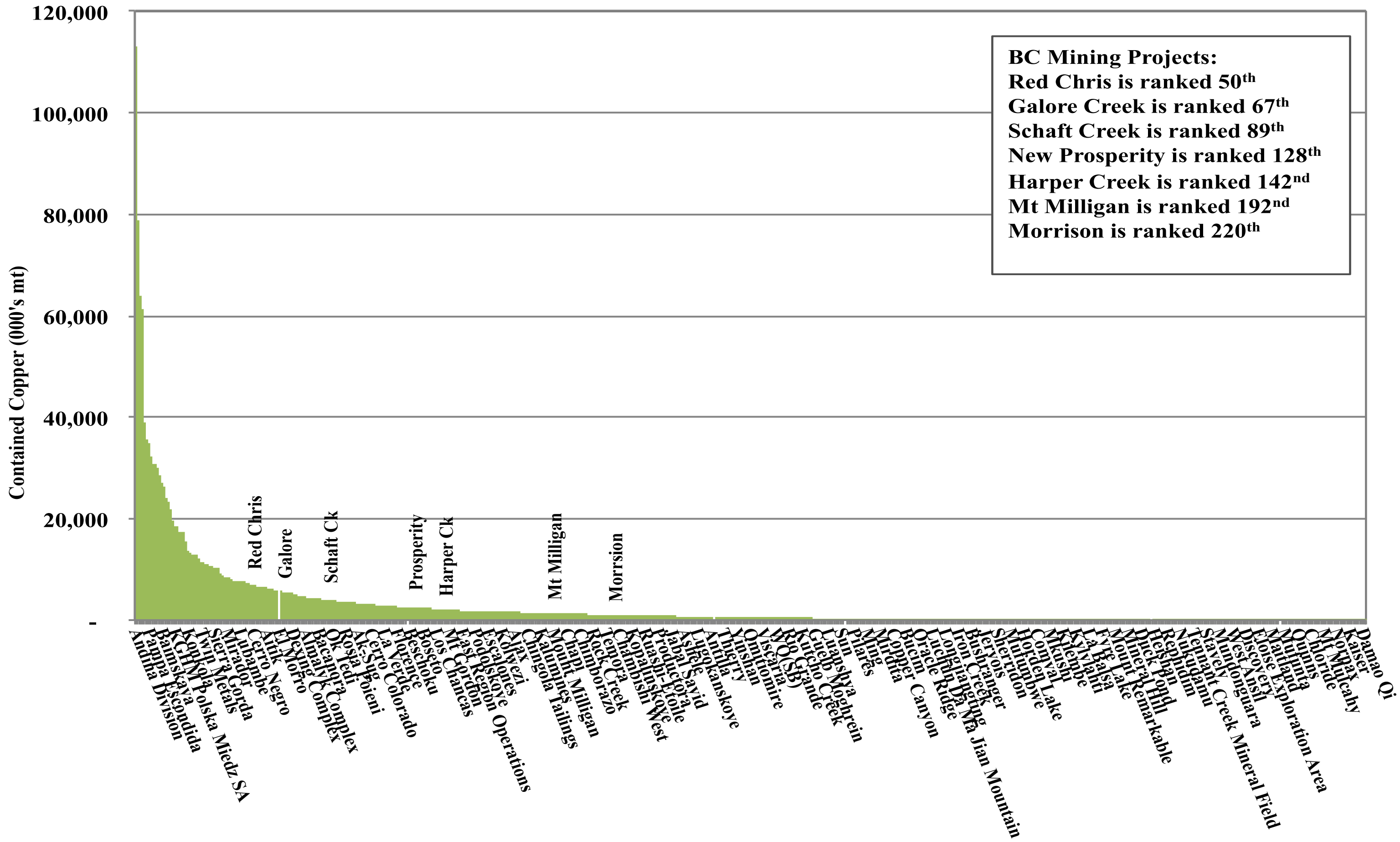
has superior economics, which is coveted by the major mining houses of the world. Therefore, world-class deposits are more likely to be developed than more 'modest' deposits.

5.3 Does BC have world-class deposits?

In order to understand the quality of BC's copper porphyry projects, their size, grade and cost structures are examined. Chart 6 ranks 566 worldwide copper deposits based on insitu copper content (size) tabulated by Metals Economic Group (MEG 2013) (see Appendix 9). Imperial Metal's Red Chris project is BC's highest ranked copper project in terms of size, and ranks 50th, whereas the Thompson Creek's Mt. Milligan mine ranked 192nd. Only the Red Chris copper project made the top 10th percentile of the projects based on insitu resources; however, all the BC projects studied seem relatively large in size. Chart 7 is a magnification of a portion of Chart 6, whereby two operating mines (e.g., Taseko's Gibraltar and Copper Mountain's Copper Mountain mine) and two other projects (e.g., Seabridge Gold's KSM gold project and AuRico Gold's Kemess North gold-copper project) that do not fit into the study criteria are examined. The chart confirms that although BC projects are relatively large in size, they might not be world-class. But, if they are so large, especially projects such as Galore Creek and Schaft Creek, then why are they not being built? Is it because they are low-grade that they are not being built?

Chart 8 is a cumulative total of the 566 worldwide copper projects based on grade and tonnage. Chart 9 is a magnification of a portion of Chart 8 used to highlight BC copper projects. The solid blue line (at the one percent mark) represents the bottom 10th percentile of the projects based on grade. All BC projects studied fall in the bottom decile of grade, even though they are seemingly relatively large in size. For instance, the Galore Creek project has the highest absolute copper grade, whereas Mt. Milligan has the lowest. With a relatively low copper grade, as well as being ranked only 192nd out of 566 projects based on size, how did the Mt. Milligan project start production in late 2013 despite being ranked marginally amongst all the projects studied? The development of the Mt. Milligan project after more than 15 years of no copper porphyry development in BC perhaps resulted from: rising copper and gold prices (Mt Milligan had significantly higher gold grades (0.38g.t Au)

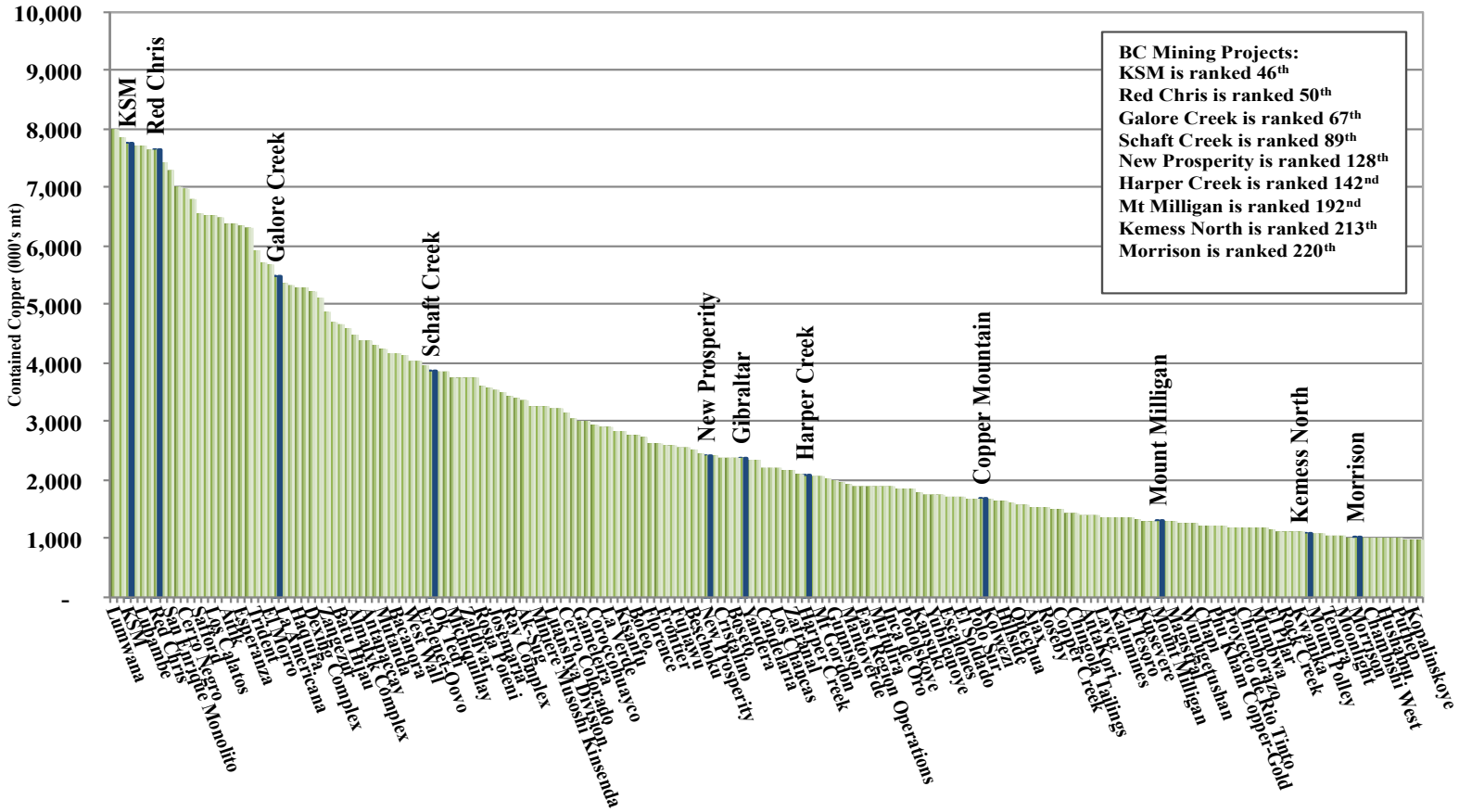
Chart 6 566 World copper deposits ranked by size (contained copper 000's Mt) [70]



Source: Generated from MEG 201

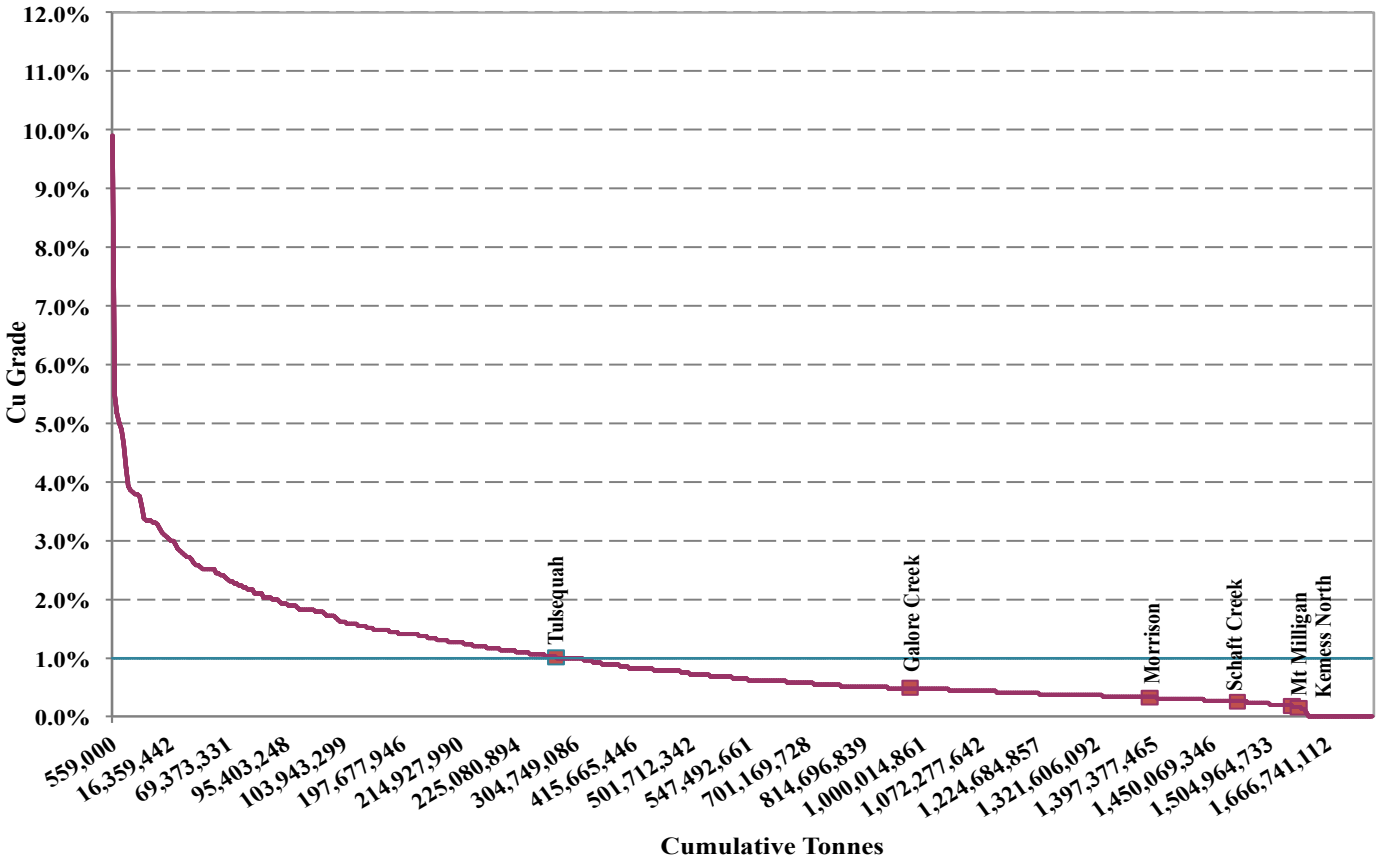
70 See Appendix 9.

Chart 7 566 World copper deposits ranked by size (contained copper 000's Mt) (a close-up)



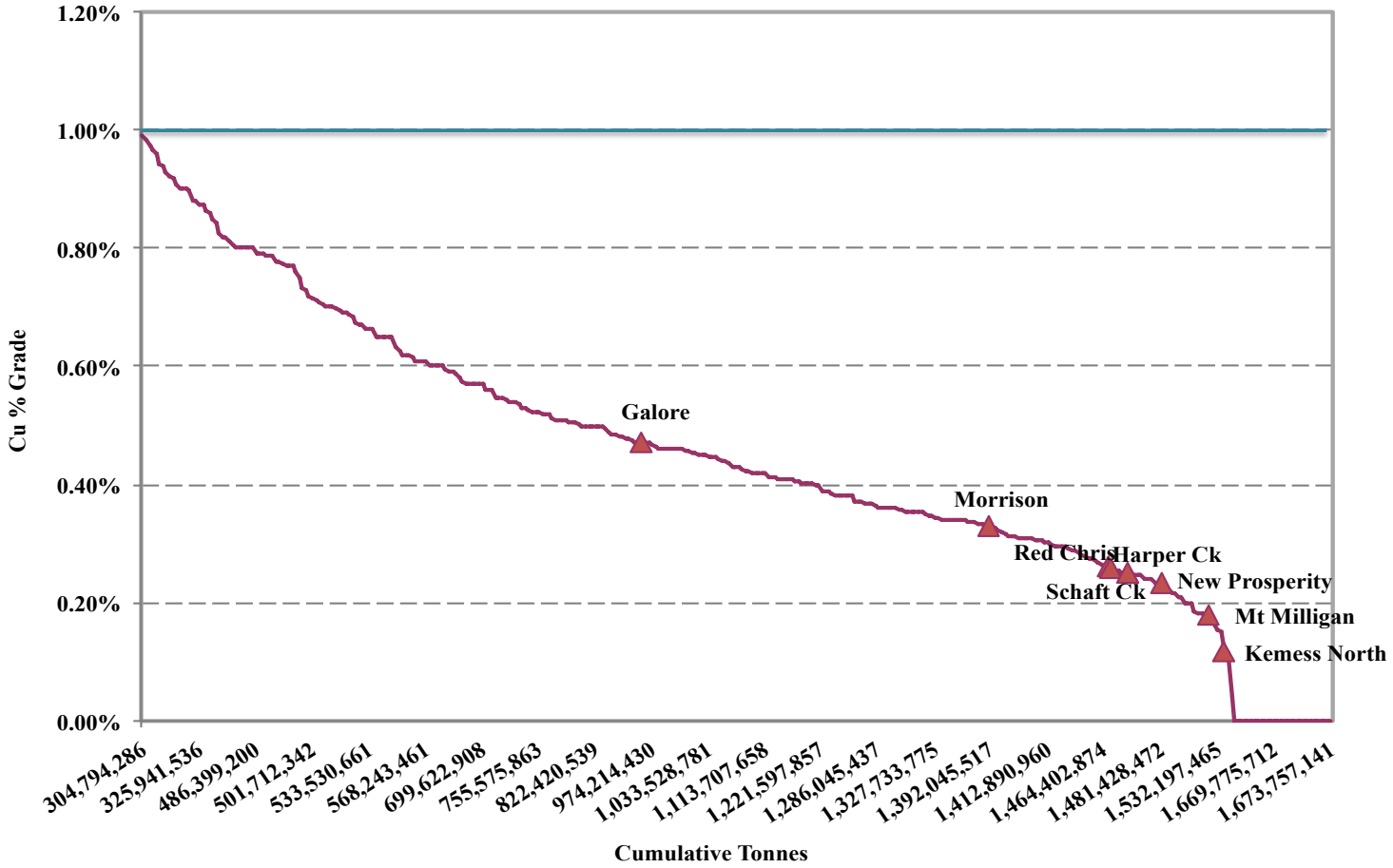
Source: Generated from MEG 2013

Chart 8 566 World copper deposits based on copper grade versus cumulative tonne



Source: Generated from MEG 2013

Chart 9 566 World copper deposits based on copper grade versus cumulative tonnes (a close-up)



Source: Generated from MEG 2013

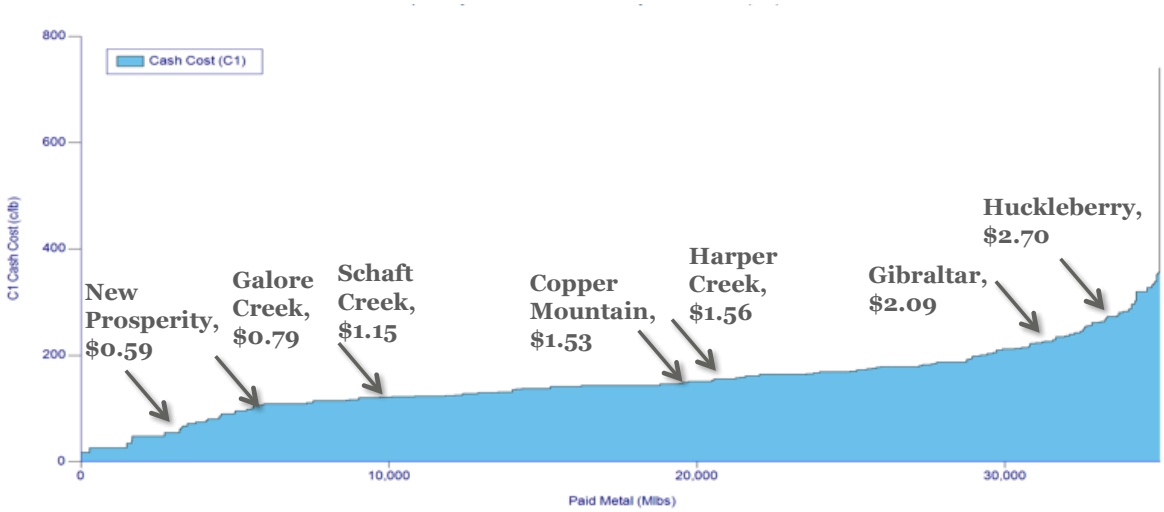
and content (6M oz Au) than most of its copper porphyry peers), available financing, its small project footprint, limited land access issues, reasonable proximity to infrastructure, the political and industry pressure to build, as well as its owner's (Thompson Creek) need to diversify away from being exclusively a molybdenum producer (see Appendix 8: Case Study Mt. Milligan).[71] [72] In many respects, it was the perfect confluence of numerous factors—metal prices, by-product credits, a need and willingness by a financially capable company to diversify, combined with a government facing pressure to show the world that BC was open for mining. It should also be noted that the Mt Milligan project was significantly de-risked and advanced by its previous owner (Terrane Metals Inc., a spin out from Placer Dome Inc.) whose key management were all involved in developing the project for many years whilst employees of Placer Dome Inc. Arguably, Mt Milligan was viewed as a gold project for the longest time.

Overall, Charts 6 to 9 imply that BC copper porphyry projects are relatively large in size; however, they are relatively low grade. As illustrated in Chart 10, it would appear that the majority of the projects are underestimating their cash costs when compared to similar sized projects and existing mines (see Appendix 10). For instance, why are Taseko's New Prosperity's cash costs $0.59/lb, when they're active mine Gibraltar cash costs are $2.09/lb? As to be discussed in Section 6.3, BC has some of the highest operating costs in Canada; therefore project estimates should reflect these costs. Are development companies conflicted with a bias to presenting their projects in the most favorable light, enhancing their NPV's and IRR's, to assist in securing their next round of much needed financing (see Table 7)? Considering that many of the projects were discovered over 40 years ago and have yet to be developed, we could almost conclude that the general market must question the economic viability of these projects despite favorable economic analysis, otherwise they would have been built by now (see Appendix 8: Case Study Galore Creek). Therefore, there could be bias in the data found in the NI 43-101's.

71 When compared to other BC projects such as New Prosperity, Red Chris, and Kemess North, the Mt. Milligan project has limited land access and environmental issues.

72 Thompson Creek's need to diversify is no more evident by the dropping molybdenum price, as well as the recent closure of one of their molybdenum mines (Endako), and the planned future closure of the Thompson Creek Molybdenum mine. For further details see the following website: http://www.thompsoncreekmetals.com/s/Home.asp.

Chart 10 Cash costs ($/lb Cu) of 434 worldwide copper mines [73] [74] [75]



Source: Modified from Wood Mackenzie L.M. Group 2012

Table 7 summarizes Schodde's world-class criteria and how they pertain to the BC projects studied. In order to be a world-class, a project must meet all Schodde's five criteria (see Table 7). The criteria based on project footprint (>1km2) has been left out due to the inconsistencies in measurement between the projects; however, all the projects exceeded Schodde's (2006) footprint value of greater than 1km^2. None of the BC projects studied met Schodde's entire 2006 world-class criterion; however, each project met at least one of the criteria. For instance, the Galore Creek project meet three of the criteria (i.e., scale, NPV, and costs), whereas Schaft Creek met only two of the criteria (i.e., scale and costs) Therefore, according to Schodde's (2006) criteria,[76] it would appear that BC does not have any world-class copper porphyry deposits, however it has numerous projects that have at least one world-class attribute.[77]

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73 See Appendix 10 for a list on the 434 Worldwide Copper Mines used in the study.

74 C1 Cash Costs: "The costs of mining, milling and concentrating, onsite administration and general expenses, property and production royalties not related to revenues or profits, metal concentrate treatment charges, and freight and marketing costs less the net value of the by-product credits"(Nystar 2011, 172).

75 Thompson Creek's Mt. Milligan project is not included in Chart 10 analysis, as Mt. Milligan is treated as a gold project in Thompson Creeks Ni 43-101 analysis.

76 All the projects (except Schaft Creek) exceeded Schodde's NPV criteria; however, it must be noted that the NPV's used in Table 8 are based on a $3.00 or a $3.25 copper price as per their NI 43-101's and not Schodde's 2006 prices. Recalculating each of the project's NPVs to Schodde's (undisclosed) 2006 commodity price is beyond the scope of this thesis.

77 BC's Highland Valley Copper (HVC) mine has been in operation since 1972 and has a copper production of 2.68 Mt (1986 and 2010), as well as a 'proven reserve' average grade of 0.36% (Infomine 2013; Minerals 2010). It too meets some of Schodde's criteria, as found with

After consulting Richard Schodde (February 15, 2015), an up-to date world-class criteria was disclosed: life-of-mine (LOM) 20+ years; size greater than or equal to 5Mt Cu; grade greater than or equal to 0.80% Cu; and NPV greater than or equal to $1000M. All the projects (except Galore Creek and Schaft Creek) meet the LOM of criteria; however, none of the projects meet any of the remaining criteria.

Table 7 Schodde's (2006) world-class criterion and BC projects studied

Project	LOM[78]	Scale	Grade	$NPV_{8\%}$	Costs	IRR
	(30+Yrs)	(>2 Mt Cu)	(>0.8% Cu)	(>US$250M)	(US$/lb Cu)	(%)
Harper Creek	28	1.65	0.26%	$819	$1.56	23%
Galore Creek	18	2.63	0.60%	$995	$0.79	10%
Mt. Milligan[2]	22	0.95	0.20%	$1,695	N/A[3]	17%
Morrison[5]	21	0.62	0.39%	$451	$0.84	24%
New Prosperity	33	1.63	0.23%	$1,663	$0.59	21%
Red Chris[4]	28	0.94	0.38%	$475	$1.22	16%
Schaft Creek[1]	15	2.21	0.60%	$67	$1.15	8%

1. Schaft Creek IRR was calculated using a $3.25 Cu Price, otherwise $3.00 unless noted.

2. Mt. Milligan NPV5% using a $3.00 Cu Price

3. Mt. Milligan is being treated as a gold project.

4. Red Chris IRR based on $2.20 Cu price

5. Morrison Cash Costs in 2008 dollars net of Au and Mo by product credits

Source: Generated from (NI 43-101's) AMEC 2011; Merit 2013; WARDROP 2009a; WARDROP 2009b; Taseko 2009; Imperial 2012; Tetra Tech 2013

5.4 The benefits of a world-class mine in your locale or province!

There are numerous benefits to having world-class mines in your locale, or province. Specifically, benefits of a world-class mine are: (1) the generation of great wealth over a long period of time; (2) the launch of major mining companies; (3) the generation of new markets through lower prices; (4) the growth in exploration investment; (5) the promotion of innovation and use of new technologies; (6) the growth of exploration and mine development in the area; (7) the growth in downstream processing; (8) the growth in support industries; (9)

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the projects studied. BC's Huckleberry copper mine production is approximately 0.395 Mt (1997-2012), of which is not even close to Schodde's world-class criterion (Mining&Exploration 2012).

78 LOM: Life of Mine.

the assistance in the area's social and political development; (10) the 'potentially' lowering of the mines impact on the environment; (11) the generation of more jobs; (12) the creation of multigenerational jobs; and, (13) the construction and long-term maintenance of infrastructure, especially in remote areas (Schodde 2006; Kosich 2006).

5.5 Conclusion

The perception that BC has world-class deposits is propagated by politicians promoting the province, by mining lobby groups and by the companies trying to seek funding to advance them to construction. The world-class criteria (i.e., size, grade and quality) is a yardstick to measure where BC's copper porphyry projects sit on the worldwide stage. In accordance with Schodde's (2006:2015) criteria, BC's current copper projects could be described as modest, not world-class, as they don't meet his entire criteria. They all have at least one world-class attribute, but none of the projects met all of the criteria. This is an important distinction, because it could go part way to explaining why the projects are not being built (see Chapters 6-10). Perhaps they are not sufficiently large, or of sufficient grade to provide the superior returns coveted by the world's largest producers. Perhaps the grades are too low, and the size too small to make them economic long term, surviving the numerous commodity pricing swings they could expect over their lifetimes. Considering that most of these deposits were discovered more than 40 years ago, and have yet to be built, would suggest capital is being diverted to more attractive projects in other parts of the world. However, the recent economic downturn has mitigated available financing and greenfield development world-wide; therefore, it would be expected that the downturn would also affect projects in BC (see Section 4.11-4.12 and Section 8.3). Overall, Schodde's criteria does not suggest that only world-class projects should be built; however, they are the projects that every mining company and its supporting banks covet, are likely to stay operational through the inevitable down cycle in the commodities market, and perhaps have a greater ability and more resources to effectively navigate the many social and technical factors that can inhibit project development.

Not having a world-class mine in your locale or province can result in the loss of significant benefits, including the loss of reputational capital whereby the province is noted as

supporting investment in the mining industry, as well as in innovation, education and human resources. World-class projects do not necessarily need to pursue financing, nor do they sit for years waiting to be developed into mines.

Companies of world-class projects tend to be ‘experienced miners’ and have access to optimum financing, and therefore can provide ‘more’ benefits to stakeholders as these projects tend to be more profitable or economic. Although junior exploration companies have a long track record of discovering very significant, if not world-class deposits (e.g., Oyo Tolgoi, Voisey’s Bay, Eskay Creek, Canadian Malarctic) they will typically be rapidly acquired by more mature, larger mining firms with the capacity (e.g., financial and technical expertise) to advance them. At times, bidding wars ensue to secure such coveted assets. After 40 plus years, it would appear none of the major mining firms in the world appear ready to acquire the studied BC copper porphyries.

CHAPTER 6 Challenges in building greenfield copper porphyry mines in BC!

6.1 Introduction

The following sections discuss some of the challenges faced in developing greenfield copper porphyry projects in BC. This section focuses on four principal areas: reliability of feasibility of studies; project costs; human resources; and, environmentalism.

6.2 The reliability of feasibility studies (NI 43-101s)!

Building new mines is not an exact science! Ruff (2013) states, "Copper producers have consistently and significantly underestimated the labor, political, and geological obstacles of bringing new mines on line, causing them to fall far short on new supply and cost projections for the better part of the past decade". A feasibility study or NI 43-101 is an evaluation of a mining project in order to determine if the mineral resource can be mined economically (see Section 4.8). This accuracy metric is defined by Hills (2013) as "…basically the level of time and effort that went into working up the numbers. The problem is the accuracy estimates [as they] are only as good as assumptions about execution". Commonly agreed standards for economic studies are defined as follows:

- A Preliminary Assessment (PA) or Preliminary Economic Assessment (PEA) Scoping Study is accurate to within 25 percent;
- A Feasibility Study is accurate to within 15 percent; and,
- A Bankable Feasibility is accurate to within 10 percent (Hills 2013).

Determining project and mining costs add to complexity in defining the economic thresholds of a project. For instance, operating costs are easier to predict as metallurgical processing, plant size and mill throughput are somewhat standardized engineering. However, mining costs can be more troublesome as certain risks are unquantifiable until after a company experiences it; unknowns such as slope failures (Hills 2013), imperfect metallurgical testing and variable ore hardness throughout the orebody. Hills (2013) utilizes the following formula to determining overall capital costs:

1. Double the capital cost estimates on scoping studies; and,
2. Add 50 percent to feasibility studies in order to come up with a number that is close to what an actual capital cost is.

Overall, the feasibility and success of projects are based on the level of inaccuracy determined by uncertain variables.

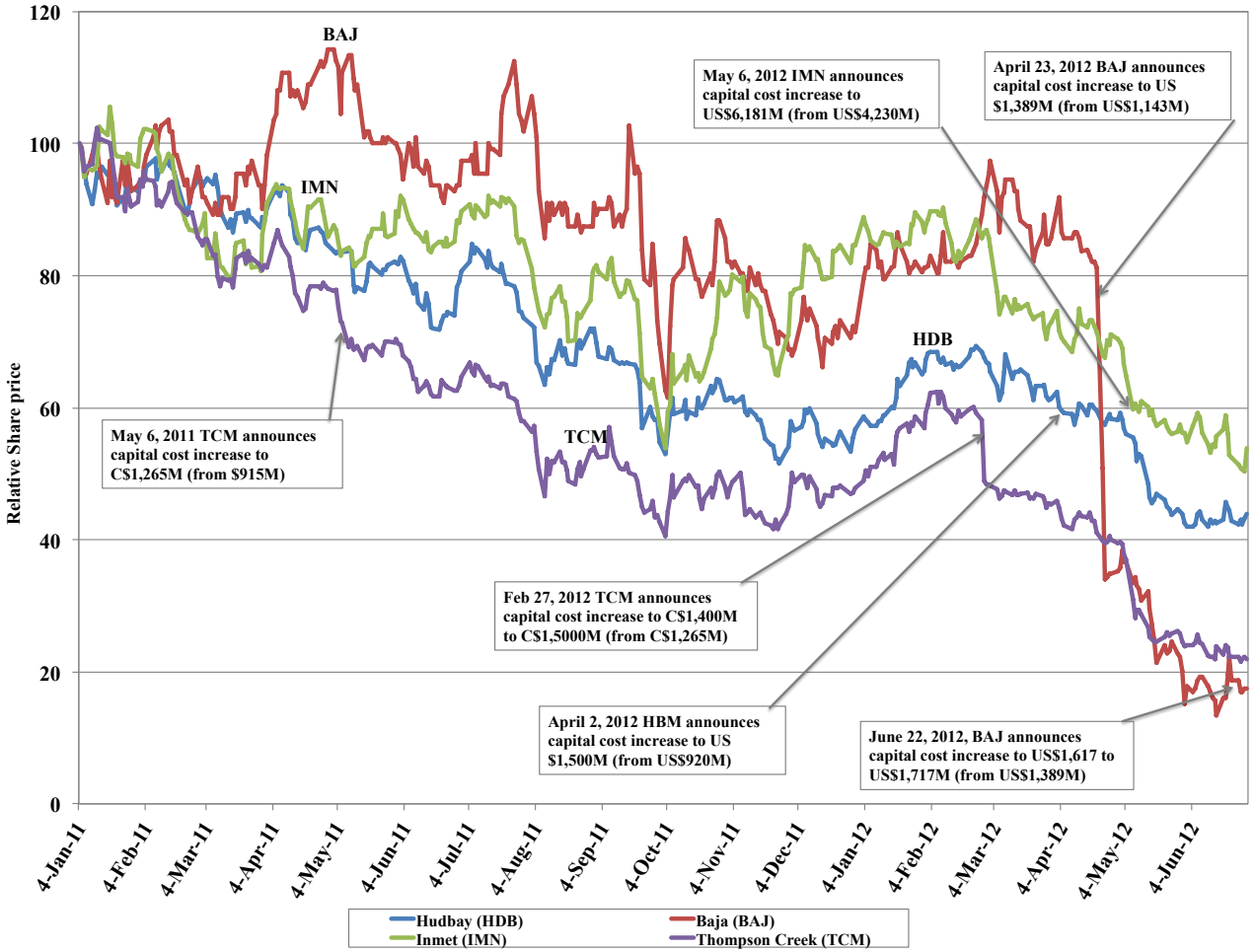
6.3 Costs end up higher than projected in economic studies

Cost overruns are a project risk. For instance, the estimated capital cost of the Mt. Milligan project in 2009 it was $915M (WARDROP 2009). By May 6, 2011 it had inflated to C$1.2 billion and in 2013 it was closer to C$1.53 billion (Lampard et al 2012) (see Appendix 8: Case Study Mt. Milligan Project). Chart 11 illustrates the share price performance of the Mt Milligan (Thompson Creek Metals Company Inc.) and three other projects in relation to capital cost increases. As illustrated in Chart 11, with each company announcement of capital cost increases there is a significant drop in share price. However, there are two key differences between the four projects studied. Baja Mining (BAJ) and Thompson Creek (TCM) projects were already under construction, whereas Inmet's (IMN) and Hudbay's (HBM) projects were not (Lampard et al 2012). Once committed to development, a company (in particular a single asset company) must continue to build to protect its investment, whereas companies not under construction have the flexibility to defer construction until a more favorable climate exists (e.g., high commodity prices). For instance, unexpected cost overruns necessitated Thompson Creek (e.g., Mt. Milligan project) to undertake dilutive financings, whereas Baja Mining went into receivership and is currently being restructured (Lampard et al 2012). It has yet to fund its shortfall. Both companies experienced significant share price depreciation (e.g., mid-2012) (Lampard et al 2012) (see Chart 11). Thompson Creek was forced to participate in a number of financings and additional gold stream offerings to finance the unexpected increased capital costs of the Mt. Milligan project (see Appendix 8: Case Study Mt. Milligan Project).[79] Overall, the Lampard et al (2012) study illustrates the challenges many companies face worldwide in regards to projecting capital costs, as well as acquiring much needed financing.

In regards to other BC projects, the Red Chris and New Prosperity projects were also noted in the Lampard et al (2012) study to have the highest risk for capital cost increases. They face similar challenges to Mt. Milligan, especially the Red Chris project currently under

79 For news on Mt. Milligan see the following website: http://www.thompsoncreekmetals.com.

Chart 11 Share price performance post capital cost increases



Source: Modified from Lampard et al 2012

Lampard et al (2012) estimate that the Red Chris project's capital cost will increase 35 percent from C$444M to C$598M. The most recent update by Imperial Metals suggests the capital cost will exceed C$500M as of April 2014.[80]

Operating and production costs (e.g., energy, labor, etc.) vary over time and are influenced by 'scarcity', whereby supply is impacted by demand surges by countries such as China and India who have large appetites for BC commodities (Deverell et al 2013). Chart 12 illustrates the increase in costs in copper mine supply and how unit costs such as labor, service and consumables have almost doubled. Estimating is certainly not an exact science, as there are too many variables influencing the outcome.

More recent feasibility studies capture the inflating capital costs; therefore provide a more accurate estimate of costs. Lampard et al (2012) believes that feasibility studies older than 12 months be deemed being materially out-of-date and therefore inaccurate in regards to industry-wide capital cost inflation. This fact is becoming even more vital in BC as projects are taking longer to complete the environmental review process, especially if it is required to undergo a Canadian Environmental Assessment Agency (CEAA) panel review. In some cases, such as Kemess North and the New Prosperity projects, the environmental review process has taken over three years, thereby increasing the probability of a material inaccuracy in the economic study. Chart 13 illustrates the overall increase in the number of years it takes to get a discovery to production.[81]

6.4 Uncertainty and costs in regards to BC tax and exchange rates

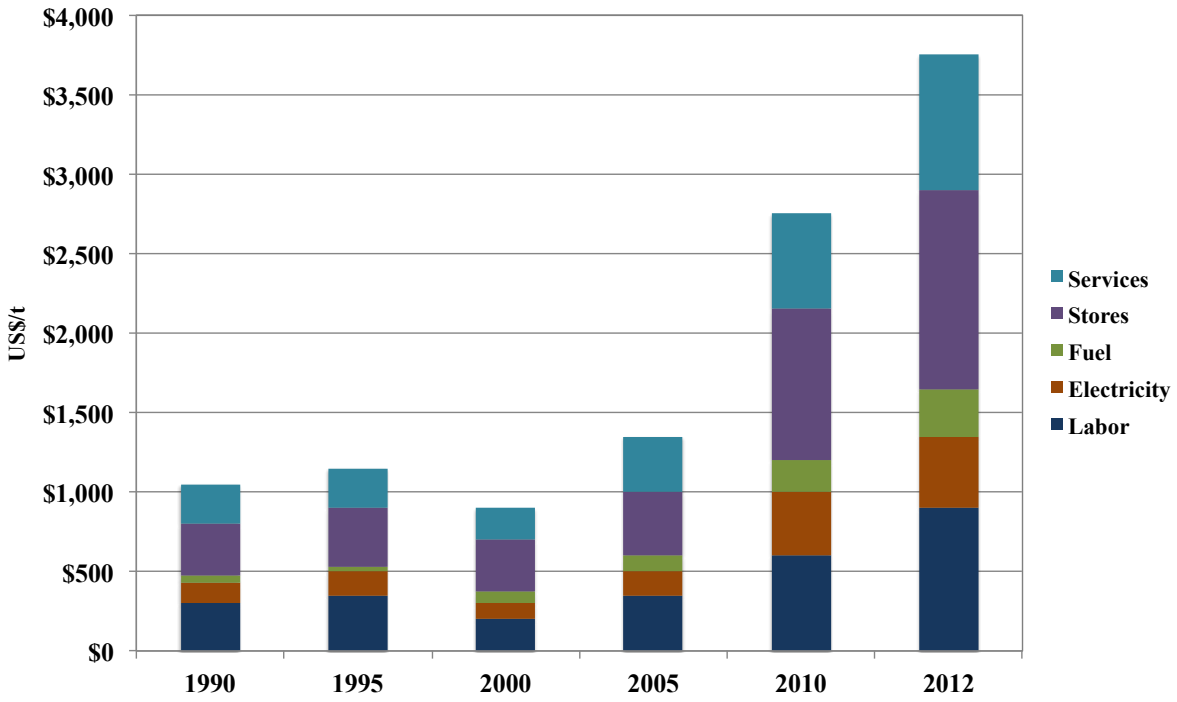
Taxes can play a significant role in determining project cut off grades by taking away cut-off flexibility. In 1991, the Highland Valley Copper (HVC) mine five-year figures listed taxes as being 43 percent of their total costs or $974 million (Taylor 1995, Hansen 1993). As a result, companies may choose not to mine as deep, hence shorten their project mine-life (Taylor 1995). In a sense, the producing mines are "locked in" to federal and provincial taxes, as governments have become more reliant on tax revenues from natural resource extraction,

80 See the following website: http://www.imperialmetals.com/s/RedChris.asp?ReportID=585273 for the most recent update on the Red Chris project.

81 Chart 13: From 2012 onwards, the data is a projected average number of years it takes from discovery to production.

especially during times of global debt crises (Taylor 1995, 27). Proposed projects may not even start as a result of the costs in relation to taxes. These taxes can also fluctuate with provincial election results. Approximately every four years, a new political leader/party could be elected as premier of BC. Each party has their own mining strategy, whereby tax and royalty rates could fluctuate in accordance to their mandate (see Chapters 13-16). Tax certainty is paramount to a successful investment decision.

Chart 12 Copper mine costs of production[82]



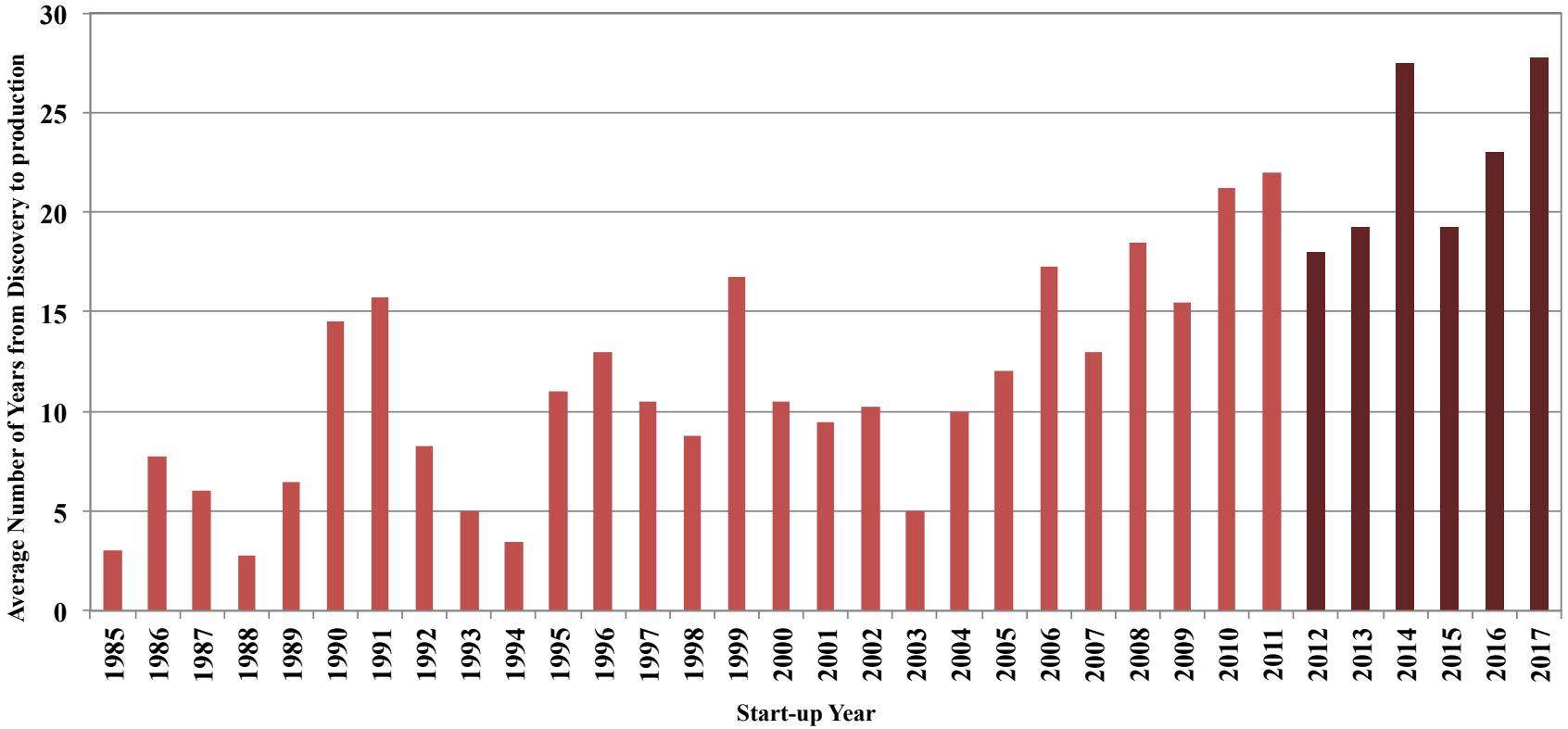
Source: Modified from Deverell et al 2013, 5

Currency rates also play a key role. BC mines will be built in Canadian dollars, although much of the inputs (steel and technology) will be priced in international currencies, or US dollars. Fellows (2010) states, "Exchange rates are usually the largest single determinant of year-on-year global average production cost changes"(p.4). The fluctuating foreign currency rate creates greater uncertainty for companies, whereby a mere one percent change could cost companies millions of dollars. For instance, using April 8, 2014 exchange rate[83] of 0.9154

82 Direct cash costs, US$/t (money of the day) (Deverell et al 2013, 5).

83 Exchange rate (April 8, 2014) retrieved from http://www.canadianforex.ca.

Chart 13 New finds are taking longer to bring to market[84]



Source: Modified from Lassonde 2012

84 Forecast data from 2012 to 2017.

percent companies wanting to build a mine in BC will pay close to an extra 10 percent on products and equipment (US dollars), whereas labor costs will be cut by close to 10 percent because labor is paid in Canadian dollars.[85]

6.5 Energy costs and the Highway 37 Northwest Transmission Line

A study completed by Freeport McMoran Copper and Gold provides power consumption curves for 7 different copper processing options, with different ores amenable to heap leaching and flotation (Marsden 2008) (see Chart 14).[86] Of particular significance is the fact that all BC copper porphyries studied in this thesis rely on two of the three most energy intensive processing options, SABC Smelt and HPGR Smelt. In addition, the energy consumption curves are exponential in terms of grade, with a material increase in energy consumption (Kj/lb Cu) as the grade declines below 0.35 percent-0.40 percent Cu, the grade of most of BC's copper porphyry deposits.

The metallurgy and low-grade deposits of BC require the more energy intensive processes to develop; however, BC has very low energy costs relative to most other copper producing nations worldwide. However, the lack of infrastructure to many of the studied projects increases the risk and capital costs of the projects. From 1970 to 1995, energy costs increased four times faster than industry wages and metal prices (Newell et al 1995; Keevil 1993). Taylor (1995) states, "Electric power may amount to 15 to 30 kWh per tonne milled and be a major cost and tax element even when available from a major utility; but may cost twice as

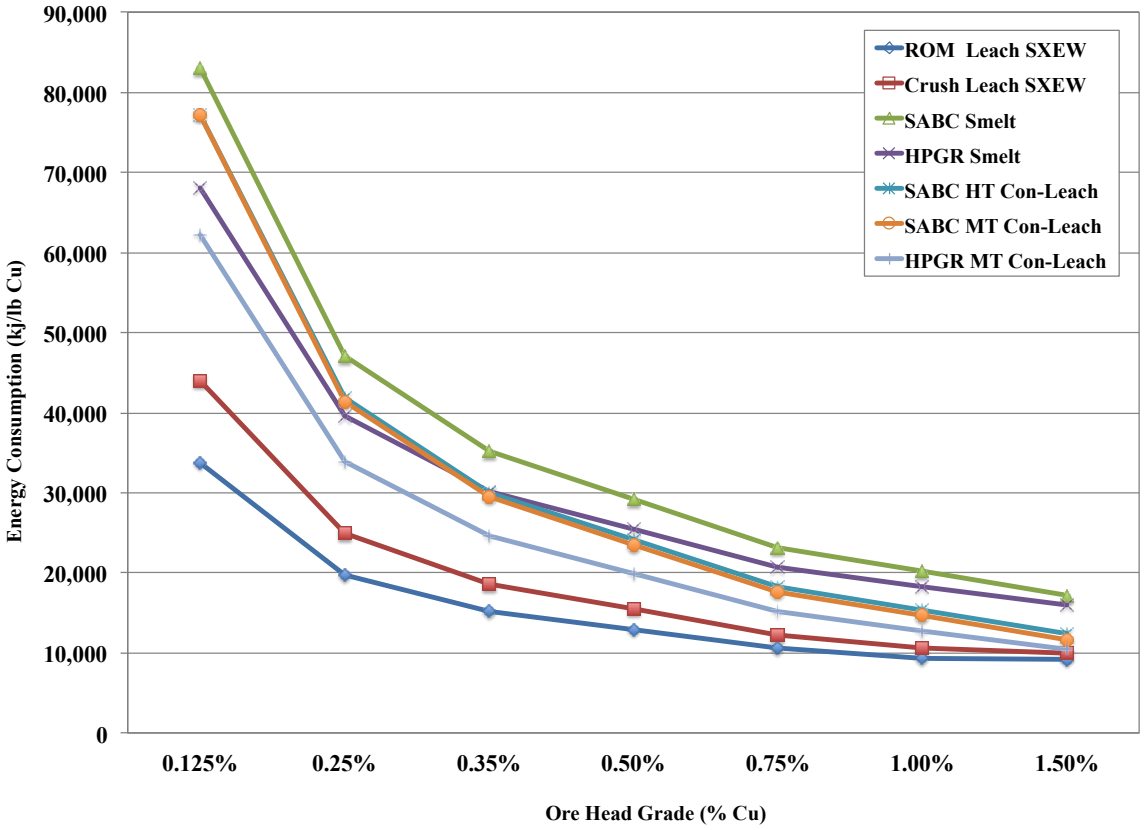
85 In Taseko's first quarter results for 2015 it outlines how the exchange rate has affected their Gibraltar copper operating costs. The report states, "For the balance of 2015, copper grades are forecasted to fluctuate between 0.25% and 0.28%. Based on forecasted grades and subsequent improved recoveries, the Gibraltar Mine is expected to produce 130-140 million pounds of copper in 2015 (100% basis). Increases in copper grades and production are expected to reduce total operating costs per pound over the remainder of this year. There are a number of cost control initiatives underway including mine plan modifications to reduce waste stripping requirements, a workforce reduction effective in January 2015, and initiatives with vendors to reduce costs of supplies and consumables. The mine is also benefiting from continued declines in the price of diesel, which is a significant input cost. Diesel prices have fallen by approximately 23% since the beginning of this year. The Canadian dollar has fallen approximately 15% since the beginning of 2014 and with approximately 80% of Gibraltar's operating costs denominated in Canadian dollars, the weakening dollar has a significant impact on total operating costs per pound reported in US dollars."(see http://www.tasekomines.com/releases/ID707701).

86 The seven different processing options: ROM Leach SXEW=ROM stockpile leaching, SXEW, Crush Leach SXEW=crushing, heap leaching, SX, EW, SABC Smelt=SAG-Ball mill, flotation, smelting and refining, HPGR Smelt=High pressure grinding, ball mill, flotation, smelting and refining, SABC HT con-leach=SAG-Ball mill, flotation HT concentrate leaching, SXEW, SABB MT Con-Leach=SAG-Ball mill, flotation, MT concentrate leaching, DEW, SXEW, HPGR MT Con-Leach=HPGR-Ball mill, flotation, MT concentrate leaching, DEW, SXEW (Marsden 2008).

much if needing to be diesel-generated at the minesite"(p.23). Table 8 illustrates power rates in Canadian dollars by province and load category. As illustrated, BC's cost is well below the national average and only higher than Quebec and Manitoba.

Chart 15 compares BC's power costs to the top 10 copper producing countries. BC's power costs are significantly lower than all of its competing copper producing peers, and therefore offers a significant economic benefit or competitive advantage over other copper producing

Chart 14 Energy consumption versus head grade for various processes



Source: Modified from Marsden 2008, 32

regions. Chile has the highest copper production and electrical costs. Internationally, the price of energy has skyrocketed based on rising demand and the shortage of inexpensive

supply. Woods (2013) states,

> The rise in power prices is driven partly by a shortage of inexpensive supply. Chile, which is the world's top copper producer, needs to double its electricity-generating capacity during the next decade from today's 16,500 megawatts, say miningcompanies BHP Billiton Ltd. and state-owned Corporacion Nacional del Cobre, known as Codelco.

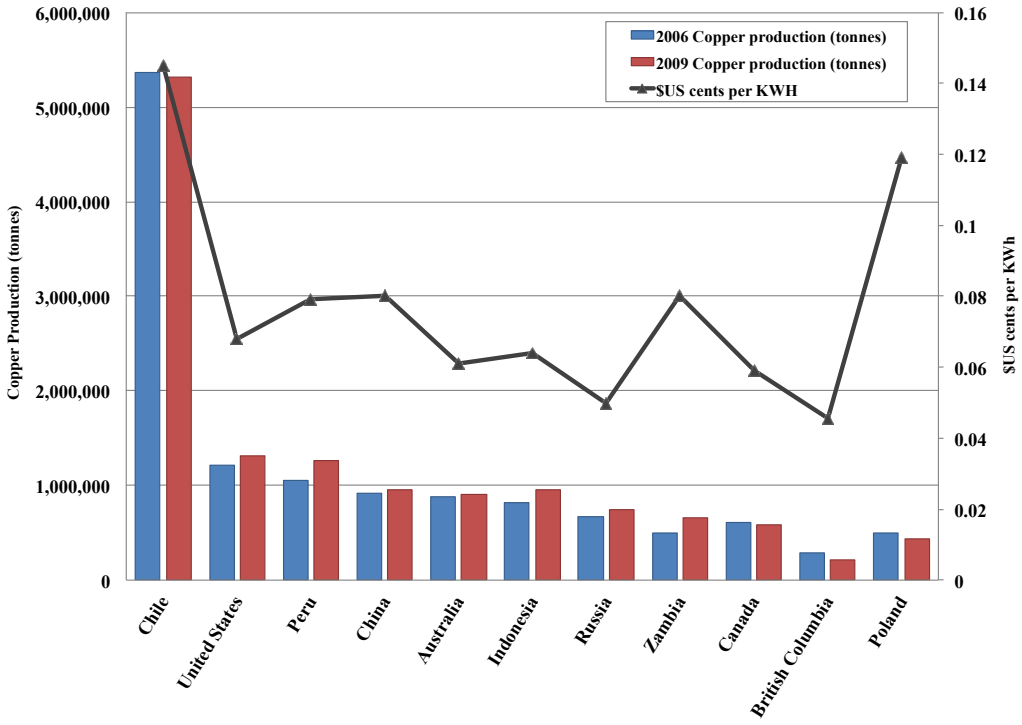
Table 8 Electricity rates (Cnd$) by province and kWh

Province	375 kWh	750 kWh	1,000 kWh	2,000 kWh	5,000 kWh
Quebec	32.40	52.62	68.21	143.31	368.61
Manitoba	31.68	56.50	73.05	139.25	337.85
British Columbia	30.15	58.06	82.71	181.31	477.12
Alberta	51.21	83.31	104.71	190.31	447.11
Average	**49.20**	**83.98**	**108.07**	**206.10**	**491.65**
Newfoundland/Labrador	50.63	86.26	109.86	204.26	487.47
New Brunswick	52.88	88.32	111.94	206.44	489.94
Ontario	56.37	96.11	123.55	237.47	579.22
Saskatchewan	59.07	98.85	125.37	231.47	549.76
Nova Scotia	57.86	104.88	136.23	261.63	637.83
Prince Edward Island	69.76	114.95	145.07	265.57	541.57

Source: Generated from Ontario Hydro 2011

Despite BC's lower grades and higher processing costs, the fact that BC has an abundance of cheap electrical power, provides a significant economic advantage over similar deposits elsewhere in the world. However, at a grade of 0.35 percent, the SAG flotation energy consumption is double or triple that of competing ROM and Crush Leach SX-EW processes commonly found in Chile (see Chart 14). In analyzing Marsden's (2008) data, a conclusion was drawn that the benefit of BC's cheap power is more than offset and therefore fully negated by more complex and costly processing methodology (see Chart 14) (see Section 3.3). At US$0.14/kWh, a Chilean heap leach process will have similar electrical costs (on a per pound of copper produced basis) as a SAG-Flotation circuit in BC costs US$0.06/kWh because its power consumption/lb is a third to a half that of the BC circuit. The province is currently tendering for the construction of the controversial Site C hydroelectric dam on the Peace River (capable of powering 450,000 households), in order to meet its forecasts for an increase in future electricity demand.

Chart 15 Top 10 copper producing countries and $US cents per KwH for 2006 and 2009



Source: Generated from Chama 2012; Dankert 2013; Dept. of Finance 2013; Electricity 2012; EMPR 2012; Enerdata 2012; Junar 2013; USEIA 2013; Wikipedia 2013a and 2013b; Zpryme 2012

The BC government is supporting the development of mining projects in the Golden Triangle by ensuring adequate power supply to the region. The Highway 37 Northwest Transmission Line (NTL) (335 km) is to run from Terrace to Bob Quinn Lake in order to provide electricity to projects and communities within the 'Golden Triangle' (see Appendix 11). The estimated capital cost was C$404M in 2010 and in 2013 the cost estimate was increased to C$746M (BC Hydro 2013). This power line is vitally important because it will provide electricity to many proposed BC mining projects (e.g. Galore Creek, Turnagain, and Mt. Klappan) and currently in construction (i.e., Red Chris) that notarized their need for NTL in their feasibility studies. As of August 2014, the NTL is up and running and therefore providing electricity to the northwest region of BC.[87]

87 For additional information on the NTL project see the following website: http://www.bchydro.com/energy-in-bc/projects/ntl.html.

6.6 Human resources: Skilled labor or the lack of?

It is estimated that the BC mining industry will need an additional 15,000 people in the near future for upcoming vacancies created by retirements, as well as expected growth in the industry (MABC 2009). From 2008 to 2017, it is estimated the existing 16,450 people employed in the Canadian mining industry will grow 35 percent to 22,225 (MiHR 2012). One of the key challenges in securing labor will be the demand created by Alberta's tar sands and Saskatchewan's potash/uranium industries which are experiencing significant growth. This neighboring demand provides increased labor competition, applying upward pressure on wages therefore increasing the capital and production costs of BC mines. Fellows (2010) states, "With regard to input costs, labour is by far the most sensitive cost component, by virtue of its large proportion of a typical operating cost base"(p.4). In 2009, Mt. Milligan's projected labor costs were forecasted to be 11 percent of their total site operating costs in their technical report (WARDROP 2009a, 23-18) (see Appendix 8: Case Study Mt. Milligan).

In order to counteract the labor shortage, the BC government created several initiatives to attract, recruit and train workers across the province. For example:

- The Industry Training Authority (ITA) created a training tax credit program for employees and employers engaged in apprentice programs;
- The Trade, Investment and Labor Mobility Agreement (TILMA) is an incentive whereby goods, services, certified workers and investments can move freely between the provinces of BC and Alberta; and,
- The Provincial Nominee Program (PNP) facilitates the speed in the immigration process for skilled immigrants with job offers in BC (MEMPR 2009).

Other initiatives include:

- The Mining Industry Attraction, Recruitment & Retention Strategy (MARS) developed by the Mining Industry Human Resources Council (MiHR). The strategy addressed ways that under-represented groups can overcome labor force challenges (MiHR 2007);
- The Aboriginal Skills and Employment Partnership (ASEP) provided skills development and work experience in large-scale industrial sectors;
- The Mineral Resources Education Program (MREPBC) is a program where teachers and the mineral industry partner to encourage learning by Kindergarten to grade 12 about geosciences, mineral resources, etc. (MiHR 2007);
- The BC Jobs Plan (see Section 16.2); and,
- InfoMine, Mining Intelligence and Technology are a gateway to Edumine whereby

students from over the world can learn about mining through online courses.

However, labor is relatively mobile and workers can at times, be incentivized to leave their hometowns to work in remote locations offering increased wages and rotational work.

During the 1990's, Canada invested very little in its resource base, rather focused on growing the manufacturing industry (see Section 4.10). In fact, "…Canada was the only G7 country where manufacturing jobs increased…" during the 1990s, despite having the largest resource sector (Cross 2013, 12). Between 1987 and 2003, the net capital stock in natural resources (excluding oil and gas) dropped by 28.7 percent (Cross 2013). Cross (2013) writes on the reasons for the shortages of labor in the BC mining industry and he states,

> Lost in the debate about the benefits of the post 2002 boom is the contrast between it and the severe slump in resources in the 1990s. This is why the share of GDP and employment that resources account for are still lower today than in 1990 despite a decade of sustained growth. Canada allowed the capital stock invested in the resource sector to literally rust away, while its share of employment fell to 0.7 percent. The lack of investment in both capital and labour over a prolonged period undoubtedly contributed to the shortages the resource sector is experiencing today as it tries to ramp up production to keep up with demand. …Meanwhile, the labour force in the resource sector aged rapidly as hiring of young people was sharply curtailed. Fewer young people entered the resource industry than any other industry in the 1990s (only 3.3 percent of youth worked in resources by 2002)(p.12).

Mt. Milligan had expected to secure their skilled labor force from mines such as Huckleberry who were forecasted to close prior to the development of the Mt. Milligan project. However, with increasing commodity prices over the last few years, the Huckleberry mine expanded and continued by mining lower grade ore. As a result, Mt. Milligan's labor costs have steeply increased due to labor shortages and worker turnover (of 30 to 40 percent) (The Vancouver Sun 2012). One of the challenges faced in new mine construction is the fact that mines are built when prices are strong, therefore existing mines are strong, and demand for manpower and materials is strong. Rarely are projects built at the bottom of an economic cycle.

Since 2002, the percentage of workers aged 55 and older in the resource industry has risen from 10.7 percent to 14.9 percent, whereas only 3.3 percent of youth worked in resources (Cross 2013). Cross (2013) states,

> Young people (aged 15 to 24) represented 23.8 percent of the non-farm resource sector's labor force at its peak in 1981. Over the next three decades, the number of

> young people employed in that sector fell in absolute terms by 64 percent, from 91,000 in 1981 to 33,000 in 2002, at which time it represented only 11 percent of the labor force in this industry.

Some mining companies have resorted to hiring international labor from countries such as China. Unions such as Construction and Specialized Workers Union (local 1611) and the International Union of Operating Engineers (local 115) were concerned that local and skilled unemployed members were not hired first. The unions stated that the Chinese workers were "…being paid $10 less per hour than the going rate in Canada for these jobs"(Fong 2012). The unions sought a court injunction to stop the miners from entering BC; however, the federal court dismissed the legal challenge by the two unions (Keung 2013).

6.7 BC's 'sunset' industry image: The jobs argument is faltering!

Until recently, the justification to build a mine was predicated on job creation and economic benefits. This argument could be faltering as a justification to build new mines in BC given the reduction in labor intensity of BC mines. Innovation and technology has created an industry whereby a 30,000 tonne/day open-pit copper porphyry mine and mill in BC requires only 200 people to operate (Taylor 1995). Taylor (1995) poignantly writes,

> As noted, the image of the low-grade open pits of British Columbia is impaired by their own technical success; because they discard large volumes of waste for a moderate output of metals, and with minimum labour now backed up by about a million dollars of capital per employee. So few of these are needed that, ironically, mining is seen as a 'sunset' industry and there may already be more trying to stop it than doing it (p.38-39).

The mine town has become extinct and labor is now flown in or travels from established communities nearby. Overall, the industry is in decline because there only has been one greenfield copper porphyry project built since 1997 (i.e., Mt. Milligan Q4 2013). The industry has had to rely on brownfield projects with decreasing ore grades in order to maintain current production levels.

6.8 Green religion: The 'big green' came to BC!

In 1990, various NGO's in California, USA (e.g., Sierra Legal Defense Fund (Now Ecojustice), Earth First, Greenpeace) developed a Protection Act titled 'The Big Green Initiative'. Later that year, the initiative became Referendum Proposition 128, whereby the

electorate ultimately voted it down by a 2 to 1 margin (Chapman 2012). The environmentalists felt defeated, as California was known as the movements 'power base'. These groups ultimately made their way to BC and made it their new home. Many became charitable organizations in BC, using Canadian tax dollars, as well as American dollars funded by the US government and various other organizations to promote a 'saving the planet' agenda (Chapman 2012). Ultimately, this agenda has altered how companies do business, as well as build mines because significant opposition to their projects affected their reputational capital and social license to operate (See Section 16.1.3). Companies have had to face timely and costly challenges, whereby some projects were shut down or stalled for significant periods of time (e.g., Windy Craggy, Clayoquot Sound) as a result of this movement (see Appendix 8: Case Studies Tatshenshini-Alsek and Clayoquot Sound). Although they offer insights into environmental protection, they can cause untimely delays and at times have been known to unduly influence perceptions of projects. Increased environmentalism, right or wrong, can lead to project delays, increased costs and therefore increased economic uncertainty for BC projects. With lower grades, more complex metallurgy and costlier processing options, increased project opposition can be sufficient to delay (New Prosperity) or even halt (Windy Craggy) mining projects.

6.9 A NIMBY state of mind in BC?

Is BC becoming a 'not-in-my-backyard' (NIMBY) state? It seems many BC projects face significant opposition. Whether its an LNG pipeline, the Kinder Morgan expansion, uranium mining (e.g. Blizzard project) or a remote mine in a pristine wilderness (e.g. Windy Craggy), British Columbians are seemingly opposed to the development of projects in their backyard (the entire province) (see Appendix 8: Case Studies Tatshenshini-Alsek and Moratorium on Uranium Exploration and Mining in BC). How does this affect the mining industry in BC? Despite the belief by industry that mining is relatively out-of-site and out of mind based on its relatively small ecological footprint in comparison to other resource industries, legacy leaves lasting memories on the voting public. A few quick facts on BC and mining are as follows:

- Area of province is 95 million hectares (Chapman 2012).
- Area staked by mining is 15% (Chapman 2012).
- Area disturbed by mining, 0.05% or 50,000ha (Chapman 2012).

- BC has about 12,000 known mineral occurrences (Chapman 2012).

Despite its relatively low physical footprint, the public no longer buys this small footprint argument. The industry needs to become innovative in persuading the voters of BC that the province needs mining, using other ideas rather than jobs and the small footprint argument. The industry also needs to take on more innovative practices (e.g., underground copper porphyry mines) that lessen this footprint.

6.10 No mine waste in our lakes!!

Submarine tailings (the deposition of tailings in a lake or body of water) provides a relatively cheap method of tailings disposal and at the same time offers the opportunity to mitigate any Acid Rock Drainage (ARD) by submersion. The lack of oxygen mitigates its generation abilities. However, the cost is the destruction of the body of water, the loss of fish and wildlife habitat. As a result, the issue is contentious, as "filling in a lake" is no longer deemed acceptable. In 2005, Northgate Minerals Corporation proposed two options for their Kemess North project for the storage of mine waste rock and tailings: Option 1 – Duncan Lake, storage and a dam; and Option 2 – Multi-storage sites. The cost differential between the two options (out of seventeen initially proposed) was $800 million dollars (Kemess 2005). Storage of waste rock and tailings in Duncan (Amazay) Lake was noted as being the most cost effective; however, the option met the most opposition despite the potential cumulative risks associated with multi-storage sites (Northgate 2005). In 2007, the CEAA panel review made 33 recommendations in regards to the proposed project design; however, ultimately it made little difference as they opposed the project on the grounds that the benefits did not outweigh the costs.[88]

In 2010, Taseko Mines Ltd. also proposed the storage of mine waste rock and tailings for their Prosperity project in Fish Lake, which received significant public opposition and was subsequently rejected by the Minister of Environment. In 2011, Taseko resubmitted a new proposal, whereby the mine waste and tailings would be stored adjacent to the lake at an

88 For further details on the Kemess North CEAA Panel Review decision see the following website: http://www.ceaa-acee.gc.ca/050/documents/23469/23469E.pdf.

additional cost of $300M dollars.[89] In 2014, the Minister of Environment rejected the second proposal on the grounds that it would have adverse effects on the environment. The following timeline highlights the environmental assessment process for the project:

- January 14, 2010 Prosperity mine project receives BC Environmental Certificate;
- November 2, 2010 Prosperity mine project is rejected by Minister of Environment;
- November 11, 2011 Taseko re-submits a new proposal to CEAA for panel review of their newly designed New Prosperity mine project;
- December 2, 2013 Taseko files a judicial review alleging that the federal review panel reviewing the New Prosperity project was using the wrong information;
- February 16, 2014 The New Prosperity mine project is rejected by Minister of Environment;
- March 26, 2014 Taseko files a second judicial review in regards to the Minister of Environment's decision.
- January 14, 2015 Provincial EA Certificate has been extended for five years. Awaiting federal government judicial review.[90]

Overall, destruction of a lake for the purposes of tailings deposition is no longer an acceptable practice in BC. Despite the economic benefits and possibly even the longer term environmental benefits (destruction of the lake and habitat versus the potential consequences of a multi hundred million tonne tailings dam failure) associated with sub-marine tailings disposal, it is no longer a socially acceptable practice. However, with the recent Mt. Polley[91] tailings dam failure could submarine tailings become a more favorable option for tailings disposal or are voters turned completely off mining in BC?

6.11 Mining culture and media

Mining culture and the media have a significant influence on the mining industry's reputation in BC. For instance, the 'old' ways of no transparency or regard for the environment and First Nations issues are no longer viable if a company wants to explore or build a mine in BC. The company, as well as their employees, management and directors' conduct especially in front of the media or in public forums acts as a social barometer with respect to the

89 For additional information on the New Prosperity project (a.k.a Fish Lake) see the following website: http://newprosperityproject.ca.

90 For additional information on the New Prosperity project (a.k.a Fish Lake) and timeline see the following website: http://newprosperityproject.ca.

91 On August 4, 2014, Imperial Metals faced a tailings pond breach at their Mt. Polley mine. Approximately 10 million cubic meters of waste water and four million cubic meters of sediment washed into the Hazeltine Creek and Quesnel Lake. For additional information see the following website: http://www.cbc.ca/news/canada/british-columbia/mount-polley-mine-spill-78-larger-than-1st-estimates-1.2755974.

company's openness to 'fairly' negotiate with stakeholders. Therefore, the actions of the company and its representatives can be detrimental for project success, as well as for the industry as a whole.

As discussed in great detail in Appendix 12, the media has a significant influence on voters, stakeholders and the general public. What they post online, in newspapers, or broadcast on television influence how the public views the industry. For instance, the Yukon Gold television show depicts the industry as a bunch of 'yahoos,' who lack conscience and knowledge in regards to the environment and how to mine in an ethical and responsible manner. Viewers believe that these images depict the industry as a whole, therefore become biased, thereby less likely to support new mine development and construction within the province. This creates greater uncertainty for the industry, as well as for future greenfield development, as companies will become more reliant on brownfield projects to maintain their production levels.

6.12 BC is no mining state!

BC is not known as a "mining state". Taylor (1995) elaborates, "Copper is not so important to Canada as it is to Chile, nor as gold to South Africa"(p. 39). Various BC governments have supported mining throughout the years (e.g., the government helped to support the gold mining industry up until 1971, as well as provided services such as geological surveys and databases and tax deferments for new mines); however, BC is not known as a mining state (Taylor 1995). Various reasons emerge (see Fraser Institute Surveys 1997-2014); however, without this designation it increases the level of uncertainty felt by investors. BC being labeled as a 'mining jurisdiction' would promote growth in the industry, province, as well as institutions that provide skilled labor and develop new innovation and technologies. Overall, the province would attract investment, in order to discover and develop the next world-class resource.

6.13 Conclusion

The four primary challenges facing BC mine development are feasibility study accuracy, project costs, human resources and environmentalism. Feasibility studies are just estimates,

and only as accurate as the assumptions made to execute the project. It would appear that these inaccuracies are not limited to the mining sector, as they occur on other projects such as the Highway 37 Northwest Transmission Line. Are these inaccuracies a result of optimism bias or the need to create a false dichotomy for shareholder value?

BC's seemingly competitive advantage with respect to cheap power is offset by more complex metallurgy and low grades required disproportionately more power. In addition, the geographic remoteness of BC projects requires substantial investments in infrastructure (power and roads) through some extremely difficult terrain and inclement seasonal weather fluctuations.

BC taxes, exchange rates, energy and human resource costs, media, mining culture, as well as environmentalism ultimately challenge project success in BC; however, these are not the only challenges. The following chapters investigate and analyze the economic and financial merits of BC copper porphyry projects, as the economic studies tend to capture all the costs associated with the development and construction of the project, notwithstanding the optimism bias briefly discussed in this section.

CHAPTER 7 To invest or not invest in BC copper porphyry projects that is the question!

7.1 Introduction

To acquire an understanding of the challenges faced by companies trying to build greenfield copper porphyry projects in BC, investment parameters such as capital intensity, market capitalization and financial capacity, as well as the copper price are studied. Two case studies: the Mt. Milligan and Galore Creek projects are also briefly discussed; providing evidence of real world challenges faced in project development (see Appendix 8).

7.2 Capital intensity of projects: What is the best rate for BC?

Copper mining is a highly capital intensive industry and with a significant decrease in new copper discoveries the capital intensity[92] for greenfield projects has risen from US$4,500/t in 2000 to US$15,000/t in 2013 (GMP 2013). Chart 16 illustrates Teck Resources' Ltd. capital costs escalation of brownfield and greenfield projects. Teck uses capital intensity values of $20,000/t for greenfield highly probable copper projects, $15,000/t greenfield probable copper projects and $18,000/t for greenfield possible copper projects. With increased uncertainty, comes increased unit cost. The following themes highlight reasons for the increased capital intensity:

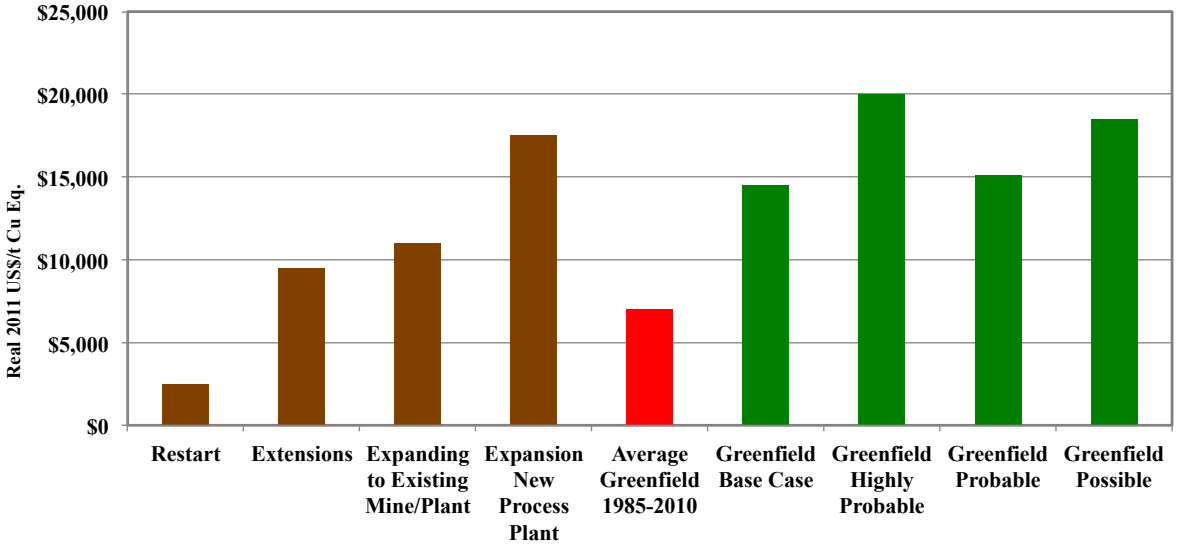
1. Falling ore grades;
2. Increasingly remote (greenfield) projects;
3. Deeper (underground) deposits;
4. Increased reliance on byproduct credits;
5. Higher infrastructure/power requirements compounded by the addition of bulky commodity by-product infrastructure and finer grind elements; and,
6. Higher EPCM[93] costs (reflecting higher wages and skilled labor shortages) (GMP 2013, 8).

Other reasons for increased capital intensity for BC greenfield projects include: uncertainty in regards to Native land claims, protected areas or parks, labor regulations and environmental regulations. All these are topics highlighted by the Fraser Institute (1997-2013) ultimately increase time and costs in acquiring project approval, or social license to operate (see Section 16.1.3).

92 Also known as Capex Intensity, Capital Intensity is the capital costs per annual tonne of Copper Equivalent (Cu Eq) production.

93 EPCM = Engineering, Procurement and Construction Management.

Chart 16 Capital cost escalations: Next generation of mines higher cost



Source: Modified from Schwartz 2013, 7

The next generation of new (greenfield) mines will also have higher capital costs, thus the more cost effective investment involves brownfield projects or expansions to maintain production supply.[94] It is generally less expensive to restart and expand existing mines, than build new mines from grassroots discoveries. Lampard et al (2012) study on 37 global projects determined that greenfield projects averaged initial capital intensity[95] as being $6.60 per annual lb, whereas brownfield projects averaged $6.11 per annual lb (p.2). The study also illustrated that the more conventional flotation projects average initial capital intensity per annual tonne milled was lower for brownfield projects (U$66) versus greenfield projects (U$76) (Lampard et al 2012, 7).[96] The advantages of brownfield projects are as follows:

1. Some or all of the infrastructure needed is already in place;
2. The ore body is understood; therefore, lower technical risk;
3. Its an already established mining area; therefore, permitting and Social License to Operate is perhaps easier to acquire;
4. Established workforce; and,
5. Less expensive to construct (Schwartz 2013, 12).

94 Types of brownfield projects as defined by Schwartz (2013) are: re-opening mothballed capacity; extension of existing mine life; expansion of existing facilities to increase production or combat falling grades; and, new process facilities – SXEW to Concentrates (p.12).

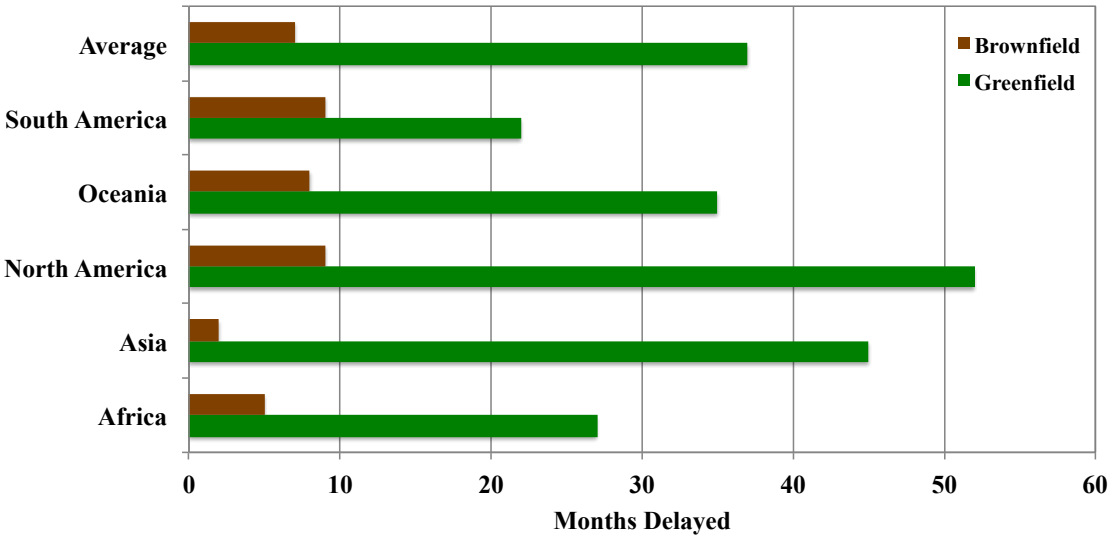
95 Capex per annual lb of CuEq production.

96 The annual tonnes milled takes into consideration the size of all the equipment used, whereas per annual pounds is affected by grade. For instance, if the grade of one project is twice as high of another, the project with the lower grade will have a capital intensity that will be half the value.

Greenfield projects also tend to face significant permitting delays as discussed previously. Chart 17 shows North America with the highest number of greenfield projects delayed (for more that 50 months) or cancelled when compared to all other jurisdictions listed (Schwartz 2013). Taylor (1995) writes,

> The primary concerns are the minimum criteria desirable to put an unworked porphyry property into safe and rewarding production; in the knowledge also that less onerous requirements may suffice to restart a halted but undismantled mine, or to start mining near an existing but underused concentrator. Despite differing motives and standards in sponsoring corporations, the decision to start a new mine requires demonstration of an absolute profit over the expected *future* outlays (p. 36).

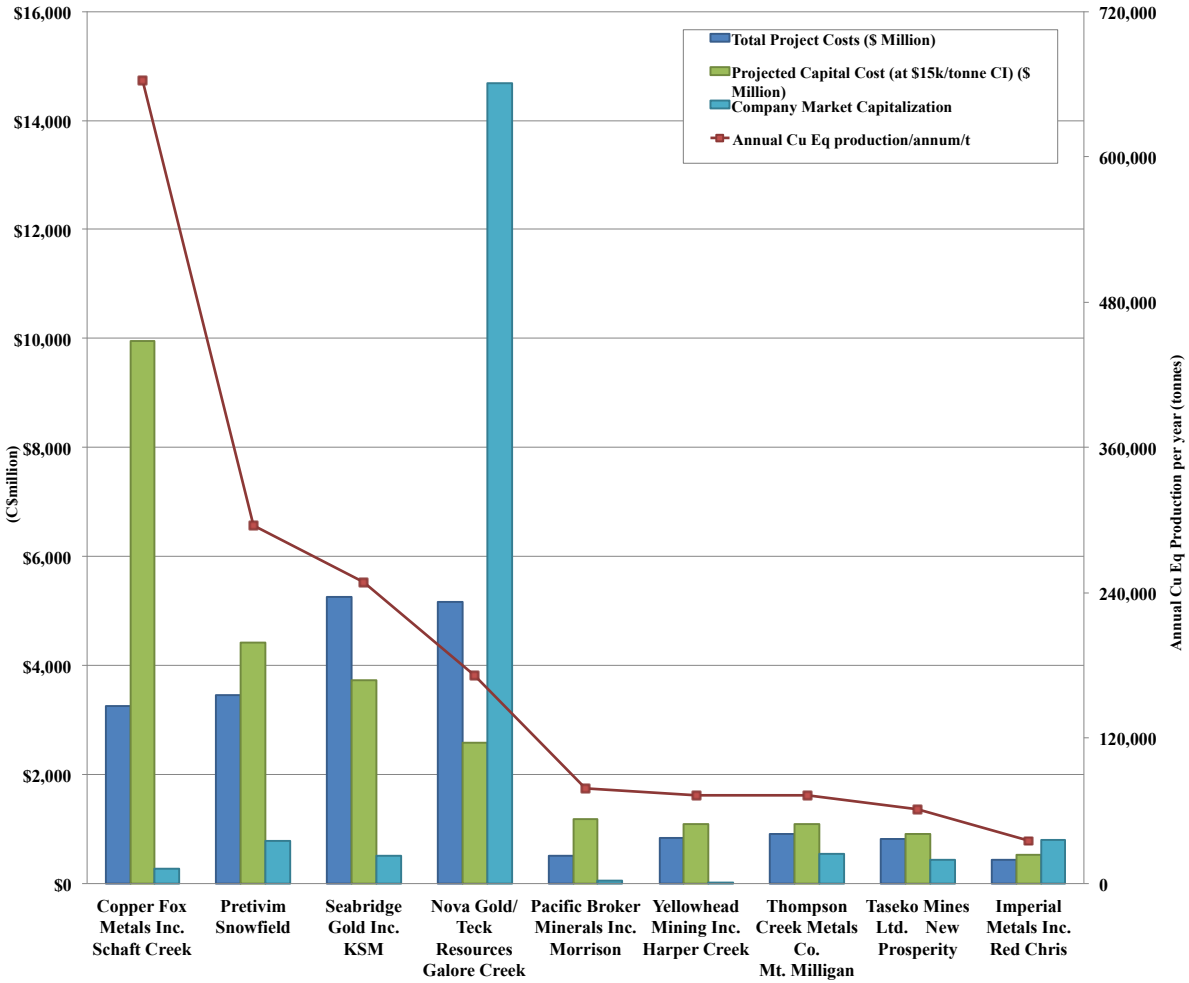
Chart 17 Global copper projects being delayed or cancelled versus 2007 expectations



Source: Modified from Schwartz 2013, 7

Chart 18 illustrates a selection of BC porphyry projects' copper equivalent capital costs and their projected copper equivalent capital costs using GMP Securities' (2013) capital intensity of US$15,000/t. The chart implies that a majority of the companies have under-estimated their capital costs, whereas KSM and Galore Creek have overestimated them in accordance with the US$15,000/t capital intensity. Charles et al (2012) studied 45 worldwide projects and the Galore Creek project had the highest overall capital intensity rating (US$20-25,000/t) because of the project's extensive new infrastructure requirements (see Appendix 8: Case Study on Galore Creek). The projected capital intensity for the Galore Creek project at US$25,000/t would total $4,296.11M. This is still shy (-$863.9M) of the companies' projected costs of $5,160M; however, if one takes into account the tunnel and infrastructure

Chart 18 BC projects copper equivalent capital costs and projected copper equivalent capital costs



Source: Generated from AMEC 2011; Merit 2013; NovaGold 2011; WARDROP 2009a; WARDROP 2009b; Taseko 2009; Imperial 2012; Stockwatch 2014a; Tetra Tech 2013

costs of $1,277M (which equals to 24.7% of their total costs) it seems that the capital intensity rate used in BC should be closer to US$25,000/t rather than US$15,000/t (Charles et al 2012). If that is the case, then a majority of the projects listed in Chart 18 have significantly underestimated their capital costs, a prevalent theme worldwide, including BC. For example:

- Antofagasta's Esperanza Sur project capex increased from under US$3.0 bln to US$3.5 bln (Mills 2012);
- Inmet's Cobre Panama project capex climbed to US$6.2 bln from US$4.8 bln implying a capital intensity in excess of $15,000/t (Mills 2012);
- Teck's Quebrada Blanca's capex is US$5.6 bln. The amount of money required to build Teck's new and very large copper mine in a difficult environment, corresponds to a US$28,000/t capital intensity (Mills 2012); and,
- Hudbay's Constancia project capital increased from US$920M in 2011, to US$1.5bln in 2012, and to $1.7bln, which equates to $19,000/t (Norsemont 2011; Hudbay 2012a; Hudbay 2012b).

The complexities and costs associated with geographically isolated projects without access to infrastructure in BC expose companies and communities to significant cost risks in new project development, which can have a significant detrimental impact on their economics.

Thompson Creek's Mt. Milligan project has been the only recently completed BC project. The project's capital costs were last disclosed as $1.53B, implying a capital intensity of $21,000/t.[97] The current costs are well in excess of the US$15,000/t originally proposed, however better than the capital intensity of US25,000/t, which would imply total project costs of $1,822.33M, or $322.33M more than spent to date (see Appendix 8: Case Study on Mt. Milligan). However, this further reinforces that a capital intensity factor closer to US$25,000/t should be used on BC projects, especially the more remote ones. Mt Milligan benefited from reasonably good access, low-cost hydroelectric power, nearby rail and only required a 92km long power line (WARDROP 2009a).

7.3 Company market capitalization: Is it relevant to BC project success?

According to Whyte and Cumming (2004), capitalization is defined as, "A financial term used to describe the value financial markets put on a company"(p.119). Market capitalization, or 'market cap' is calculated by multiplying the company's shares outstanding

97 $1.53bln (Capex)/$72,893/ty(CuEq as per NI 43-101)=$20,989/ty or $21,000/ty (capital costs per annual tonne of production).

by the current market price of the shares (Whyte and Cumming 2004, 119). Chart 18 illustrates the company's overall size (on May 15, 2014) in accordance to the total market value of their outstanding shares. Size indicates a company's asset allocation, as well as risk-return parameters; in other words, "…it is a reflection of potential growth, and the flip side of that potential is the level of risk"(Minyanville 2011). For example, small market cap companies are likely to experience rapid growth and are more likely to have higher market risk (Lampard et al 2012).

There are varying definitions of large-cap, mid-cap and small-cap mining companies; however, for the purpose of this study Stafford's (2013) rankings for market capitalizations (e.g., large-cap >US$500B+; mid-cap US$5B-US$500B; and, small-cap <US$5B) are used to differentiate between projects. All the companies listed on Chart 18, except Teck Resources Ltd., are small-cap companies. Lampard et al (2012) deem companies with market capitalizations less than US$5Bln (or small–cap) as being vulnerable to risk in relation to capital cost inflation. Lampard et al (2012) write,

> Projects in the hands of smaller market cap companies generally exhibit lower capital intensity, perhaps reflecting more aggressive estimates given the greater equity dilution risk to smaller companies financing large projects. Also, we believe that smaller companies have a strong motivation for their projects to appear as robust as possible in order to attract potential acquisition interest from their larger peers (p.3).

What does this mean for BC projects success? Out of all the projects listed on Chart 18, the companies owning the Morrison and Harper Creek projects have the smallest market capitalizations, as well as high projected capital costs. This could imply that only small market cap companies are interested in projects in BC and as a result, have limited financial resources to develop capital-intensive projects. Perhaps they hope for an acquisition by much larger companies; however, these companies have minimum thresholds and desire large profit margins that equate to the risks of building in BC. Conceivably, this could be a contending factor as to why many of these projects have remained undeveloped for over forty years.

As per Chart 18, the Copper Fox Metals Inc. (e.g., Schaft Creek project) market capitalization is the third lowest of all the projects studied. However, of all the projects listed on Chart 18, the Schaft Creek project has the highest Copper Equivalent (CuEq) production

of 663,325/t a year, as well as projected capital costs (at $15,000/t) of C$9.9B. Does Copper Fox Metals Inc. have the experience as well as the finances to build the Schaft Creek project (see Chapter 8)?

On July 16th, 2013, Copper Fox and Teck Resources Inc. formed a joint venture to explore the development of the Schaft Creek project.[98] (See Appendix 8: Case Study on Galore Creek). This joint venture will ultimately increase the likelihood that the project will get built because Teck Resources has experience building copper mines in BC and their combined market capitalizations is substantial, especially if their share prices continue to rise in value (see Chapter 8).

7.4 Copper price: Supply and demand

World events and technological innovations, as well as discoveries and mines have a significant impact on the supply and demand of copper, thereby affecting it's price (see Chart 1). In this section we will briefly review the fundamentals of copper and review some of the key drivers affecting the price.

From Economics 101, "the consumer is king", whereby the consumer decides what product they want, who they would like to acquire the supply from, as well as how much (Hird 1992). However, as consumer demand changes so does the market! Copper prices fluctuate according to supply and demand. Schodde (2010b) writes, "Prices are an output - not an input. They are driven by supply [and] demand"(p.25). Demand may change in response to price changes, substitute products, wealth and preferences, as well as expectations of future prices. Supply on the other hand may change due to price, production costs, technology change, as well as PEST factors that may inhibit the building of new mines to replenish supply. The relationship between supply and demand is one whereby both strive for equilibrium.[99] However, factors such as world events and technological innovation influence supply and demand, thereby affecting the overall market price of copper.

98 For additional information on the Schaft Creek see the following website: http://www.copperfoxmetals.com.

99 "The equilibrium price is the price at which the quantity demanded of a product is equal to the quantity supplied"(Hird 1992, 47).

7.4.1 World events

Chart 1 illustrates the fluctuation and volatility in the copper price in relation to significant world events. With the onset of World War One, there was an initial drop in the copper price; however, with the increased demand for copper (e.g., ammunition) the price rose significantly to US$9,360/t by 1916 (see Chart 1). Other events such as The Great Depression (1929-1939), World War Two (1939-1945), Recession (1982-1985) and the Financial Crisis (2008-2010) had an effect on the price of copper (see Chart 1).

7.4.2 Technological innovation

Major mining technological innovation (e.g., open-pit, concentration, solvent extraction/electrowinning (SX/EW)) has had a major impact on the price of copper (see Chart 1 and Figure 10). For instance, SX/EW allowed for the recovery of oxide ores in Latin America and US during the 1980's and 1990's that were previously uneconomic (Charles et al 2013) (see Chart 1 and Figure 10) (see Section 9.5). Innovation also allowed for historically uneconomic deposits to become economic quickly through economies of scale (e.g., open-pit and larger earth moving equipment) (see Figure 10). This has allowed for "…a significant structural change in the copper supply to the world market"(Wallis and Chlumsky 1999, 89). For instance, companies faced significant cost savings by creating concentrates rather than shipping ore directly to smelters (see Chart 1). Overall, production costs dropped sharply during the 1990's (see Chart 1 and Figure 10).

7.4.3 New discoveries and production

Figure 11 illustrates how most of the copper found worldwide is contained in several large deposits. Large new copper mines can have a significant effect on the commodity price as the market becomes saturated with supply. As illustrated on Chart 1, in 1990 both the Escondida copper porphyry mine in Chile and the Grasberg porphyry/skarn copper mine in Indonesia came into production. Both mines are large open-pits that annually produce a combined total of 1.05M/t of copper, 165,300/t of gold and 5.227M/oz of silver (Infomine 2013a; Infomine 2013b). Due to the significant increase in copper supply on the market, the price of copper dropped from US$3.22/lb to US$1.25/lb by 1994 (Schodde 2010b). These large, new mines can become new price setters, assuming their production costs are significantly below the

marginal cost of production (Schodde 2010b). What will happen to the copper price when the Oyu Tolgoi open-pit/underground copper mine in Mongolia reaches full production in 2021? Production started the first quarter of 2013 and by the time it reaches full production it "…will generate up to a third of Mongolia's GDP"(RioTinto 2013). The measured and indicated resources for Oyu Tolgoi are approximately 46B/lbs of copper and 25M/oz of gold and the inferred resources are approximately 55B/lbs of copper and 37M/oz of gold (Turquoise Hill 2013).

The effect on the copper price by new discoveries is rarely material and is usually short lived due to the lag time between discovery and production. By comparing Chart 1 and Figure 11, there are similarities between the peaks and valleys of change associated with the influx of copper supply or possible supply created by new discoveries. However, not all discoveries become mines. Until recently, the industry has been discovering deposits more quickly than they are able to mine (Schodde 2010b). This is not to say however, that the total number of copper discoveries is increasing, as they are not (Schodde 2010b). Strang (2007) notes that over a 10-year period (1960–1970) 65 worldwide discoveries occurred, whereas over the subsequent 30-year period (1970-2000) only 56 discoveries occurred. Mines are not being built because they are not 'economical' as per the present and forecasted copper price. Also, geopolitical, technical, social and environmental factors play a significant role in the project's success.

7.5 Copper price: Today's price is the best 'indicator' for tomorrow's metal price!

The success of projects is heavily weighted to commodity price and accurately predicting a price reflective of the first five years of operation. Slade (2000) writes, "…Price is the principal source of uncertainty; cost and reserve fluctuations are second order…Price is a nonstationary random variable; mean reversion is not observed"(p.2). Because a commodity price is so uncertain, miners use a long run or long-term commodity price, in order to substitute the random variable with an expected value (Slade 2000). Deverell et al (2013) state,

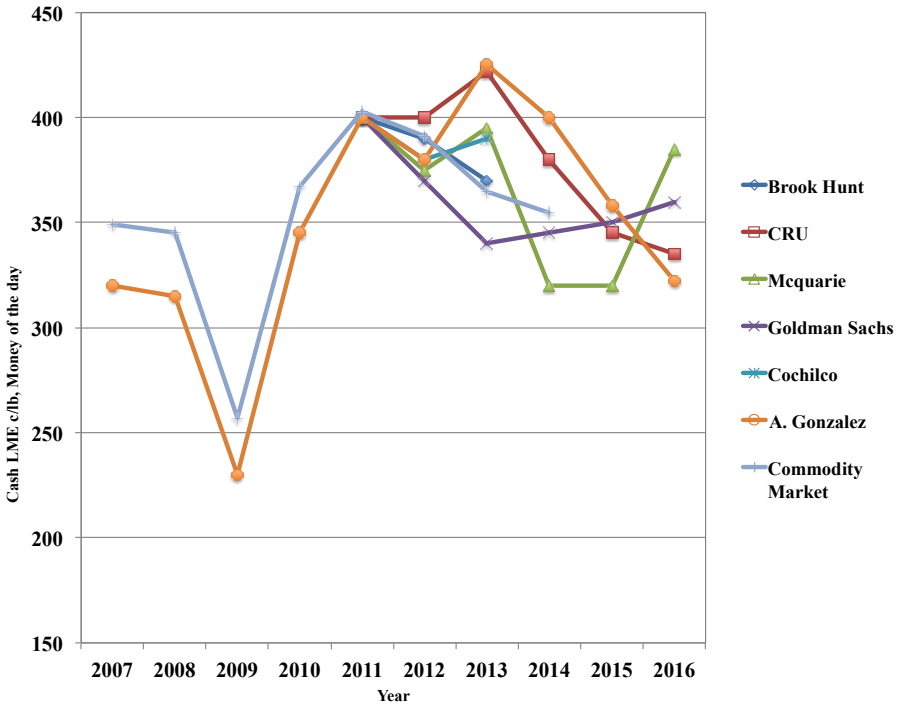
> Long-run price assumptions are a hypothetical construct used to support investment decisions. For producers with disciplined valuation and investment decision-making practices this entails determining a "market-expected" price over the life of an asset as

> a reference point. This approach acknowledges that "market-expected" prices (which are different from the consensus of commodity analysts) also change through time. In other words, these assumptions are not strictly forecasts of future prices at any single point in time (p.4).

Costs are variable using long-run prices, whereas for short-run prices the costs to mine are fixed, at least for the short-term.

Chart 19 illustrates copper price forecasts by world-renowned banking houses from March 2012 to 2016, as well as average LAPP Group market price and price by A. Gonzalez by year from 2007 to April 14, 2014. From 2013 to 2016, there is an overall decline in value in the price of copper, whereby the copper prices range from US$4.00/lb dropping to US$3.20/lb. In 2012, the average price of copper was US$3.913 (LAPP Group 2014). For instance, the forecasts for 2013 (except Goldman Sachs) are above the averaged monthly copper price calculated. There are numerous forecasts on copper prices for the day, month and year on the Internet; however, the pattern seems to be that the majority of the forecasts downward shift prices for the upcoming years. It seems the best indicator of tomorrow's price is today's.

Chart 19 Latest copper price forecasts, March 2012



Source: Modified from Gonzalez 2012; LAPP Group 2014

There has been much debate as to what metal price should be used in project estimates, especially when undeveloped projects require higher long-term price forecasts than commonly used (Strang 2007, Charles et al 2012). For instance, US$1.00/lb used for 2007 is no longer a viable option for long-term pricing today (Strang 2007). In Q1 2013, companies were using the long-term price of US$2.75 to make investment decisions (CIBC 2013). Table 9 illustrates the various long-term prices used by the BC projects studied throughout this thesis. Prices range from $1.65/lb to $3.25/lb. Many times, the long-term price is a 3-year backward looking average, while more sophisticated methodologies can include Monte Carlo simulations.

Table 9 The long-term copper price used by the BC projects studied

Project	Harper Creek	Schaft Creek	Morrison	Prosperity	Mt. Milligan	Red Chris	KSM	Snowfield	Galore Creek
Cu Price $/lb	$2.50	$3.25	$2.97	$1.65	$2.00	$2.20	$3.21	$2.95	$2.50
Date of 43-101	Jan 2013	Jan 2013	Mar 2009	Sept 2007	Oct 2009	Dec 2004	Jun 2012	Apr 2011	July 2011

Source: Generated from AMEC 2011; Merit 2013; WARDROP 2009a; WARDROP 2009b; Taseko 2009; Imperial 2012; Tetra Tech 2013.

7.6 The price of copper versus the cost of production

The Galore Creek project has a high quality feasibility study and is owned by a reputable company. Charles et al (2012) suggests that the project's intensive infrastructure requirements should push the capital intensity for the project to $20-25,000/t. BC projects are expensive to develop and with demands by investors for dividends, miners are facing numerous challenges (e.g., appease investors and limit production) that require commodity price support. Ruff (2013) states,

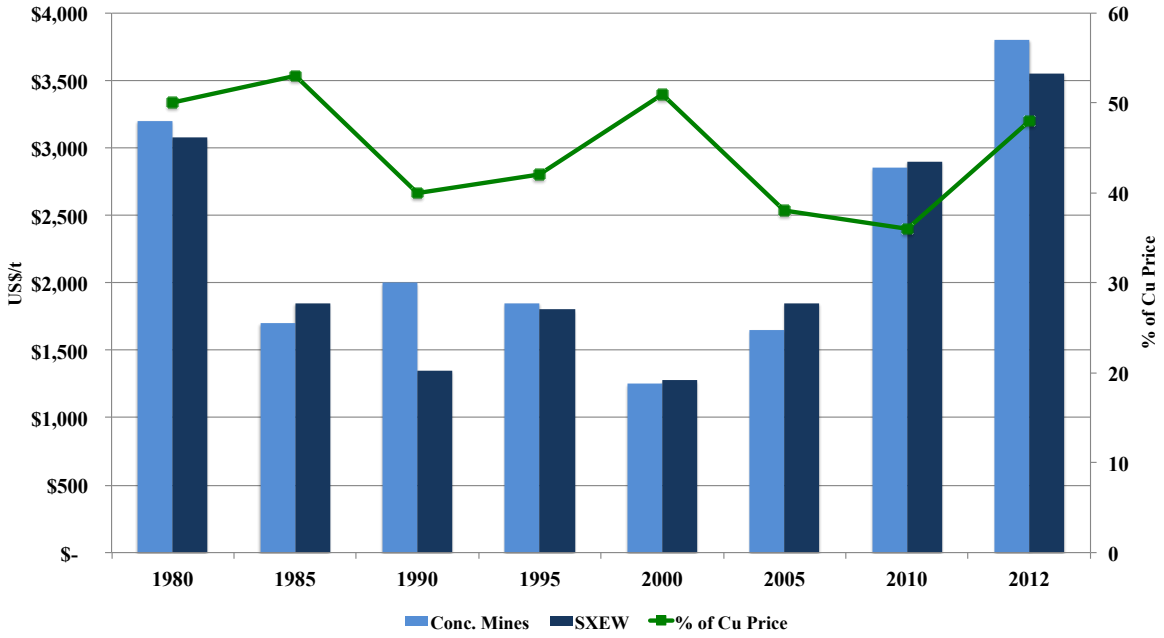
> …the massive costs and risks involved in finding and opening new mines today hints at why copper prices continue to float above marginal cost: prices need to be high enough to provide miners with an adequate return on their investment in costlier and riskier mines…However, if copper prices revert much further toward marginal costs, these projects may become uneconomical and eventually shelved, creating an implicit medium-term price floor.

The marginal cost of production occurs at the point where a producer's operating costs equal the current commodity price. A new project should not be built unless the operating costs

including depreciation and a risk adjusted return are at least below the marginal cost of production. New projects that still have significant depreciation cannot compete with existing mines for financial returns, but can continue to operate so long as their cash operating cost is below the spot price. At this point, depreciation is treated as a sunk cost and the operation will aim to maximize free cash flow.

BC projects have faced this pricing pendulum over time, where the price of copper was below the value required to justify construction. However, between the 1960's and 1980's there were windows of opportunity, whereby projects were built and successfully operated (e.g., meeting project financing or banking covenants such as reserve tail and payback requirements) (see Chart 1, Figure 10 and 11). Chart 20 illustrates how the costs of copper mine production for mines producing copper concentrate and mines recovering cathode in SX/EW plants significantly decreased from the 1980's to 2000. A collapse in cyclical demand as a result of an economic recession in 1982-1983 resulted in this downward shift in real cash costs (Deverell et al 2013). Chart 20 further illustrates the percentage of the copper price used towards costs for concentrate-producing mines.

Chart 20 Mine-site costs[100] at worldwide copper mines, 1980-2012



Source: Modified from Deverell et al 2013, 5

100 Real cash costs and percent of copper (for concentrate-producing mines), US$/t.

After 2000, there was a material rise in costs, to the point where 2012 costs exceeded the real costs dating back to 1980. The cost to produce copper increased from 2000 onwards in real dollar terms, but decreased as a percentage of the copper price, suggesting that copper prices were rising faster than operating costs (Deverell et al 2013). After 2010 however, margins were being squeezed as operating costs were inflating faster than the realized price (Deverell et al 2013).

7.7 Copper price and capital intensity

If project capital intensity increases (as discussed in Section 7.2), then so also should commodity prices, at least eventually. In other words, the long-term price must be reflective of the cash cost to produce the metal, but also of the total cost, including depreciation and a rate of return. Failure for the price to meet these economic hurdles would result in a lack of investment, which in turn would curtail supply until such time that the copper price returned to a level where it would provide a return on investment. In 2000, companies used US$0.90-0.95/lb long-term copper prices for forecasting purposes (Charles et al 2012). Today, companies use a long-term price of around US$2.75/lb, comparable to a threefold increase in capital intensity (Charles et al 2012).

7.8 Conclusion: When the "rubber hits the road"!

Corporations, both big and small, can plan and design to accommodate all operating scenarios and outcomes. However, the only certainty occurs when the mine is actually constructed, and the copper is actually produced and then sold. Uncertainty in regards to copper price and capital costs, as well as company experience, risk tolerance and financing all affect project feasibility. By evaluating the capital intensity of each project and comparing that to the market capitalization, one can readily see how financially capable the sponsor is to carry out construction of their project. The validity of the assumptions and data presented in economic studies will ultimately determine the success of projects. Case study analysis has confirmed that small-cap and medium cap companies are generally financially challenged to build major mines, let alone in BC. Reliant on additional shareholder equity (versus the cash and balance sheet of a major diversified miner) single asset development companies are at the mercy of the public markets to raise the necessary funds to build their mines. A

miscalculated or misjudged capital cost estimate, or even insufficient working capital, may result in the company needing to resort to unconventional financing methods such as streaming/royalty transactions, whereby they are forced to sell the rights of a percentage of their gold production at a lower market price in exchange for an immediate injection of much needed capital. In many respects, these are just forward sales. As discussed in Chapter 5, if a project is world-class, financiers will fight over the investment opportunity, or a major mining firm will sufficiently covet the project to buy it and develop it itself. BC projects seem to have difficulty finding the necessary financing, thereby are not world-class and have to rely on extreme measures to obtain the necessary capital to bring their project into production. Large-cap companies with greater financial strength, experienced staff and more resources are more likely to be successful in building mining projects in BC than under-capitalized juniors or explorers. Due to the relatively low-grade, short-life span, and complex metallurgy resulting in high unit costs, large mining companies have yet to take much of an interest in BC's copper porphyry development projects. Additionally, with many PEST issues such as NIMBY, land access and regulatory challenges, large international companies are reluctant to risk their reputational capital as it could affect their ability to develop a project elsewhere throughout the world.

CHAPTER 8 The 'finance-ability' of copper porphyry mining projects in BC

8.1 Introduction

BC copper porphyry projects are capital intensive and typically cost in the order of $1Bln to construct. A mere 10 percent cost overrun equates to $100M of unbudgeted expenses. As illustrated in the Detour Gold Corporation Case Study (see Appendix 8), cost over runs, or the failure to construct a project on budget (or as portrayed to equity investors) can result in a serious erosion of shareholder value. In this chapter, we will review each project and the financial condition and capacity of the sponsor (owner or parent) to determine the likelihood of the project proceeding through construction. This chapter reviews and addresses the concept of investor "confidence" in regards to the projects studied, as well as looks at other challenges faced by companies in financing a project. In essence, using high level and rudimentary financial metrics (e.g., Market Capitalization (MC), Debt Equity Ratio, Net Present Value (NPV), Discount rate (DCR) and Internal Rate of Return (IRR)) to see if the market is "signaling" that it has the confidence to proceed and successfully build its project (see Appendix 13: Definition of Financial Metrics).

8.2 What does the market say about each company and project?

Table 10 highlights the key aspects of market analyses on the five projects[101] studied and the following discussion provides a high level summary of the implications of the ratios reviewed.

Yellowhead Mining Inc. - Harper Creek Project

- Yellowhead Mining Inc. shows a strong IRR of 23 percent and an NPV to Capex of 0.98x. However, the market is only valuing the company at less than 2.01 percent of the capital required to build the project. Although seemingly a very attractive project, it would appear that the market is questioning the economics of the Harper Creek project as portrayed. Of key concern is that the company must dilute existing shareholders by almost 3000 percent to raise sufficient equity to meet a 60 percent equity contribution to build. In other words, the company would need to raise almost 30 times its current market capitalization in an equity offering just to get to the minimum 60 percent equity required for conventional project financing.

101 This study excludes projects already in construction, Mt. Milligan and Red Chris.

Copper Fox Metals Inc. - Schaft Creek Project

- Copper Fox Metals Inc. has an IRR of 8.3 percent but has an after tax NPV of only $67M (at a $3.25/lb copper price) on an investment of US$3.3B dollars. The NPV alone does not justify project construction risk, as a mere 5 percent cost overrun ($165M) would result in a negative NPV, and therefore the economics are not sufficiently robust to proceed. Additionally, the market is only valuing the company at 2.8 percent of the capital required to build the project. Recently, Copper Fox participated in a joint venture with Teck Resources to help finance further studies and potential development of the project.

Pacific Booker Minerals Inc. - Morrison Project

- The Morrison Project would appear to have very strong financial returns with an IRR of around 24 percent and with an NPV to Capex ratio of 0.87x. However, the market is only valuing the company at less than 12 percent of the capital required to build the Morrison project. In other words, Pacific Booker would need to increase its equity by 501 percent just to meet a 60 percent equity contribution. Raising over 5x your existing capital to build a project is highly improbable. NPV studies confirm that the project is very sensitive to gold price movements and the 2009 Feasibility Study by WARDROP may be too dated to be valid in today's economic times.

Taseko Mines Ltd. - New Prosperity Project

- When making simple modifications to Taseko Mines Ltd. December 2009 feasibility study (e.g., increasing operating costs by 30 percent, Capex by 38 percent and making a proxy to increase the gold and copper prices to US$1250, US$3.00, as well as including an additional $300M of capital for the newly disclosed and designed tailings facility to replace the Fish Lake tailings management facility), the New Prosperity project would appear to be sufficiently robust to justify construction (Langelaar 2014; Bergot 2014). Taseko Mines is well positioned from a financial perspective to proceed with the project as it already has a cash flowing asset in the form of its 75 percent interest in the Gibraltar Mine. Given the projects are operationally similar, in the same geographic proximity, of similar scale, combined with its extensive operating expertise, the project risks are significantly reduced. As illustrated in Table 10, Taseko would have to issue up to 107 percent of its existing shares to fund its 60 percent equity contribution. Although difficult in today's market, it could be done, especially in light of the potential share price appreciation (thereby reducing dilution) they could experience on a positive permitting outcome. Taseko also benefits from strong financial partners in Japan (e.g., Sojitz Corporation, Dowa Metals & Mining Co. Ltd. and Furukawa Co. Ltd.) who would in all likelihood support a financing package in exchange for an offtake agreement, similar to the one at Gibraltar (see http://www.asiapacific.ca/fr/news/taseko-completes-gibraltar-mine-joint-venture-japanese-conso). With a MC to Capex of 55.93 percent (e.g., the highest of all the projects studied), and a 2.04x profitability index, it is not beyond comprehension that a financing package could be put together to support New Prosperity. Given the large size of the operation, alternative-financing structures could include a partial sale of the asset, vendor financing and leases. However, as discussed in Section 6.10 the project is facing significant environmental, legal and

political hurdles to get approved by the federal government.

NovaGold Resources Ltd. and Teck Resources Ltd. - Galore Creek Project

- NovaGold Resources Ltd. and Teck Resources Inc. show that a 10 percent IRR and Profitability Index of 0.39x on the Galore Creek project would be deemed too risky. Currently, the project does not provide adequate economic benefits to justify a construction decision at this time (see Section 7.3.2). In all likelihood, the feasibility study will change materially to reflect a new understanding of the project (see Appendix 8).

As discussed, the sponsor of each project (except New Prosperity) appears to have limited financial capacity or resources with respect to their ability to finance their projects. If there is limited investor confidence (low share price reflective of limited appetite) in the project, it is difficult to get the necessary financing (the equity component is too dilutive to raise) to build the project. Taseko's has the greatest financial capacity to provide the required capital to build its project; however, on a standalone basis, it would still be difficult to finance as the capital outlay is very significant. Without a lot of external support, it would become a "bet the farm" investment decision for Taseko and its shareholders. However, despite Taseko's experience operating mines in BC, as well potential support from strong commercial partners who possibly could assist with financing, New Prosperity faces significant challenges in regards to acquiring approval from the federal government. Taseko also faces significant resistance from local First Nations groups who have concerns in regards to possible environmental degradation of their traditional lands (see Section 6.10). Since 2010, Taseko's stock price has dropped from over $7 to $2.30 in early-2014 (Stockwatch 2014a). At a $7.00/share price, Taseko would only have to issue 70M shares to fund its 60 percent equity, which at that point in time was only 36 percent of its capitalization, versus the 107 percent today (May 15, 2014). With a $7.00 share price, New Prosperity would be a much easier project to advance than at $2.30/share.

Table 10 Market analyses on the BC projects studied

Company Name	Project Name	Shares O/S[102]	Share Price [103]	Market Cap *(C$ mlns)*	Initial Capex	MC/ Capex	60% of Capex as Equity	Shares Issued to raise 60% of equity	Equity Dilution to Build	IRR	NPV8% @ $3.00Cu	IRR	NPV8% @ $3.25Cu	NPV/ Capex
		(mlns)		*Shares x Share Price (mlns)*	*(US$ mlns)*	*MC/Capex*	*MCx60% (mlns)*	*MCx60%/ share price (mlns)*	*New/Old Shares x100%*		*(US$ mlns After Tax)*		*(US$ mlns After Tax)*	*NPV/ Capex*
Yellowhead Mining Inc.	**Harper Creek**	99	$0.17	$17	$839	2.01%	$503	2961	2991%	23%	$819	-	-	0.98x
Copper Fox Metals Inc.	**Schaft Creek**	405	$0.23	$93	$3257	2.86%	$1954	8496	2099%	-	-	8%	$67	0.02x
Pacific Booker Min'ls Inc.	**Morrison**	12	$5.00	$60	$516	11.97%	$310	62	516%	24%	$451	29%	$622	0.87x
Taseko Mines Ltd.	**New Prosperity**	194	$2.35	$455	$814	55.93%	$488	208	107%	21%	$1663	-	-	2.04x
Nova Gold/Teck [104]	**Galore Creek**	317	$3.46	$1098	$2580	42.55%	$1548	447	141%	10%	$995	-	-	0.39x

Source: Generated from Taseko 2009; WARDROP 2009c; AMEC 2011; Merit 2013; Tetra Tech 2013; Stockwatch 2014a

102 All market figures from Stockwatch, as of Market Close May 15, 2014.

103 All market figures from Stockwatch, as of Market Close May 15, 2014.

104 Share price and outstanding shares based on Novagold. Own 50% of project. Can they come up with the necessary money to build the project?

8.3 Other challenges to the 'finance-ability' of copper porphyry mining projects in BC!

8.3.1 Mining investment is a joint venture!

Ultimately mining investment is a really a joint venture between sponsors, stakeholders and financiers, and is rarely done in isolation. Development companies (versus single asset producers (Taseko) or major mining houses with multiple assets or diversified asset bases) trying to build a mine in BC just can't go it alone! Time and money is spent weighing the economics and alternatives, thus involving a variety of parties including shareholders. These parties may differ in regards to their tolerable level of risk, which may cause them to stall their pursuit or outright reject the project. It is truly a challenge to balance bias (e.g., optimism or pessimism), with an equal amount of skepticism in regards to data obtained from drill holes, technical reports and economic studies. In order to secure debt from financial institutions and banks, projects are subject to an additional level of scrutiny by the bank's technical experts and independent auditors to ensure any debt can be repaid under all likely, or envisioned operating and metal price scenarios. Each party wants their say, thereby dictating on how and when a project should be built. Companies and projects are challenged, as stakeholders ultimately determine the 'finance-ability' of their project.

8.3.2 Money is a coward and flees at the first sign of risk!

During economic downturns, financing for junior exploration companies tend to dwindle due to the risk averse climate. A common rule of thumb to describe investor and market sentiment is, "when it is going up, it will go up forever. When it starts to come down, it will go down to zero" (Langelaar 2014). This is no more evident than in the current economic slump, whereby capital raising (in particular IPO's) has declined significantly in 2012 and 2013, and is projected to continue into 2014 (see Table 11). Now into the fourth year of a mining slump, new capital remains extremely elusive and scarce and many junior mining firms with no sources of revenue are facing significant hardship.

Table 11 Capital raising by asset class - proceeds 2007-2012.

	2007	2008	2009	2010	2011	2012
IPOs	21,400	12,406	2,987	17,948	17,449	1,388
Follow ons	66,802	48,751	73,806	49,705	49,745	29,950
Convertible Bonds	12,685	12,238	14,431	5,477	2,365	3,537
Bonds	36,358	38,146	61,016	72,502	83,804	112,539
Loans	110,787	171,691	62,420	183,875	187,059	105,981
Total	**248,212**	**283,232**	**214,660**	**329,507**	**340,422**	**249,394**

Source: Modified from Downham et al 2012, 26

With added pressures (e.g., land access, regulations, First Nations) investment in the BC mining industry faces constant new challenges. Chapman (2012) cites an exploration executive as stating in the 2013 Fraser Institute report,

> …It is not the government that is the problem in B.C., it is the people. We will not invest in a jurisdiction with some 40% of the people voting socialist as we will not get a reasonable return on our investment because of strong unions, high taxes and complex regulations (p.45).

Big miners are known to be risk averse, as large institutional investors who tend to manage pension and investment funds own them. These generalist funds differ radically from the investors in junior mining companies. Greenfield exploration companies are high-risk investments and as a matter of fact could be categorized as speculative investments (Langelaar 2013). For instance, success in a junior company is one good drill hole (commonly called a discovery hole) away and failure is just one missed hole. Investment in junior exploration tends to be discretionary money provided by retail investors who appreciate the risky nature of greenfield exploration (see Section 4.7: Flow-Through Financing).

Chart 1 and 5 illustrates that companies spend money on exploration when the commodity prices are high and curtail budgets when prices are low, especially at times of the 10-year bust cycles in years 2008, 1997, 1989 and so forth. When prices are low grassroots exploration tends to be led by small junior companies, as they tend to be more risk tolerant, whereas majors cut back their exploration budgets. In 2011/2012 Fraser Institute report, a vice-president of a small mining company stating,

> With the global economic crisis exploration companies are going to be much more selective about where and how and if they spend their money, so government policies and the working environment are going to be much more important in the coming years (McMahon and Cervantes 2012, 31).

As the current decline in investor appetite continues unabated, it has now become very difficult for even the small junior companies to finance (see Table 11). Only the best projects are attractive to investors and are able to raise exploration dollars.

8.3.3 Mergers and acquisitions: A sign of the times!

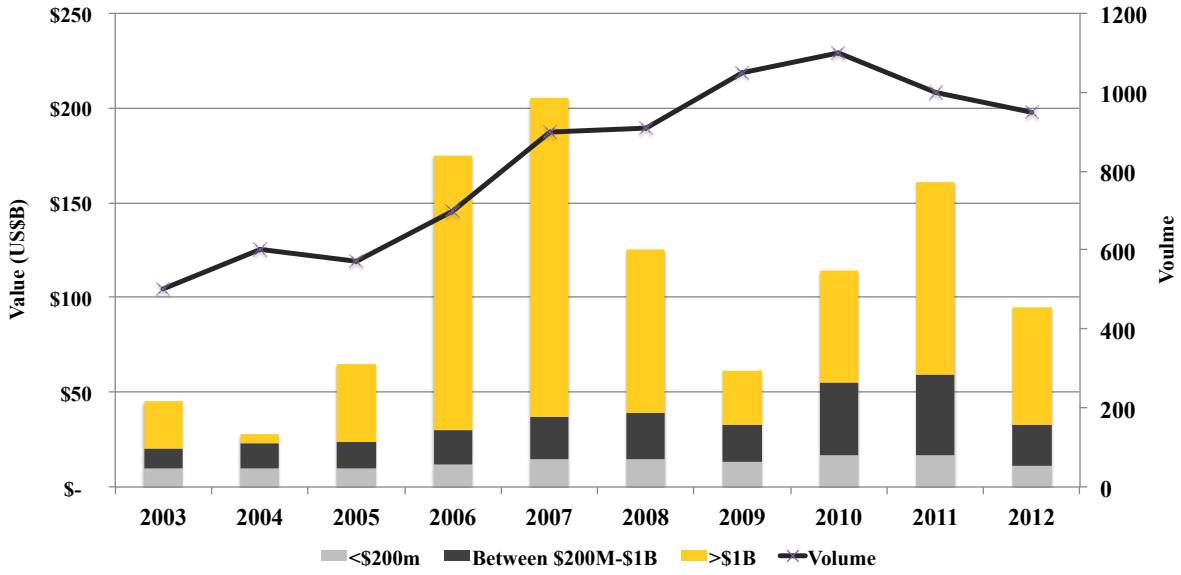
During the 1950s-1960's companies built new mines (e.g., Gibraltar, HVC, Island Copper, etc.), whereas today companies are focused on growth through acquisition, expansion and the restart of old mines in order to maintain ore reserves (see Appendix 5 and 6). This is primarily as a result of the expensive and high-risk nature of exploration. Many major mining firms have expensive cost structures, and find it is cheaper to buy an asset that has been discovered, and substantially de-risked than it is to continually spend exploration dollars on an annual basis with no guarantee of success. Langelaar et al (2007) state,

> It is quicker and less expensive to acquire existing production to meet customer demand than it is to explore, obtain permits and build new mines. …Mergers and acquisitions do not typically generate growth in the form of new production; rather, they consolidate production into fewer hands (p.55).

Chart 21 illustrates the surge in worldwide mergers and acquisitions (M&A) since 2004, with the exception of 2009 in the midst of the financial crisis. During these heady times of acquisition activity, none of the projects studied in BC were acquired during this robust period of high commodity prices and M&A.

With increased consolidation and fewer active companies, exploration activities are curtailed. Large companies want large, long life assets and will invest accordingly. In order to maintain long-term supply, British Columbians must look at the sustainability of building competitive new mines in the province in order to not only maintain supply, but the future of the mining industry in BC. Closing mines also negatively impacts not only the knowledge base and technical expertise of the province, but also the provincial recovery after economic downturns.

Chart 21 Mining company mergers and acquisitions worldwide: Volume and values of deals by size, 2003-2012



Source: Modified from Downham et al 2012, 8

8.4 Conclusion

The lack of investor confidence or appetite is one of the greatest obstacles in acquiring the needed financing to build a project in BC or elsewhere. Without the investor confidence in the company or the project, its equity component or contribution will be insufficient to satisfy even the most basic of project financing thresholds. Without the ability or capacity to raise sufficient equity amongst its shareholders, expanding the financial net to capture and influence stakeholders, business partners and financiers (all with their own stringent requirements, financial rules and thresholds) is nearly impossible. Without participation by all parties, a project will stall or be halted. Alternative financing avenues such as royalty or streaming deals (e.g., forward selling) and Joint Venture partners in order to acquire the necessary financing can have a significantly negative impact on the profitability of a project; however, the providers of this alternate form of capital have higher risk tolerances than traditional banks. Of all the projects studied, the Taseko's New Prosperity project has the highest probability of being financed by virtue of the financial strength, its financial partners and operating team in place adjacent to the project. However, with its seriously diminished share price, financing New Prosperity will still be challenging, however not impossible. However, this project faces significant social and environmental obstacles that hinder its

potential future development. It is extremely difficult to secure financing during downturns in the commodities market, forcing companies to look in-house at existing projects and expansions rather than spending valuable dollars on high risk exploration projects, or new capacity that the market does not think is necessary as a result of the low commodity price.

CHAPTER 9 How do projects get built in BC? Criteria for success!

9.1 Introduction

It is possible to successfully build a mine in BC as various companies have done it numerous times before. The following section is a compilation of key success factors and events highlighting how past projects were successfully turned into mines. Perhaps this knowledge can assist in the future development of copper porphyry projects in BC.

9.2 A window of opportunity needs to be open to build new mines in BC!

Time-series analysis reveals that projects are built when a small window of opportunity opens up. This could involve factors such as commodity price, desire and financial capacity of a sponsor to build, necessity of a sponsor to build, a favorable economic climate or even access to capital. For instance, immediately after WWII there was a period of reconstruction with high metal demand, as well as high real prices of commodities (see Chart 1). Also, there were added incentives to build new mines such as low and stable interest rates, as well as a three-year tax-free period (Newell et al 1995; Taylor 1995). As a result, three new mines (e.g., Gibraltar, Brenda, and Bell Copper Mines) were built (see Appendix 5). These collective factors created a favorable window for mine construction in BC and the industry took advantage of that window. The challenge is in being able to accurately forecast this window of opportunity; however, as a precursor, successful exploration, clear regulations, adequate skilled labor all need to be in place or available, as well as the political support and will in order to take advantage of this opportunity.

9.3 Small versus big miners

There certainly is a difference between small and big miners operating or trying to start-up a new project in BC. Larger companies tend to have more technical resources and experience to handle complex porphyry deposits, optimize plans and mine designs. In addition, they tend to be more experienced, or have the ability to retain experts with significant experience working with the federal and provincial governments. For example, experienced miners such as Placer Dome Inc. (PDI) (who once owned the Mt. Milligan project) had successfully built many greenfield projects; therefore would have greater success in building a new mine in

BC. Alf Hills (2013) commented on why PDI was so successful, in particular on project cost estimation. He states,

> Take a look at Mt Milligan - which I believe had a Feasibility Study which estimated a capital cost of about CAD$900M, last I read the cost was about CDN$1.5B. One of the huge advantages Placer had in building mines was it had a group of in-house people who had done it (successfully) a number of times before - so they understood how PDI built mines and what it would cost when a feasibility study was being done and Placer had a number of mines it had build, and operated so it had a very large database of actual cost information that it could use to estimate - which is a lot more accurate than estimating from first principles.[105]

Smaller mining companies lack the resources to build such internal expertise and therefore, tend to contract out a large portion of the engineering and development of their projects. This reliance on outside expertise could result in biased studies, as the compiler of the data is not charged with ensuring the successful outcome of the project. As a result of this lack of in-house expertise, smaller miners tend to be more susceptible to project and financial risk as well as community relation issues due to limited staffing capabilities.

9.4 Building to full size is possibly less expensive than in stages. There are advantages to starting small!

An alternative strategy to building billion dollar capital projects or mines is to incrementally build them in stages. Start small and as cash flow accumulates and knowledge of the deposit and process increase, invest in subsequent expansions to reach the ultimate desired capacity. Taylor (1995) writes, "Some of the more successful porphyry producers in British Columbia have started small, at substantially enhanced grade, and with gained prosperity and experience have expanded later"(p. 38). Although this may seem more costly, it has some advantages. Taylor (1995) highlights some of the advantages to starting small:

1. The smaller operation functions as a pilot plant;
2. Bottlenecks can be remedied, allowing for opportunities to be recognized;
3. Output can be optimized until the next market downturn; and,
4. Future expansions can be based on operating history (p.38).

105 See Appendix 8: Case Study Mt. Milligan.

9.5 Innovation

Innovation has had a significant effect on the overall industry. Figure 10 illustrates how certain technological events such as open-pit design, processing, geophysical and geochemical techniques and SX/EW influenced the copper supply and price. New porphyry deposits, as well as mineral associations (e.g., gold) were discovered by the utilization of new technology, hence changing the face of porphyry mining in BC (see Section 4.7).

The proposed utilization of 'new' technology on copper porphyry deposits in BC today enriches future possibilities for the industry tomorrow. For instance, Pacific Booker Minerals Inc. has proposed using High Pressure Grinding Rolls (HPGR) for their Morrison project. HPGR consists of two rolls, one fixed and one floating, that crush feed through inter-particle breakage (Pacific Booker 2007). The benefits of using HPGR over SAG mills is as follows:

1. A large savings in regards to energy costs;
2. A reduction in grinding media consumption and operating costs;
3. Expedited equipment delivery schedules; and,
4. The development of a finer product (Pacific Booker 2007, 2).

From an economics point of view, a HPGR circuit costs approximately CDN$9.45M more than a comparable SAG installation (Pacific Booker 2007). However, operating costs are expected to save CDN$0.08/tonne of power (based on CDN$0.032/kWh) and CDN$0.59/tonne on consumables (Pacific Booker 2007). In the case of Pacific Booker, the gross installed power would also be reduced by 3.67MW (Pacific Booker 2007). Assuming a 30,000 tpd operation running 360 days per year, the HPGR would save around CDN$7.2M of operating costs per year, therefore having a payback period of just over one year (Pacific Booker 2007). HPGR has been around since the early 1980s when it was used to crush kimberlite in Canadian diamond mines (Pacific Booker 2007). It was also used in the cement industry. There are concerns by industry in regards to rolls wearing quite quickly; however, there have been recent advances in the technology and it shows a great deal of promise.

There are a variety of different trains of thought in regards to new methods or technology used in the BC mining industry; however, Taylor (1995) writes on an important aspect and he states, "No radical innovations seem likely to improve the competitive economics of British Columbia porphyries. Environmental perceptions might be improved by disposing of waste

or tailings back into pits, although in time something will surely be found wrong with it"(Taylor 1995, 38). As discussed in Section 6.5, BC's competitive advantage is its extremely low power cost, however this is more than negated by the complexity and energy intensity of the metallurgical processes used to extract the copper. A radical new processing technology that could significantly reduce the operating costs of the metallurgical processes used to produce copper in BC would be industry changing.

A campaign seems to be emerging by the Clean Mining Alliance supporting the redesign of proposed open-pit projects into smaller footprint underground mines.[106] A clean mining supporter Monty Bassett (a Smithers-based filmmaker) states, "An underground operation would reduce the impact of the mine on area land, water and wildlife"(Stueck 2013b). There are very few underground copper mines in BC (e.g., Copper Mountain and the New Afton mine), as geology, economics, start-up costs (i.e., high upfront investment) and unit costs are the major drivers that inhibit their development. For example, the AuRico Gold's Kemess Underground (formally know as Kemess North) project is forecasting total unit mining cost using an underground block caving method of US$32.30/t, whereas Mt. Milligan's open-pit has a projected unit cost of US$6.96/t of ore, including stripping (SRK Consulting 2013; WARDROP 2009a). Underground mining costs can be in excess of $100/tonne depending on the technique, whereas open pit mines with vast economies of scale have unit costs of around $2.00/tonne unit cost (MEG 2013). However, underground mining methods have their advantages, in particular a minimum 'visual footprint' and far less waste material (e.g., stripping ratio) than open-pit mining. As discussed in Section 6.8, underground mining (in particular the use of block caving – the least expensive underground methodology) may prove to be an advantage in a province with a high percentage of postmaterialists and anti-mining voters (Thomas 2014). More recently, large, higher-grade copper deposits (i.e., New Afton, Kemess East) have been found deeper underground in BC. Perhaps underground

106 Stueck (2013) states, "The Cleaning Mining project is a follow-up to a successful campaign to stop gas drilling in the Klappan River area in the vicinity of the Spatsizi Plateau Provincial Park, an area also known as the Sacred Headwaters". A three-way agreement was reached between Shell Canada, the Tahltan Central Council and the provincial government, whereby the province agreed not to issue permits for this region and Shell gave up its leases in the area. For additional information on the Clean Mining Alliance see the following websites: http://www.cleanmining.org or https://www.linkedin.com/company/clean-mining-alliance.

mining methods are the future of BC's mining industry; therefore, further research and innovation is required to determine this methods economic and geologic viability in BC.

There is a growth in a Zero Tolerance Acid Rock Drainage Agenda in BC (Steuck 2013b) (see Section 4.4). Changes in provincial legislation, regulation and policies in BC have promoted innovation in regards to managing acid rock drainage (ARD), as well as the development of an ARD Task Force. There is a motion towards backfilling open-pits with tailings to prevent oxidization; however, it renders tailings as uneconomic, as well as negates any possibility of pit expansions or re-openings (See Section 4.4). In addition, pit's can only be filled once created after the ore body is depleted. In a time where companies are seeking expansions and the re-opening of mines, rather than build mines, this option is not currently viable.

Research is being conducted into less environmentally invasive ways to mine in BC and around the world. For instance, 'natural machines' such as bacteria are being studied for their potential to extract metal from ore (Beveridge and Murray 1976:1980; Dunbar (in press)), whereas certain plants are being studied (known as phyto-mining) for their hyper-accumulating ability to absorb metals into their root systems (Anderson et al 1999; Dunbar (in press)). Curtis et al (2011) from the University of British Columbia are researching a method known as 'biomining with bacteriophage' (Handy 2009). They are studying how "…bio-engineered proteins can be used to separate common economic sulfide minerals from waste during mineral extraction"(Handy 2009). These innovations are the way of the future for mining in BC and around the world. Innovation requires a healthy and forward-looking industry as well as government, as the public and private sectors are funding, supporting and providing the skilled personnel.

9.6 Lower processing costs: Is it possible for copper porphyry mining in BC?

Solvent Extraction/Electrowinning (SX/EW) technology was developed for the low cost processing of copper resources. In 1980, SX/EW accounted for only 2.0 percent of worldwide copper mine production; however, by 1989 it had increased to 22 percent (Wallis and Chlumsky 1999). In 1999, costs associated with conventional smelting and refining were

approximately US$0.24/lb, whereas SX/EW was approximately US$0.09/lb (Wallis and Chlumsky 1999). The competitive advantages of SW/EW technology are as follows:

1. Low costs allow for the processing of low-grade material;
2. Typically no need to install or operate a SAG mill, significantly reducing electricity costs and capital costs
3. No need for a beneficiation or flotation circuit
4. No heat transfer;
5. Processing is done on site;
6. No transportation of concentrates is required to a refinery; and,
7. Less water is used in comparison to conventional processing (Wallis and Chlumsky 1999; Kappes 2000).

SX/EW has allowed the processing of low-grade ore to be economical, thereby increasing copper supply and decreasing the market price (see Chart 1).

Generally speaking, SX/EW involves ore being crushed and heaped onto a lined leach pad. Once heaped, the copper containing ore is irrigated with leach solution (e.g., sulfuric acid) in order to dissolve the copper. Leaching can take from two months to several years (Kappes 2000). As the sulfuric acid percolates through the heap, the leachate is drained into a holding pond until it is sent for metal recovery (Kappes 2000). The leach solution is then collected and treated by a two-stage process: solvent extraction (SX); and, electro-winning (EW). SX is a liquid-liquid extraction used to purify and concentrate the leachate solution, whereas EW is an electrochemical process that takes the metal dissolved in an electrolyte and deposits it on to an electrode (Dreier 1999; Kappes 2000).[107] The end result is copper cathode, or copper metal. The copper recovery rates using this method are usually between 60-70 percent; however, there are exceptions.[108] The challenges of SX/EW technology being used in BC are as follows:

1. Physical characteristics of ore; and,
2. Adverse climatic conditions:
    a. Low temperatures (below zero);
    b. Extensive rainfall, diluting the efficacy of the acid;
    c. Wind; and,
    d. Snow accumulation and spring run-off (Witte and Witte 1984).

The ore and gangue mineralogy are vital to leaching kinetics and acid consumption (Dreier

107 For additional information on SX/EW see the following website: http://en.wikipedia.org/wiki/Heap_leaching.

108 For additional information on Heap Leaching see the following website: http://www.greatmining.com/heap-leaching.html.

1999). As discussed previously, the majority of the copper mines and projects studied in BC contain chalcopyrite, a mineral known to leach slowly (Dreier 1999). Dreier (1999) writes, "Chalcopyrite dissolves so slowly that heap leaching is not a feasible recovery method"(p. 7). BC is known for adverse climatic conditions, as it is a province with four seasons. The province faces extreme temperature fluctuations, extensive precipitation (especially in the coastal regions) and wind, all factors that hinder efficient and/or successful use of SX/EW (Witte and Witte 1984) (see Appendix 8: Galore Creek). Usually heap leaching occurs in regions such as Chile, Australia, South Africa, as well as in American states such as Arizona and Nevada which all have favorable climates (warm and relatively dry), as well as mineralogy (Witte and Witte 1984). Currently, there are no proposed copper heap leach projects or mines in BC. A 'dump leach' was utilized by Placer Dome Inc. to treat acid run-off post-closure from the waste dump located at the Gibraltar mine in the 1990's. Smith (2002) writes,

> An interesting case history is the closure of the waste dump for the Gibraltar Mine in British Columbia. The dump began to produce acid post-closure and the remediation was to install as SX/EW circuit. For several years this was the lowest cost copper produced at the mine. Had this been planned as a dump leach, it could have been built as an engineered facility with proper containment, controls and planning. Thus, the copper production could have been optimized and the environmental exposure minimized, probably with a higher overall profit (p.9).

According to Brian Bergot[109] (2013), the SX/EW plant was restarted in 2007 and has been operating seasonally (except for 2013 as the company is reconditioning the dumps). The closest substantial mine using heap leach is the Fort Knox gold mine in Alaska, USA. One of the benefits of using this process is electrical cost savings, as the Interior of Alaska is an expensive place to operate a mine (Lasley 2012). The ability to create a cheaper alternative to process BC copper porphyries could be a game changer for the province and its numerous low-grade deposits. A new technology akin to what heap leaching did for copper oxide deposits would lead to an immediate resurgence in the copper industry in BC.

9.7 Infrastructure

From an infrastructure point of view, BC is known for having low cost and reliable energy - a

109 Brian Bergot is Taseko Mines Ltd. Investment Relations Officer.

key benefit to the mining industry given the high power demands of mines and mills (see Section 6.5). It is also known as the Pacific Gateway given its coastal location and proximity to Asian markets, in addition to its proximity to the USA (MEMPR 2009; Resnick, 2000). The Port Metro Vancouver, the Port of Prince Rupert and the Vancouver International Airport are the closest gateways to the Asia Pacific. It is estimated that C$15 billion dollars will be spent on improvements pertaining to these infrastructures in the near future (MEMPR 2009). BC also has tens of thousands of kilometers of all-weather roads, as well as rail infrastructure connecting much of North America (PWC 2010). A proposed government upgrade on roadways and hydroelectric power in the Highway 37 corridor (Northwestern BC) would provide some of the world's best projects with road access and power (PWC 2010). Relative to the rest of Canada, BC is the closest to the Asian markets and with such advanced infrastructure, BC's competitive advantage relative to the interior or landlocked provinces of Saskatchewan and Manitoba is significant. Exploration and mining costs increase significantly when there is no infrastructure to support mine access.

9.8 Availability of offsite infrastructure?

Offsite infrastructure includes water and slurry pipelines, power plants, transmission lines, roads and ports. Lampard et al (2012) noted in their study of 21 projects that 42 percent of direct costs for the Galore Creek project is allocated to offsite infrastructure costs. Galore Creek is in an isolated region of the province, whereby there is limited infrastructure available and the project requires a 14km tunnel and 70km slurry pipeline (AMEC 2011) (see Figure 4) (see Appendix 8: Case Study Galore Creek). The remainder of the 5 projects (excluding the Morrison project) studied averaged between 8 and 14 percent of their direct costs to offsite infrastructure (Lampard et al 2012). The Harper Creek project is located adjacent to the town of Vavenby, a major highway (#5) and a railway, which ultimately has the lowest offsite infrastructure costs (8 percent) of all the projects studied (Lampard et al 2012). Lampard et al (2012) deem "…projects with <15 percent of initial capital related to infrastructure as being at higher-than-average risk of scope changes"(p.12).

9.9 Other support services available to BC's mining industry

BC has a long history of active mining throughout the province and the industry has reached

out and been supported by a number of communities throughout the province (Lucas 1971; Taylor 1978). As a result, a vibrant and sustainable service industry has developed that supports current, as well as any future exploration and mine developments. "In Vancouver alone there are more than 400 service suppliers to the mining industry" (MEMPR 2009, 11). The sector is also supported by a variety of associations. For instance, two such associations are the Mining Association of British Columbia (MABC), as well as the Association of Mineral Exploration British Columbia (AME BC). MABC has been active in BC since 1905 (Mills 2011). BC is also home to five post-secondary institutions that provide educational opportunities for the mining and exploration industry. These institutions help to support the diverse BC labor pool of 2.4 million (MEMPR 2009). In 2009, WorkSafeBC reported that the mining industry was the safest industry in BC (PWC 2010).

9.10 Government now discourages mine towns!

Avanti Mining Corp's Kitsault molybdenum mine operated off and on from 1967 to 1982.[110] [111] The mine is located 140km northeast of Prince Rupert and is in an area with no road access. Employees could only access the site by plane or by boat from the small community of Alice Arm. As the project proceeded into production, the mine and surrounding work camp/community began to boom and a road was built from the mine site to Terrace (Kitsault 2014). The community of Kitsault was established with the construction of new homes, a school and other municipality buildings, as well as occupied by miners' families. However, by 1982 molybdenum-by-production from copper mines, as well as the recession shifted the supply and demand equilibrium causing the price of molybdenum to drop significantly (Blossom 1998; Kitsault 2014; Newell et al 1995) (see Table 4) (see Section 4.6). Eighteen months after it reopened the mine was closed and the community was shut down (Kitsault 2014). Taylor (1995) writes, "It has long been government policy to discourage mine towns, and most producing porphyry mines have been within commuting distance to existing towns, which then include the mine sites into their property-tax base"(p.23). Projects close to infrastructure, in particular established diversified communities, have a greater chance of succeeding in BC.

110 For additional information on the Kitsault mine see the following website: http://www.avantimining.com.

111 For additional information on the history of Kitsault mine see the following website: http://www.kitsault.com.

An alternative to the mining town model such as Kitsault, is the fly-in/fly-out (FIFO) model. In this model, workers commute on a regular rotational basis to remote mining camps. This model negates the need to expend capital on building homes and communities, although increased operating costs are associated with housing and transportation. In BC, there has been no porphyry mine that has been operated as a fly-in/fly-out (Taylor 1995). There are numerous PEST challenges, as well as a negative reputational capital associated with these types of operations. For instance, an Australia study revealed that FIFO workers had a higher rate of depression, anxiety and sleeping issues as a result of their living conditions in FIFO camps (Jamasme 2014). As a result, the FIFO workers were at a higher risk in regards to taking their own lives or committing suicide (Jamasme 2014).

9.11 Politically stable environments

According to the 2012-2013 Fraser Institute survey, BC is ranked 50th out of 96 jurisdictions in regards to political stability (Wilson et al 2013). Investors see our political climate (e.g., pro or anti-mining legislation and policies, conflict between federal and provincial governments, four year political terms, etc.) as being a mild to moderate deterrent to investment in BC (Wilson et al 2013). The top jurisdictions with only mild deterrents to investment were: New Brunswick, Saskatchewan and Finland, whereas Egypt ranked last at 96th. Other countries with low political stability rankings include: Mongolia (where the government has tried to renegotiate its economic agreement with Rio Tinto on the Oyu Tolgoi project partway through its construction) are vulnerable to lower investor confidence based on their high political risk (Rio Tinto 2014).[112] Despite a significant investment, Rio Tinto threatened to suspend further construction and investment of the project. Also, counties like Kyrgyzstan (where the Kyrgyz government has renegotiated their ownership in the Kumtor Mine with Centerra numerous times, and has tried to frustrate operations with increase environmental conditions with the aim to secure a greater interest in the asset) are deemed less attractive as a result of an unstable government and political policies (Centerra Gold 2014).

112 For additional information on country security rankings see the following website: https://www.cia.gov.

The 2012-2013 Fraser Institute survey also ranks 84 jurisdictions in regards to corruption. BC ranked 12th, whereas the Congo ranked 84th (Wilson et al 2013). Corruption is not as great a threat or deterrent to making investments in BC as is political stability.

Investors seek certainty and need to know that their economics will not be negatively affected by governments unwilling to honor investment agreements and pacts. They seek consistent pro-mining policies that promote exploration and mine development, as well as land access. Key historical events discussed throughout chapters 11 to 17 highlights why BC is not ranked as the most favorable jurisdiction for political stability; however, when comparing the province to other jurisdictions, BC is relatively safe. To accommodate varying degrees of political risk and stability, investors can adjust their discount rate[113] accordingly to compensate for the perceived variations in risk between countries.

9.12 Environmental permitting: "One process, One project?"

Deputy Minister of Mines, Steven Kerr told Resource World's Ellsworth Dickson (2011) in regards to permitting that,

> What we're on to taking into governments is called 'one process, one project' where we're trying to streamline the permitting right from the beginning of the exploration all the way through time, to mine development. One of the things we're facing of course, right now, is we've had a couple of years of tight budget resources, so we're in the process of retraining a number of people, that have been previously in the forest industry and other sectors of government, to do some of the mine permitting so that we can get the kind of resources that we need to move the permits through the system in a very streamlined way (p.7).

Kerr continued by stating, "We used to have about five ministries involved with permitting and now there is only two. In addition, harmonizing the process between federal and provincial government is a high priority for us"(p.7). In the 1960's, it took six months to complete the permit process by a company and today it can take between three to seven years (Chapman 2012). According to the Fraser Institute reports (1997-2013), environmental regulation is one of the top deterrents to investment in BC by miners. A

113 The discount rate is reflective of the required rate of return to compensate for the percieved risk of the project. Therefore, country risk can be accounted for by adjusting the discount rate accordingly.

"one process and one project" certainly would negate lengthy permitting processes, as well as sponsor miners to investment in BC (see Appendix 7 and 8).

As to be discussed in part two of this thesis, designing a politically independent environmental process (e.g., YESAA Process in the Yukon, Canada) [114] may be the best alternative for expediting project assessments (see Section 17.1.3). As to be discovered, federal and provincial power struggles impedes the regulatory process, as do elections. Timing delays not only increase project risk (changes in ideologies, elected officials and technology), but also decrease the time value of money. For example, a project that was approved six months from the completion of its feasibility is worth considerably more than one that has tied up invested capital for a period of seven years.

9.13 Conclusion

There is a narrow window of economic opportunity to build a mine. A confluence of economic, environmental and financial parameters must all occur simultaneously to facilitate a construction decision. This opportunity is a combination of variables that influence one another, as well as the success of the project. Each plays a role in project success; however, other variables such as land access, regulations and politics are also key determinants and are discussed in part two of this study

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114 For additional information on YESAA see the following website: http://www.yesab.ca.

CHAPTER 10 Part 1 Conclusion

10.1 Conclusion

Copper is of vital economic importance. It is the third most consumed metal worldwide and in many respects is a barometer of the economy. Copper-gold is the primary geology found in BC and the province is Canada's largest producer of copper (MABC 2013a). There has been a long history of copper-gold porphyry mining in BC and with the strong worldwide demand for copper, it is a vitally important component of the natural resource industry and for the future of resource extraction in the province.

BC is known for its abundance of copper-porphyry deposits and has often been promoted by mining lobby groups and politicians as having world-class deposits. Of the seven BC copper porphyry projects studied, all had publicly disclosed economic studies that showed seemingly favorable economics and yet only two have made it to the financing or construction phase. Additionally, the projects were discovered between 20 and 40 years ago and five have failed to reach an investment or construction decision. Why?

Porphyries are the second most abundant copper deposit worldwide; however, they tend to be amongst the lowest grade by virtue of their geology and BC's copper porphyries are no exception. The Red Chris project (currently under development) ranks 50th in size in terms of insitu copper out of a group of 566 projects. Although relatively large in size, BC copper porphyries are not amongst the largest in the world. Grade, a primary driver of economics is a key component of deposit quality. BC copper porphyries tend to congregate around a 0.30% grade, and when ranked against worldwide deposits, are in the bottom decile of the cumulative grade curve. When compared to copper deposits worldwide, BC's copper deposits rank as modest at best and are not really world-class, although all the studied projects has at least one world-class attribute.

BC copper porphyries have relatively complex metallurgical processing requirements compared to other deposit styles around the world. Milling, flotation and smelting circuits are an order of magnitude more expensive to construct and operate than deposits amenable to heap leaching with SXEW. Additionally, their operating costs are also significantly higher on

a unit or per tonne basis. Although BC has amongst the lowest power costs of any of the copper producing jurisdictions, this competitive advantage is lost due to the increased power consumption requirements of the metallurgical processes required to extract copper from the sulphide style mineralization. The power consumption component increases exponentially around the grades commonly found in BC and ultimately negate any competitive advantage that BC's low power costs provide. Additionally many of BC's porphyry deposits are located in geographically isolated areas, which experience a wide range of seasonal climatic changes. All of these factors result in increased capital costs as the infrastructure in the region is limited, albeit the provincial government is working to improve it with the construction of the Highway 37 Northwest Transmission Line to the "Golden Triangle".

The discovery of gold-rich calc-alkalic porphyry deposits, led to a resurgence of exploration in the province, resulting in several new discoveries. However, with the exception of the now depleted Kemess South mine, only Mt Milligan was constructed. The true copper-gold porphyries remain unfinanced.

A review of the publicly disclosed economic studies of the projects revealed most may be subject to some degree of optimism bias with respect to capital cost and operating costs. With capital intensities below those forecasted by existing major mining houses with up-to-date databases, with operating costs below those of higher grade, and currently operating mines, it is understandable that investors are skeptical of the desktop studies providing superior economics to existing operations in the province.

A key attribute of the majority of the projects studied, is the fact the owners or sponsors of the projects are relatively under-capitalized junior exploration or development companies, not established mining firms with existing operations. Are the projects not being built because the companies are under-capitalized and lack the financial capacity to execute? Could it be that the major Canadian and International mining houses find the projects sufficiently unattractive that they have ignored them, or cast them off, only to have the junior developer pick them up? Major mining firms discovered many of these deposits over 40 years ago. If these projects were sufficiently large and economically attractive, why did the major mining houses not retain them or why are they not buying them up to develop them?

The history of copper porphyry mining in BC illustrates that 'timing' is vital for project-to-mine success. A great number of factors, actors and sectors need to come together in order for a large, low-grade copper porphyry deposit to be economically viable. This window of opportunity involves a variety of variables; however, project success relies heavily on geology, commodity price, byproduct credits, infrastructure and economies of scale, as well as experienced miners. Without these primary requirements, all other variables are somewhat irrelevant. Other variables include: political support (e.g., supportive regulations, exploration, taxation, etc.), land access (e.g., parks, First Nations, etc.), low processing costs (e.g., energy, etc.), innovation, foreign investment, exploration (e.g., avoid discovery drought), skilled labor, smelters (e.g., lower costs, etc.), and amalgamation, as well as SLO (e.g., acquired community consensus to build, etc.). The growing environmental or anti-mining movement (e.g., Green religion, NIMBY, etc.) certainly adds complexity to building mines in BC; however, it also motivates industry to develop and use new technology to lessen mine footprints, as well as lower the companies overall costs.

Despite all these challenges, the low grade and high cost Mt. Milligan project was recently put into production, albeit with a more than 65 percent capital cost overrun of US$615M. Mt Milligan was built due to an alignment of a number of very favorable factors and some innovative designs. These factors included a significant and relatively sudden rise in both copper and gold prices, which in turn generated investor demand for new projects, therefore providing financing appetite. In addition, a smaller footprint design (e.g., experienced miners involved with the project), limited land access issues (e.g., no parks, support by First Nations etc.), political and industry pressure to get a new mine built in BC (e.g., last copper mine built was in 1997), and Thompson Creek's need to diversify from being a pure play molybdenum producer to a more diversified miner, provided for a motivated buyer and builder. This project truly defines the notion of success, as it had to overcome a variety of obstacles in order to become an operating mine. However, from a political standpoint, this project is a public relations gem as it required very little infrastructure, as well as had the least amount of resistance by community stakeholders. It showed investors that the province was indeed open for business and that new copper mines, albeit gold-copper, could be built in BC, even after a 15-year drought in new construction.

The uncertainty revolving around commodity prices and the boom and bust cycles creates the greatest challenges for industry. BC copper projects are very price sensitive as they are low grade, by-product dependent and therefore a slight drop in metal prices can result in projects failing to be economic. The first step in the project evaluation process is the economics. If the economics cannot withstand the requisite stress testing of financing, the project will not proceed regardless of government, First Nations or permitting issues. The majority of the BC copper porphyries studied, do not appear to be sufficiently robust, or do not appear to have a sufficiently strong sponsor to ensure their "finance-ability". Regrettably, the seemingly most robust project with the strongest parent, Taseko's New Prosperity Project is mired in environmental, First Nation, and other stakeholder opposition, and therefore we will now delve further into the social and political aspects of mine design and construction in BC.

PART 2 POLITICAL ANALYSIS

The second section of this thesis analyzes the political factors, actors and sectors that ultimately have influence over mineral policy and development in BC (see Figure 12). Despite the ramifications of poor economics, BC copper porphyry projects face other significant challenges as a result of decisions made by the provincial and federal governments, which include political parties, leaders and activists, as well as by the media, voters, NGO's and First Nations. Using Factor-Actor-Sector (FAS) and PEST analysis, along with time series analysis (1850 to 2013) allows for the exploration of causal relationships between actors and factors that influence mineral development in BC. In particular, political cleavages are studied illustrating who may support or oppose mineral development, thereby providing insight into the characteristics of BC voters and their tendencies towards particular policies. Time series analysis demonstrates a series of themed progressions throughout time, which ultimately have influenced mineral policy resulting in today's mineral development landscape. This historical data is organized by the governing party of the day (e.g., W.A.C Bennett, Social Credit, 1952-1972) and highlights on four deterrents to investor confidence: (1) First Nation land claims; (2) Environmental movement and protected areas; (3) Regulatory duplication and inconsistencies; and, (4) Provincial, Federal and International relations. To conclude, SWOT analysis reveals the province's strengths, weaknesses, opportunities and threats in regards to future copper mine development in BC.

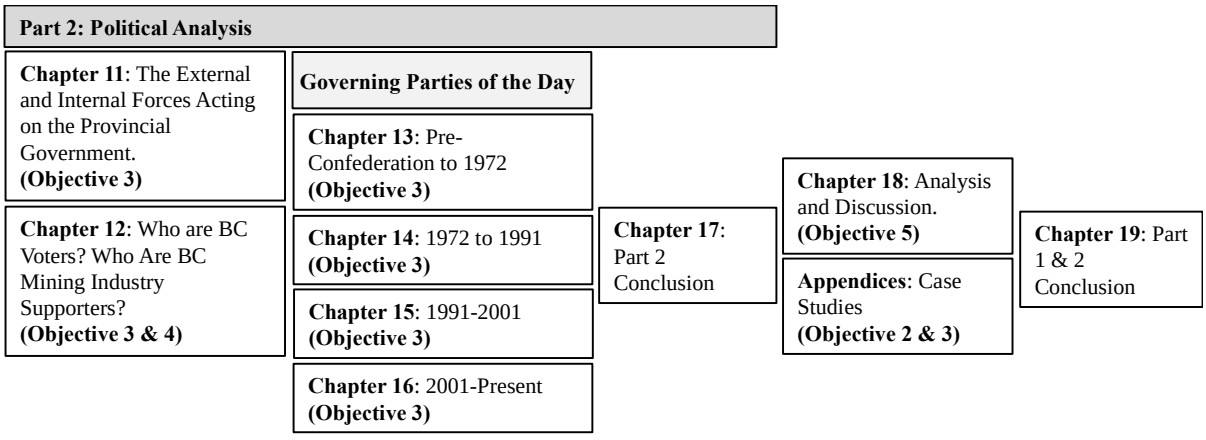


Figure 12 Part two methodology road map

CHAPTER 11: The external and internal forces acting on the provincial government

11.1 Introduction

What factors, actors and sectors influence mining in BC? This chapter briefly discusses the external and internal forces acting upon the provincial government, which ultimately influences mining and mining policies in BC. It is a preamble for the upcoming chapters that highlight and discuss key historical events as they pertain to each subsequent premier and party from 1952 to 2014. The forces discussed are: the federal government, the courts, opposition parties, activists, interest groups, as well as corporations. The formal structure of the provincial government is discussed in Appendix 14. The media is covered in greater detail in Appendix 12; however, it is important to note that no administration can ignore the media. Opposition parties are well known for utilizing the media to try to alter government agendas. The voters are covered in greater detail in Chapter 12.

11.2 The Federal government

The federal and provincial governments increasingly have overlapping jurisdictions over public policies (e.g., environmental standards, etc.). For instance, BC's mining industry is in the heart of a jurisdictional battle with the two levels of government in regards to environmental standards and the environmental assessment process (see Appendix 7). The New Prosperity copper-gold mining project in BC exemplifies this struggle. The provincial government (through the environmental assessment process) has approved the project; however, for the second time in the last two years the federal government has disapproved the project based on the project's potential environmental impacts. Out of all the projects studied, the New Prosperity project is the most advanced and most likely to be financed. The project is in a region that has been decimated by the pine beetle; and, many of the local residents want the project built. However, the project is in a region where First Nations treaty and land claim issues are not settled, as well as in sensitive grizzly bear habitat. There are a host of issues with respect to this project; however, the New Prosperity project seems to be a part of a jurisdictional tug-o-war that may ultimately be settled by the Courts.

The federal government's "power of the purse" to restrict provincial governments budgets is significant to the electorate in BC (Morley 1996, 154). The fiscal checks and balances of the

federal government have a significant impact, as the province receives less money for such things as social programs.[115] This tug-of-war can boil over into all aspects of the economy, including the BC mining industry where projects such as New Prosperity are shrouded in territorial debates. Morley et al (1983) write,

> British Columbia's position in federal-provincial relations necessarily goes beyond simple bilateral intergovernmental interaction. The reality is rather complex triangular interaction among two jurisdictions and the dominant resource industries. The crosscurrents generated by these industries cause the province to take a tack all its own in the conduct of intergovernmental relations (p.275-276).

11.3 The Office of the Ombudsman and Auditor General

The Office of Ombudsman is an "officer of the provincial legislature" that is independent of political parties and government (Ombudsman 2014).[116] The office was created to ensure that government policies and actions "…are fair, reasonable, appropriate and equitable" (Ombudsman 2014). "The Auditor General is a non-partisan, independent auditor of the legislative assembly in BC"(BCAuditor 2014).[117] They conduct audits on how well the governments are managing responsibilities and resources (BCAuditor 2014). In July 2011, an Auditor General report[118] criticized the BC Environmental Assessment Office (EAO) on failing to follow-up on compliance at mines, large power plants, etc., as well as ensuring accountability by companies who fail to meet or maintain required environmental standards (CBC 2011). The Auditor General made six recommendations:

1. Ensure commitments are clearly written in a measureable and enforceable manner;
2. Continue to work with the Ministry of Environment to finalize a policy framework that will provide provincial guidance on environmental mitigation;
3. Clarify the post-certification monitoring responsibilities and compliance mechanisms for each commitment;
4. Develop and implement a comprehensive compliance and enforcement program that includes an integrated information management system to monitor project progress

115 In 1995, the BC government imposed a three-month waiting period for welfare on those immigrating to BC (Morley 1996). Feeling this was against national standards, the federal government withheld certain transfer payments owed to the province and as a result, BC went to court to try to get the funds owing (Morley 1996). This example illustrates the jurisdictional challenges and power struggle between the provincial and federal governments, as well as the importance of the courts (who interpret and make laws) in keeping the two governments in check.

116 For additional information on BC Ombudsman see the following website: http://www.ombudsman.bc.ca.

117 For additional information on BC Auditor General see the following website: http://www.bcauditor.com.

118 See the following website to find the Auditor report on the EAO at: http://www.bcauditor.com/pubs/2011/report4/audit-bc-environmental-assessment-office-EAO.

and ensure compliance;
5. Conduct post-certificate evaluations to determine whether environmental assessments are avoiding or mitigating the potentially significant adverse effects of certified projects; and,
6. Provide appropriate accountability information for projects certified through the environmental assessment process (CBC 2011).

By September 30, 2012, the EAO had implemented four of the six recommendations (BC Newsroom 2012). Both the Ombudsman and the Auditor General are examples of powerful external forces acting on government and their policies. They measure, monitor and act on policies and actions that are unfair, unreasonable, inappropriate and inequitable to the BC populace.

11.4 Corporations

The role of corporations as an external force involves partisanship, power and party donation. Corporations who feel that a particular party will support their economic mandates will publicly support that party. For instance, at a meeting that included Patty Moore, Chair of the Mining Suppliers Association of BC (MSABC), and Liberal leadership candidate Christy Clark, Clark "…made it very clear that she believes it is critical to recognize and support the natural resources industries, including metals mining, oil & gas and forestry"(MSABC 2011). Moore's response to Clark's beliefs,

> It is not my place to suggest, one way or another, how anyone should vote for the leader of the Liberal or NDP parties, or which party should be chosen in a provincial election...But we do feel we need to inform those with a vested interest in the mining industry, which candidates are our supporters (MSABC 2011).

Mining companies also have significant political influence due to the long-established concentration of mine ownership in BC amongst a small number of mining companies (Morley et al 1983). Between 1972 and 1975, it was the actions of these companies and their influence that contributed to the NDP's 1975 defeat (see Section 14.2).

In 2013, the Vancouver Sun newspaper investigated how much money corporations donated to the NDP and the Liberal parties between 2005 and 2012 (Culbert and Skelton 2013). They found that the Liberals collected $76 million ($46 million from corporations) and the NDP collected $40 million ($2 million from corporations) (Culbert and Skelton 2013). Currently,

there are no regulations in BC on how much a corporation, a union or even an individual can donate to a political party (Culbert and Skelton 2013). However, during the 2012 election there was a significant increase in donations to the NDP, with the polls indicating that party leader Adrian Dix could win the election (Culbert and Skelton 2013). Adrian Dix received the greatest amount of donations by individuals ($28 million versus $21 million for the Liberals) who wanted to level the playing field by only allowing individual donations in upcoming elections (Culbert and Skelton 2013). Francesco Trebbi (an associate professor of economics at Simon Fraser University) states, "There is definitely a correlation between how much money a candidate raises and how well they do at the ballot box"(as cited in Culbert and Skelton 2013).

Carole James (former NDP opposition leader) states, "I think money can influence politicians and politics. I think there is both a perception and sometimes a reality that the largest donors get the decision made perhaps faster than someone else"(as cited in Culbert and Skelton 2013). Taseko's CEO Russell Hallbauer and the company have donated $110,000 to the Liberals since 2009, as well as an additional $5,000 to Mines Minister Bill Bennett to go to Ottawa to lobby the federal government on their behalf (Stockwatch 2014a). Taseko's New Prosperity project has struggled to get federal government approval despite receiving provincial approval in 2010. On January 6th, 2014 Stockwatch News published an article titled "Taseko's strong ties to Clark's Liberals" which is an excerpt from the original Vancouver Sun article posted on January 4, 2014 (Stockwatch News 2014b; O'Neil 2014). The article highlights the company's donations to the Liberals; however, it also briefly highlights Taseko's "corporate heft" which could evoke thoughts on "incongruity" in regards to provincial approval and not federal approval (Stockwatch News 2014b; Kolenko 2014b). In February 2014, Taseko made a $1.5 million donation towards a new mental health facility at Vancouver General Hospital (VGH) (Kolenko 2014b).

11.5 Party activists or grassroots politicians

Party activists are the "…individuals who populate the party organizations, give them ideological content, and choose and constrain the leadership that carries the partisan battle to the wider electorate"(Blake et el 1991, ix). Essentially they are "…a community of

believers…" "…who stand between the politicians and the electorate"(Blake et el 1991, 17; ix). They work behind the scenes to elect party leaders, nominate candidates, help shape party direction and governing style, as well as work in the election campaigns (Blake et al 1991). During elections they canvas voters, raise funds, recruit supporters and oversee polling stations (Blake et al 1991). Blake et al (1991) write, "…convention delegates are individuals who have a well developed understanding of their party and the individuals who offer to lead them"(p.92). By looking at party activists, a further understanding on behind the scenes influences on policy direction and decisions can be obtained.

Between 1986 and 1987, Blake et al (1991) surveyed 340 Social Credit activists, 373 NDP activists and 90 Liberal activists who attended leadership conventions. They also used mid-1970's data from Norman Ruff to look at values and beliefs of the people "…who drive the system…"(Blake et al 1991, 13). They discovered that:

- "…Social Credit activists are better educated, wealthier and less diverse in terms of ties to national parties"(Blake et al 1991, 14);
- NDP activists are "…more middle-class, white collar and professional"(Blake et al 1991, 14); and,
- Liberal activists are older, professional and upper middle-class. For instance, the Liberal's have the largest number of university-educated activists (Blake et al 1991, 26-27).

How would the competing (e.g., leaders, voters and activists) perspectives affect party ideology, policy positions and the overall party organization? David Butler (1960) suggests that party activists are more ideological and less accommodating than party leaders and voters (as noted in Blake et al 1991, 123). Therefore, with the activist's central role in party leader choice, as well as their vast array of political duties within the party, the activists have a pivotal role in directing leadership and shaping policy (Blake et al 1991). Activists therefore hold a significant amount of power and are very prominent actors in the BC political system. Blake et al (1991) also discovered from the survey on convention delegates that:

- Conventions are like family reunions, up to 25 percent of the delegates were related to one another (p.23);
- The parties have stable activist membership over time (e.g., after 1972 the Liberal party became practically non-existent; however, the activists stayed and persisted) (p.23);

- Despite BC's level of immigration, most of the activists are long-term residents of BC (p.28);
- Conventions are governed by well-educated, middle-aged, affluent males (p.22); and,
- The socio-economic profiles of activists remain consistent over time (p.25).

The activist's dedication to their party illustrates the long-term standing of party ideology, public policies and orientation along the political spectrum (Blake et al 1991). This also demonstrates that party leaders come and go, but the activists stay and build their party in accordance to their mandates. Understanding the activists role in BC, illustrates the complex nature of the political system, as well as the roles in which their attitudes and opinions play in influencing the pattern of change, such as polarized party competition.

11.6 Non-government organizations

The complexity of today's governance has given rise to the growth in non-governmental organizations (NGOs). NGOs contribute to the development of policy and assist in placing issues on the political agenda. They also provide a medium in which the audience feels connected to the state, as political parties are "…no longer the pre-eminent actors in government…" and are seen by the electorate "…as distant and unresponsive"(Meisel and Mendelsohn 2001, 171). NGO's consist of interest groups, lobbyists and think tanks.

11.6.1 Interest groups

Interest groups are audience members who are interested in participating in political activity (Meisel and Mendelsohn 2001). Interest groups (e.g., charitable organizations, civil rights groups, associations) are usually voluntary and are involved in a limited number of issues (Meisel and Mendelsohn 2001). They publically promote their cause and are less willing to compromise with opposing groups (Meisel and Mendelsohn 2001; Thorburn 2001). Pross (1975) states, "Interest groups are organizations whose members act together to influence public policy in order to promote their common interest"(p.2, as cited in Thorburn 2001, 51). There are two types of interest groups: institutional and issue-oriented groups.

Institutional interest groups have sufficient resources to use their direct access to media to influence public opinion, especially through advertising during election times. However, issue-oriented groups with limited funding often resort to public confrontation to convey

their message (Thorburn 2001). The advantage of small issue-oriented groups is that they can easily rally public opinion; however, governments tend to work more with institutional groups who have reliable sources of information (Thorburn 2001). Thorburn (2001) highlights institutional groups by stating,

> The size of the membership, the control of financial resources, the monopoly of technical knowledge, the prestige of the group's leaders and willingness of the group to cooperate and to avoid outright confrontation are important elements in gaining recognized status within government (p.52).

The most important consideration in regards to interest groups is that they serve as a warning to the political system (Thorburn 2001). For instance, issue-oriented groups are known to act as "social barometer," whereby issues that may not have been recognized are brought to the forefront by these organizations (Thorburn 2001, 53).

In the early 1900's, the earliest social movements sprang to life in BC. For instance, the 'impossiblists' wanted to transform capitalism and the Industrial Workers of the World found support in logging camps and mining towns (Resnick 2000). By the mid-to-late 20th century, new social movements were occurring, whereby noisy and attention getting techniques such as protest demonstrations, guerilla theatre[119] antics and public confrontations were used (Thorburn 2001). Ultimately, BC became a hotbed of interest group activity and the most radical student movement was associated with Simon Fraser University (Resnick 2000).

During the 1970's, Greenpeace was born in BC, which changed the face of the province's social movements and in the way corporations and governments do business (Resnick 2000). In the 1990's, protests against clear-cutting ensued amongst loggers, First Nations and environmentalists drew international media attention to how BC manages its forests (Hayter 2000) (see Appendix 8: Case Study Clayoqout Sound). In 1997, the anti-APEC[120] demonstration at the University of British Columbia resulted in the Vancouver police using tear gas to subdue the protestors (Resnick 2000). This resulted in an expensive public inquiry into the rights of activists and activism in BC and how authority is used to manage large protests, especially when an international delegation is involved. Overall, interest groups play

119 For additional information on guerilla theater antics see the following websites: http://en.wikipedia.org/wiki/Guerrilla_theatre and http://www.feministactivism101.com/2014/03/performance-activism-and-guerilla-theatre.html.

120 Asia-Pacific Economic Cooperation Summit.

a significant role in BC's political process, as well as in how we view biodiversity, sustainability, preservation and conservation in relation to the province's natural resources.

11.6.2 Lobby groups

Lobbyists are usually consulting firms hired by groups or individuals to influence decisions made by legislators or regulatory agencies. Advocacy groups, government officials, fellow legislators, corporations and private sector groups also act as lobbyists in BC. Lobbyists such as the Mining Association of British Columbia (MABC) tend to work with government to sort out the details of policies (Kristianson 1996). Organizations or citizens can hire a lobbyist to communicate their ideas to the government (ORL 2012a). Lobby groups provide the government with a wide range of evidence, perspectives and direction on public issues (ORL 2012a). The BC Office of the Registrar of Lobbyists (ORL) summarize the role of lobbying by stating,

> In BC, to "lobby" means to communicate, for payment, with a public officer, in an attempt to influence one of several articulated outcomes, including the introduction, defeat or amendment of legislation, the awarding of a contract, the privatization of government services, or the development or amendment of a government program, policy or directive (ORL 2012a, 3).

Lobby groups have been around since the mid-1800s, in particular in Victoria where the first governmental institutions were formed (Kristianson 1996). An example is the Vancouver Board of Trade, which was formed in 1891. Other groups included the Rossland Miners Union and the Miners and Mine Laborers Protective Association. In 1974, the Mining Association of BC (MABC) joined forces with industry to protest the NDP government's Bill 31 (the Mine Royalties Act). The group brought thousands of people to Victoria to protest Bill 31, successfully bringing media and public attention to their plight. They also contributed to the growing dissent against the Dave Barrett NDP government.

Only recently has there been a requirement by government for lobbyists to register (under the Lobbyist Registration Act (LRA)), in order to minimize the effect lobbyists have over government (ORL 2012b). Key features that are made public as a result of the new Act are: "…who is being lobbied, on what subject matter, on whose behalf, toward what outcome and whether the client or organization is receiving any government funding"(ORL 2012b, 1). In

January 2013, there were 893 registered lobby groups (who are mostly based in Vancouver) active in BC.[121]

11.6.3 Think tanks

During the 1990's, cutbacks to the civil service, as well as the ever-growing turmoil in power and belief systems sponsored the growth in private think tanks such as the Fraser Institute and C.D. Howe (Meisel and Mendelsohn 2001).[122] Meisel and Mendelsohn (2001) write, "This raises serious issues for democratic governance, as the agenda for policy may increasingly be generated by private organizations responsible to their sponsors, rather than publicly accountable organizations, like parties, accountable to the electorate"(p.172). McGill University (2012) defines think tanks in the following statement:

> Think tanks are organizations, institutes or groups involved in research and advocacy in a range of fields including social policy, political strategy, economy, science and technology, industry, business and national defense. Many think tanks are non-profit organizations; their funding may come from governments, businesses or private advocacy groups, or from consulting and research work they engage in.

A think tank's mandate is to produce policy suggestions to government while trying to maintain a 'neutral' position despite having perhaps their own "…distinct political point of view"(Meisel and Mendelsohn 2001, 172). In a way, think tanks act like lobbyists. For instance, the Vancouver-based think tank, the Fraser Institute, is "…a prominent voice in BC's public-policy playing field"(Carlson 2012). Since 1974, they have been quantifying government policies and their performance, as well as according to Carlson (2012) "…successfully surviving harsh criticism". For instance, Jane Ecker who serves on Ontario's Progressive Conservative cabinet comments on the Fraser Institute's potential power after the think tank published a report on the province's fiscal situation just prior to an election. She states, "The sense was that they could shape people's minds and drive opinions"(as cited in Carlson 2012). Nick Veldhuis, the president of the Fraser Institute responds by stating, "If you can change opinions and educate Canadians about what works and what doesn't work, then ultimately filters down into policy. Politicians react to what people think"(as cited in Carlson 2012).

121 An up-to-date list on lobby groups in BC can be found on the following website: http://www.lobbyistsregistrar.bc.ca.

122 An up-to-date list on think tanks in Canada can be found at the following website: www.mcgill.ca/caps.

11.7 Conclusion

The formal government structure hides a complex level of hierarchy, whereby (despite the public believing the opposite) the premier actually holds very little power in regards to policy decision making in BC. Party activists play a large role in the policy making process, as do the BC voters. Since the time of Confederation, there has been a rapid social and economic transformation throughout the province, which has created for the average citizen a very complex political environment. In order to be heard, citizens have turned to the media, the federal government, the courts and the opposition parties, as well as the activists and interest groups to become informed and educated on political matters. These internal and external influences have an impact on BC's political process, as well as on the development of the province's political and economic strategy.

CHAPTER 12 Who are BC voters? Who are BC mining industry supporters?

12.1 Introduction

This comparative study is on voters and their voting behavior in BC. The focus of this time-series study is primarily on the period from 1952 to 1991, which is best known as the period of polarization. BC has had a long history of polarizing opinions and throughout this study a theme of dichotomies such as free enterprise versus socialism, left versus right, materialist versus postmaterialism, individualism versus collectivism, and environmentalism versus resource development emerge. According to Resnick (2000), BC is known as the region that has opposite views on almost everything. Therefore, how will these opposing views impact the BC mining industry?

The above dichotomies are also known as cleavages.[123] Bornschier (2009) writes on the importance of cleavages and he states, "One of the great appeals of the concept thus lies in its ability to link individual political behaviour to macro-historical processes, and to make sense of the way "critical junctures" may shape politics in path-dependent ways for decades". The understanding of 'critical junctures' are vital to this study's success, as are the voters who tell their story by voting for a particular party at each provincial election. Each elected party paves the way for a certain type of economic development process, accompanied by policies that are, or not pro-mining; however, it is the voters values influenced by the media, unions, religion, etc., that ultimately drive them to their choice. Shively (1979) states, "The party itself is not a guide to voting choice, but is rather an expression of that choice"(p.1042). Therefore, studying political culture allows for the opportunity to look at the link between individual value patterns; for example environmentalism or pro-mining policy, both of which have had a significant effect on the mining industry in BC.

In order to acquire a further understanding of the nature and consequences of value change in individuals, four post-industrial political cleavages will be studied. They are materialist/postmaterialism; individualism/collectivism; populism; and, partisanship. This

123"Political cleavages within the population are usually based upon differences of circumstance or values…Measureable differences that risk creating tension and perceptions of inequity and that have important implications for public policy are the ones that are considered cleavages"(Thomas 2001, 432).

research reflects on a number of studies outlined by Inglehart (1977), Blake (1985; 1996 a, b), and Elkins (1985), and in particular, on surveys completed by Inglehart in 1970 to 1975 and by Blake, Elkins and Johnston in 1979. These studies (in particular Blake, Elkins and Johnston) highlight insights into BC politics as it pertains to the four aforementioned post-industrial cleavages. Understanding what differentiates groups (based on some kind of conflict) provides insight into voter's choices, parties' ideologies and their impacts on public policy, in particular policy that affects the BC mining industry.

12.2 Materialist and postmaterialist values in BC

In the 1970's, Ronald Inglehart developed an analysis tool to acquire further understanding of the shift in individual values and the consequences these changes had and/or would have on Western societies. Based on the results of his study, Inglehart was able to group survey respondents into materialist and postmaterialist categories, therefore acquiring a better understanding of individual value priorities. One of Inglehart's (1977) goals in his study of materialism and postmaterialism was to answer the following question: "Do the Materialist/Post-Materialist value categories reflect a central aspect of the individual's outlook on life, with pervasive ramifications among his political attitudes?"(p.30). He discovered that "yes" they did! He states, "Our value typology proves to be a sensitive indicator of a broad range of political preferences"(Inglehart 1977, 30). Inglehart (1977) and the later works by Blake (1985; 1996a,b) recognized key variables that identified between the materialist and postmaterialist voters:

- Materialist voters:
    - Focus on physiological needs (Inglehart 1977, 42);
    - Have concerns with means of survival rather than ultimate ends (Inglehart 1977, 62);
    - Have a relatively strong attachment to maintaining order and preserving economic gains (Inglehart 1977, 46);
    - Support the established order (Inglehart 1977, 56);
    - Maintain a high rate of economic growth (Blake 1996a, 11);
    - Make sure Canada has strong defense force (Blake 1996a, 11);
    - Maintain a strong and stable economy (Blake 1996a, 11);
    - Fight rising prices (Blake 1996a, 11);
    - Maintain order in the nation (Blake 1996a, 11);
    - Have high national prestige (Inglehart 1977, 30);
    - Fight against crime (Blake 1996a, 11);
    - Are born before 1940 (Blake 1996a, 11);

    - More likely belong to a church (Inglehart 1977, 89);
    - Seek to preserve the existing socio-political pattern (Inglehart 1977, 42); and,
    - Tend to be from lower income groups, which traditionally supported the right political philosophies (Inglehart 1977, 60).

- Postmaterialist voters:
    - Focus on social and self-actualization needs (Inglehart 1977, 42);
    - Have values that emphasize individual self-expression (Inglehart 1977, 57);
    - Have concerns with ultimate ends rather than economic rationality (Inglehart 1977, 62);
    - Have broader horizons, are less parochial and more cosmopolitan (Inglehart 1977, 57);
    - Want beautiful cities and nature and less urbanization (Inglehart 1977, 48);
    - Want a more participant and less hierarchical society (Inglehart 1977, 46);
    - Have a relative aversion to traditional bureaucratic institutions (Inglehart 1977, 46);
    - Want more say in important governmental decisions (Blake 1996a, 11);
    - Want a less impersonal, more humane society (Blake 1996a, 11);
    - Want people to have more say in how things get decided at work and in their community (Blake 1996a, 11);
    - Feel that ideas count; (Inglehart 1977, 46);
    - Want to protect freedom of speech (Blake 1996a, 11)
    - Want to protect nature from being spoiled and polluted (Blake 1996a, 11)
    - Want a society where ideas are more important than money (Blake 1996a, 11);
    - Downgrade economic and scientific rationality (Inglehart 1977, 30);
    - Are most favorable to student demonstrations (Inglehart 1977, 30);
    - Have a high priority to economic aid to less-developed countries (Inglehart 1977, 30);
    - Have more concern for women's rights (Inglehart 1977, 30);
    - Are born after WWII (Blake 1996a).
    - Are young and university-educated (Inglehart 1977, 82);
    - Have been living in a relatively prosperous nation/region for a long-time (Inglehart 1977, 39);
    - Are mainly from middle-class families, which are more likely to support change-oriented parties or the left (Inglehart 1977, 60);
    - Have incomes and occupational status that tend to support conservative political parties (Inglehart 1977, 60);
    - Have a favorable view on political change (Inglehart 1977, 62);
    - Are linked with political dissatisfaction (Inglehart 1977, 62);
    - Are more likely to be union members than no union members (Inglehart 1977, 92);
    - Are over represented amongst NDP supporters (Blake 1996a, 15).

Inglehart (1977) discovered that materialism and postmaterialism categories showed a remarkable relationship between political party preferences and social structure (p.31). For

instance, he discovered that there are obvious causal relationships between the independent variables (e.g., socio-economic cleavages – age, education, income, etc.) and the dependent variable (e.g., voting behavior) (Inglehart 1977, 129-136). For instance, those who support the parties to the left are more likely belong to a labor union, therefore tend to have postmaterialist values (Inglehart 1977, 92).

Janda (1970) studied 50 countries and over 3500 documents on party politics in order to devise a left/right coding scheme to describe the two sides of the dichotomy. He discovered the top four left party positions are: (1) relatively favorable to government ownership of the means of production; (2) a major government role in economic planning; (3) redistribution of wealth; and, (4) extensive social welfare programs at the public's expense (as noted in Inglehart 1977, 186). The left/right dimension helps to identify party ideology and individual orientation; however, postmaterialism describes differences that could lead to radical political opposition (Inglehart 1977).

With the economic collapse of the 1930's and the long resurgence of affluence afterwards, there has been a fundamental growth in voters supporting the left in BC, in particular during the late 1960's and early 1970's (Inglehart 1977). Blake (1996b) defined the period from 1952 to 1991 as "the politics of polarization" as it was a period with the greatest amount of economic and social structure transformations and resulted in new political forces and agendas (p.72). These changes produced the greatest amount of political conflict amongst parties and electorate, as well as changes in public policy and economic well being in BC. As previously discussed, the voters are the currency of party politics, and with the growth in postmaterialist philosophies, parties to the right (e.g., Social Credit) faced challenges in regards to their economic development strategies, as well as remaining in power. Blake (1996b) writes,

> …a significant number of British Columbians place a higher value on postmaterialist values such as personal empowerment, protection of the environment, and development of a less impersonal and more humane society than on materialist values such as law and order and economic growth (p.81).

In 1995, Blake conducted a subsequent survey on the BC electorate in order to acquire a better understanding of the dispersion of political ideologies such as

materialist/postmaterialism; individualism/collectivism; populism; and, partisanship (Blake 1996a). His study found the following characteristics on postmaterialism:

- Postmaterialists tend to be born after 1940 (Blake 1996a, 11);
- Postmaterialism is a distinctive attitudinal dimension (Blake 1996a, 11);
- Postmaterialist values are more prominent with people who have post-secondary education and are economically better off (Blake 1996a, 12);
- There is a link in BC between postmaterialism and ethnic origin (Blake 1996a, 12); and,
- In the 'other ethnic origin category', the largest most postmaterialist group was First Nations. However, the study sample on First Nations was small, thereby bringing to question the reliability of the sample size and attitudinal dimension (Blake 1996a, 13).

One of his most important findings on postmaterialism and ethnic origin, was that "[o]nly about 10% of those from Asian backgrounds are found in the group that places the greatest priority on postmaterialist values, compared to just under 30% of those whose roots are in Europe"(Blake 1996a, 12-13). This is significant, as Asian ethnic minority is an ever-increasing portion of the electorate throughout the Lower Mainland (Blake 1996a). Overall, there seems to be a contingent of both materialist and postmaterialist voters in BC and it is up to each party to reach out and acquire their votes.

12.3 Individualistic and collectivist values in BC

To comprehend today's BC politics, an understanding of how individual and collective responsibility is entwined with the current political system and culture must be understood. This involves understanding how these orientations are built on a foundation of common variables such as political styles, and electoral and candidate types, as well as how conflict emergences over clashing political values and beliefs. The following outlines the key variables in regards to individual and collective responsibility:

- Individualistic Orientations/Attitudes:
    - Believe that a person should do their best and take care of themselves and their family, as well as be a productive member of society (Elkins 1985, 67);
    - Believe that each person should bear the costs and consequences (Elkins 1985, 67); and,
    - Have attitudes that are more conservative (e.g., against higher taxes, as well as is against increased regulation against businesses) (Blake 1996a, 9).
- Collective Orientations/Attitudes:
    - Believe certain risks (e.g., illness, accident, handicaps, etc.) should be shared collective, either by government intervention, unions or associations (Elkins

1985, 67); and,
    - Believe that collective benefits could be obtained through collective/coordinated action (Elkins 1985, 67).

According to Elkins (1985), when people have to make tough decisions, they reveal characteristic orientations concerning either responsibility that ultimately differ in degree of political polarization (p.68). For instance, a comprehensive interview survey was conducted on 1000 BC residents following the 1979 election (Blake 1985; 1996a). The respondents shared their opinions on public policy, their party loyalties and their feelings about political parties (Blake 1985, 10). Ultimately, the survey measured the social, economic and political aspects of BC and what it discovered in regards to the individual and collective orientations and party ideology is that:

- The NDP is significantly more collectively oriented than any other party (Elkins 1985, 69);
- The Social Credit party was very individually oriented (Elkins 1985, 69); and,
- All parties contain people from each group (Elkins 1985, 69).

The 1979 survey also discovered that individual and collective party orientations diverge in regards to specific electorate characteristics. For example, the Social Credit was more business-oriented, whereas the NDP are labor-oriented (Elkins 1985, 70). Today, the Liberals would fill the role of the Social Credit from these studies. Therefore, by identifying voter characteristics provide insight into voter behavior and ultimately determines who may or may not support mining development in BC. This is vital information, as companies would be able to acquire a better understanding on stakeholder demographics in project locales.

12.4 Populism in BC

Populism is a diverse and multi-faceted political ideology with a long history in Canada's political culture. It is the belief that "…people like me can get things done"(Blake 1985, 57). In the 1960's and 1970's, BCs electorate's political efficacy mean score was the highest of any provincial population in Canada (Blake 1985). This reflects the level of political activity (e.g., protests, movements) that occurred during this period (see Section 13.3.1).

Populism emerged from farmer movements in the province's of Ontario, Saskatchewan, Alberta and Manitoba, whereby farmers fought 'big business' and 'consumer co-operatives' (Elkins 1985). In 1932, the Cooperative Commonwealth Federation (CCF) was the first party

in Canada to express social-democratic populism (Elkins 1985). However, over time all of BC's political parties have utilized or are utilizing populism to reaches the masses (e.g., Bill Vander Zalm) (see Section 14.4).

Populism is participatory democracy, whereby the public opposes powerful elites and advocates for more power for the people. It is a mix of political ideologies such as socialism, liberalism and neoconservatism, as well as has a focus on grassroots participation. These factors have sponsored the development and growth in the current political protest landscape throughout the province (Elkins 1985). In particular, are the beliefs that the public should be suspicious of 'experts' and have "…a concomitant trust in ordinary people and commonsense"(Elkins 1985, 62). These beliefs are in clear opposition with the mining industry, as its reports, studies and designs are reliant on expert opinions. According to Elkins (1985), people who follow populism are from lower status occupational groups, have lower incomes, are from rural communities and have less education (p.63). In regards to political parties, Elkins (1985) revealed that there is no difference between the major parties in BC and populism. He writes, "Although certain types of people differ in predictable ways on populism, the parties do not"(p.63).

12.5 Partisanship in BC

Partisanship is the electorate's support (e.g., voting behavior) for a particular party or cause (Elkins 1985) (see Section 13.2.1). In order to understand the electorate's voting behavior, ideological differences in regards to partisanship are studied. The primary focus is on BC's bipolar political culture during the period from 1952 to 1991, which includes studies by Blake (1985; 1996a,b) and Elkins (1985). The electorate at the time was either supporting the right (free enterprise or Social Credit) or the left (socialism or NDP) political parties.

Blake (1985; 1996a,b) discovered that work-place setting and residential setting have a fundamental influence on voter choice. Most importantly, he discovered that the presence of trade unions in the work-place setting is a clear indicator of blue collar NDP support (Blake 1985; 1996a,b). In 1975, union membership was close to 50 percent of the working population in BC (Blake 1985). In BC, unions are linked to militant action and conflict, especially during the 1960's to 1970's, as well as their "…double-barreled effect, indirectly

through political education of the rank-and-file and directly via solicitation…"(Issitt 2011; Blake 1985, 95). Union membership and NDP support were homogenized by the spread of large-scale resource based industries throughout the interior (while W.A.C Bennett was premier), as well as in the growth of a unionized middle-class public sector (Blake 1985; 1996a,b) (see Section 13.3).

This new middle-class sector had its own philosophy in regards to state intervention and activism, which contributed to the NDP's win in the 1972 provincial election (Blake 1985). However, where the voters lived or whom they worked for helped to influence their vote. For instance, direct neighborhood effects such as campaign posters, as well as single industry town settings (where militancy, working class consciousness and neighborhood segregation is prevalent) have an affect on voter behavior (Blake 1985). Their residential settings are where they make most of their contacts and assimilate to the residential setting ideals (Blake 1985). Peet (2001) reflects on Anne Buttimer's (a social scientist) notion of place identity, he states, "…people's sense of personal and cultural identity is intimately bound up with place identity"(p.56). Other possible influences include: the type of firm; the size of firm (e.g., number of employees); and the quality of work setting (Blake 1985). For instance, a mining executive may have a distinct attitude towards free enterprise over an executive whom works in a regulated industry such as BC Hydro (Blake 1985). Where people live and work influences how they will vote in provincial elections and since voting behavior is an expression of choice (i.e., beliefs and values). It is vital to understanding factors and actors that influence mine development in BC.

In his study, Blake (1985) discovered the following NDP and Social Credit outcomes:

- Unionized blue-collar voters are more likely to support the NDP (p.100);
- Non-unionized blue-collar voters were more likely to support the Social Credit party (p.104);
- Voters working in the primary construction, transportation/communications/utilities and manufacturing industries were more likely to support the NDP (p.98);
- Public sector employees were more likely to support the NDP (p.104);
- Blue-collar workers in the largest firms (e.g., 100+ employees) were more likely to support the NDP (p.100);
- Blue collar workers in middle class settings were more likely to support the Social Credit (p. 102-103);
- Resource sector blue-collar workers (who are more individualistic) were less likely to

support the NDP, but rather support the megaprojects of the Social Credit. This may be a result of higher wages, and different unions (p.106);

- Middle class voters in working class neighborhoods were more likely to vote for the Social Credit (p.103);
- Blue-collar support for NDP was lower in neighborhoods where there were more educated people, than in neighbors with less educated people (p.102);
- Blue collar voters from areas such as Prince Rupert, Comox, Kootenay and Cariboo, were more likely to support the NDP, over some of their metropolitan (e.g., Oak Bay, Vancouver Island, central Fraser Valley, etc.) counterparts (p.102);
- Managers and professionals living in the hinterland (e.g., Prince Rupert, Comox, Kootenay and Cariboo) have stronger ties to the NDP party (p.102); and,
- Managers and professionals who work in the resource industry (e.g., are individualistic and have higher incomes) were more likely to support the Social Credit party (p.96-106).

According to Blake (1985), the best predictors in determining party choice in BC are: "…income, union membership, occupation, sector and ideology"(p.104). However, other influences should be considered such as the cyclical nature of the commodities market, whereby employment and government revenues fluctuate with each boom and bust cycle. This creates insecurity amongst the workforce, who may fluctuate in their party choice during provincial elections. Also, large policy changes such as the Meech Lake Accord, supported by the BC premier and not a large contingent of the electorate, affects party support.

A classic study on political ridings including demographics such as income would illustrate a clear picture on who voted for what political party/mandate at each political election. This study could provide valuable information on demographics, as well as perhaps a very rough estimate on the level of consensus in regards to who would or would not be in support of a particular resource project. For instance, would the electorate supporting the Liberals in Williams Lake also support the New Prosperity project? A political party's understanding of provincial ridings, or known voting patterns, is fundamental to its success. For instance, each party could tailor their message to be appealing for a particular riding or demographic, thereby winning their support and votes. Really, political parties and corporations are not much different from one another, except that corporations aren't outwardly campaigning the entire province for project approval, nor are their issues diluted by a variety of other topics, subjects and projects. For example, one political scandal can sway the average viewer from

important election topics at hand, thereby resulting in the electorate voting for a party for the 'wrong' reasons. What we have learned from Inglehart (1977), Blake (1985; 1996 a, b), and Elkins (1985) studies is that the electorate who were more likely to support a mining project in BC were:

- Materialists who tend to be born prior to 1940,[124] and have lower education and/or incomes. Also, are from an Asian ethnic minority;
- Have an individualistic orientation;
- Conservative voters;
- Non-unionized blue-collar worker, or a unionized blue collar worker who is employed in the resource industry;
- Middle-class voter from a working class neighborhood;
- Blue-collar worker from a middle-class setting;
- Managers and professionals who work in the resource industry who are more individualistic and have higher incomes; and,
- Managers and professionals from the private sector who live in the metropolis who have higher education and incomes.

These are all predictors of pro-mining policy orientations, as demonstrated by voter support for the Social Credit party. The Social Credit supported and implemented an extensive resource development strategy throughout BC, as well as represented the polarized political landscape at that time. However, this data is somewhat indicative of the growing polarized landscape today, whereby the Liberal (pro-development) and NDP (anti-development) parties have represented the majority of the BC electorate since mid-2000.[125]

In the 1990's, there were more materialist voters (63 percent), than postmaterialist voters (16.9 percent) in BC (Blake 1996a). During this period, the NDP were in power and BC politics had moved away from a polarized political system to one that was being dominated by three parties (NDP, Liberals and BC Reform). In 2001, the Liberals had gained power and will maintain power until the next election in 2017, unless some sort of political scandal emerges. It would appear that a more polarized system seems to be re-emerging, with the

124 Over time, the characteristic that materialists tend to be people who were born prior to 1940, and postmaterialistists tend to be people born after 1940 will be come somewhat redundant. The researcher utilized available studies that pertain to BC politics and voters dated prior to 1996; therefore, a new generation of studies will devise new dates, or eliminate this concept as a characteristic all together. However, it currently has some relevancy as this age group (75+) in 2013 was 11.3% (204,515/1,813,912) of all registered voters who voted in BC, and it had a 65.5% turn-out for its age group at the polls (registered voters 312,412 v. who actually voted 204,515). See http://www.elections.bc.ca/docs/stats/voter-participation-by-age-group-2013.pdf.

125 For additional information on BC election results see the following website: www.electionsbc.net.

collapse of BC Reform in 2005, as well as by the close, but still majority victory by the Liberals (44.14 percent of the popular vote) over the NDP (39.71 percent of the popular vote) during the 2013 provincial election. During the 1996 election, the Liberals had 41.8 percent of the popular vote, whereas the NDP had 39.5 percent of the popular vote. However, the NDP won the election with 39 seats, over the Liberals 33 seats.

Other things to take into consideration are the province's history, GDP and boom and bust cycles. Based on the election of Liberal leaders premier Gordon Campbell and later Christy Clark in the last 14+ years, one could conclude that materialists are still the more prominent voter; however, the postmaterialist voters are certainly gaining momentum. This is demonstrated by the NDP's gain in the popular vote in the last 14+ years, as well as the fundamental growth in the Green party supporters. In 1983, they had 0.2 percent of the popular vote, by 2001 they had 12.4 percent and are currently holding steady at 8.1 percent.[126] However, each party has its own political factions that either support economic development through resource extraction, or are environmentalists. In order to be elected or survive their term in office, parties must promote ideology that will secure voter support. Is this ethical, moralistic or just opportunistic? Should companies alter their mandates in order to mirror voter ideology in order to win consensus? Perhaps companies are just out of synch and need time to modernize, as "…BC society is a proclivity towards fluid, shifting values"(Resnick 2000, 9).

12.6 Conclusion

In BC, occupation, income, ideology, age and union membership are all variables that influence electorates' support for a political party. As parties recognize these divisions, so too should mining companies wanting to build mines in BC. For instance, small town and rural populations are usually over-represented in political seat distribution; therefore understanding their political, economic, social and cultural make-up is vital for successful mine development in BC (Thomas 2001). More seats equal more representation in the Legislative Assembly, especially considering that these seats come from areas where mine development is most likely to occur. Also, understanding voter distribution and

126 For additional information on BC election results see the following website: www.electionsbc.net.

demographics provides insight into ‘potential’ stakeholders of future mine development in BC. This knowledge can provide some insights into possible opposition; therefore, allowing the company time to plan accordingly.

Based on BC’s political, economic, social and cultural ideology patterns, the province’s development is primarily based on economic determinism. Premiers such as W.A.C. Bennett opened the provincial door for resource and economic development in BC, while individual occupation (with or without union membership) and income paved the way in determining political party support. The ‘power of jobs’ is still relevant in BC despite the growing contingent of non-resource development supporters, and this is no more evident than the results of the 2013 BC provincial election. Liberal leader Christy Clark won the election despite being behind NDP leader Adrian Dix (20 points) in the polls (Macdonald 2013). It was Dix’s anti-resource development (i.e., Northern Gateway project - loss of jobs) and an increase in social spending mandate amidst a recession that contributed Clark winning the election.

Overall, the challenge for mining companies is to obtain consensus or the proverbial middle ground in regards to proposed mining projects in BC, otherwise the alternative is a limited long-term mineral supply. This is not attractive, economically viable, or smart for the BC economy. Therefore, companies must recognize the importance of the voters, as they elect in the governments who implement policies that influence the industry’s ability to build new mines in BC. Adrian Dix is quoted in The Globe and Mail (May 14, 2013) as stating, “Elections belong to the voters – and the voters have decided”(Hume et al 2013).

CHAPTER 13 Political parties and leaders and their role in BC's mineral development story, pre-confederation to 1972

13.1 Introduction

Political factors, actors and sectors have an influence on mineral policies in BC - policies that can either promote or thwart mineral development. Blake (1985) writes, "…politics is a function of political culture, history, and social and physical context"(p.49). By studying BC politics, key historical events (e.g., reigning political party and their mandates, environmental movement, federal and provincial relations and First Nation issues) pertaining to each governing party from 1952 to 1972 is identified, in order to attempt to deduce a sequence of recurring political events and their influence on mineral development in BC. However, key historical events from 1763 to 1952 are also discussed, as they are the foundation to the present political system and culture in BC. The latter chapters will address key historical events from 1972 to 2015.

13.2 The foundation of the present political system and culture, pre-confederation to 1952

13.2.1 The rise of partisanship in BC

Since 1867, BC politics has been focused on economic development; in fact, "[t]he province was enticed into Confederation by the prospect of great riches…"(Blake 1985, 7). BC politicians were judged on their ability to contribute to the province's prosperity and in doing so, pursued with malice to take control of all of BC's natural resources (Blake 1985). This drive for economic prosperity formed the beginnings of partisanship in BC.

Historically, partisanship arose as a result of divisions in ethic and religion origin; however, BC's demography of white British and Protestant population eliminated this as a reason (Blake 1985; Blake 1996b). In BC, partisanship was a result of "…chronic government instability, scandal, and, …an emerging threat from the left"(Blake 1985, 13). Bruce Hutchison (a veteran Vancouver Sun journalist) (1950) writes,

> Vancouver is ruled by the most garish tycoons produced to date in Canada. The capitalists who draw dividends, the entrepreneurs who live in luxury on the toil of countless unknown men in the wilderness, the financiers and promoters of sudden eminence form a distinct caste as in every entrepot of commerce. Here they are rather

> bolder and much franker in their ambition than the same caste in the East (p.189, as cited in Resnick 2000, 8).

Partisanship illustrates the dichotomous nature of political culture in BC. Depending on which party is in power and for how long, determines the type of policies that will effect mineral development and investment in BC. Without third party competition, the voters within the province are heavily divided between two philosophies (e.g., socialism versus capitalism), thereby creating an arena for significant change and conflict.

The growth in socialist and economic ideologies resulted in an antagonistic labor movement, which further fueled partisanship in BC. For instance, in the early 1900's major strikes and union recognition occurred, for example, at mines in the Kootenay region. As a result, the two political parties (i.e., Liberals and Conservatives) at the time tried to ratify the growing social and labor movement by supporting the employers who faced rebellious workers, rather than the workers who wanted better working conditions, more pay, etc. (Blake 1985; 1996b).

High labor mobility, as well as project seasonality and remoteness, common in frontier development (especially in the mining industry), were also compounding factors in the growth of socialism in BC. This growth sponsored 'class awareness' by laborers who sought a party based on organized labor (Blake 1985). In 1918, the Federated Labor Party (FLP) with support from the B.C. Federation of Labor was formed. By 1926, FLP's (renamed Independent Labour Party) membership increased five-fold and they were negotiating with the Co-operative Commonwealth Federation (CCF) from the Prairie Provinces to enter the BC election process (Blake 1985). Thorburn (2001) writes,

> The Co-operative Commonwealth Federation (CCF), a social democratic movement drawing support from western farmers, the urban working class and university intellectuals, was formed in the Depression of the 1930s. It was the first party in Canadian history to build up an organization, a philosophy and a cadre of leaders in order to offer a sustained challenge to the two omnibus parties (p.6-7).

During the early 1930's, the two-party period ended with the introduction of the CCF (a social democratic party) into BC's provincial politics. The Liberals through the use of the media (e.g., partisan newspapers) labeled the CCF as "Communists," "The Communist Party" and the "Reds"(Hutchinson 1945; The Calgary Daily Herald 1938). Their purpose was to use the growing fear of communism to stop public support for the CCF. However, the

economic collapse from the Great Depression drove electorate support towards the CCF, thereby defeating the Liberals' efforts. This growth in CCF support ultimately pushed the Conservatives out as the official opposition party in BC. By 1941, a coalition between the Liberals and Conservatives occurred that lasted through the next two provincial elections (1945 and 1949). This coalition reduced the differences between the two parties; however, increased the partisan division in doctrinal philosophy between themselves and the CCF (Blake 1985).

Ultimately, strains and misunderstandings within the Liberal and Conservative coalition lead to its dissolution. In 1950, the Social Credit party in BC emerged with support from the Alberta Social Credit party and Albertans located throughout northern BC, as well as from local politicians (e.g., Liberals and Conservatives) and businessmen (Blake 1985). Under the leadership of W.A.C. Bennett (previously a Conservative MLA), the Social Credit party won the 1952 provincial election (see Section 13.3). A party Bennett believed was "…free from entanglements of federal politics…" and truly a free enterprise party (Blake 1985, 18).

The foundations of BC's present political system and culture is primarily based on economic determinism. The need for riches and ultimately the power acquired through a bi-partisan government system led to a rise in a strong dichotomist belief system, which led to conflict between governments, labor and First Nations. All had interests in BC's natural resources, but rarely if ever, were these interests aligned.

13.2.2 First Nations, 1763 to 1952

Federal and provincial politics have left a legacy of significant events that have had a profound affect on today's treaty process, the land question and on the development of new mines in BC. For instance, the Royal Proclamation of 1763, Douglas Treaties (1950's), Terms of Union (1871), Joseph Trutch (1864-1899), British North America Act (1867), Land Act (1874), Indian Act (1876) and the Department of Indian Affairs ((1880) laid the foundation for today's treaty process. Also, years of colonialism, racism and federal-provincial governmental disputes have deterred the settlement of the land question, access to

natural resources or rights to land, thereby diminishing 'certainty'[127] in regards to the future of mining in BC (Fisher 1992). The following highlights key historical and legal events that give evidence to and/or deterred the settlement of the land question in BC.

Britain's King George III issued the Royal Proclamation of 1763, which acknowledged that Native tribes had possession of lands and could cede the land to the Crown, thereby treating Native tribes as if they had ownership (Tennant 1996). Muckle (1998) summarizes the purpose of Proclamation by stating,

> The proclamation was issued to maintain peace and a sense of order between British subjects and First Nations in North America. It asserted that the First Nations of North America had existing rights and established the system of surrendering those rights by treaty (p.69).

The Colonial government (except James Douglas) challenged the applicability of the Proclamation by arguing that the land was *terra nullius*[128] prior to colonization and that First Nations lived a nomadic lifestyle, therefore could not have 'possession' of any lands (Tennant 1996; Woolford 2005). Despite the Proclamation, the Colonial government (1849-1871) believed that Native title never existed and First Nations had no rights; therefore, set the foundation for years of conflict and uncertainty in regards to the First Nations land question in BC (Tennant 1996).

Between 1850 and 1854, the Governor of the Colony of Vancouver Island was James Douglas. He was instrumental in negotiating 14 separate treaties (known as the Douglas Purchase Treaties) with Vancouver Island First Nations.[129] These treaties are legally and historically important because they "…were based on the principle of cession" [130] and it

127 Certainty is defined as something that is clearly established and in order to reach a 'level of certainty' in regards to mining in BC, the land question has to be answered and resolved (Woolford 2005).

128 *Terra nullius* is a Roman law that means, "land belonging to no one" (see http://en.wikipedia.org/wiki/Terra_nullius). This doctrine would stay relevant for over 120 years (Tennant 1996, 49).

129 In 1858, James Douglas became the Governor of the mainland Colony of BC.

130 "[C]ession - is a legal device approved by both British Policy and international law at the time, for use by the Crown to acquire lands of '…a pre-existing society of indigenous people holding specific territories subject to cultivation. Acquisition would require the consent of the indigenous people to transfer their sovereignty and portions of all or a portion of their land to the acquiring state. This new relationship would then set out in a formal treaty. Those acquiring the sovereignty and the territory were required to pay compensation to those who had ceded it' "(Jepsen et al 2005, 5).

would take another 50 plus years until the province of BC would again enter the treaty process (Jepsen et al 2005, 5-6). Muckle (1998) depicts Douglas by stating,

> Douglas is usually portrayed as sympathetic to First Nations concerns. He recognized aboriginal rights, consulted First Nations about the laying out of reserves, and sought peacekeepers with knowledge of First Nations to maintain order and resolve conflicts between native people and gold seekers throughout the province. Douglas also advised First Nations to seek retribution or compensation for perceived wrongs through British law (p.71).

The Douglas Treaties would become known as "…British acknowledgement of pre-existing and unextinguished Aboriginal title" in BC (Jepsen et al 2005, 5-6).

After Douglas's retirement in 1864, Joseph Trutch who was prominent in shaping BC's land claims policy became BC's commissioner of lands and works, as well as chief surveyor. Trutch regarded Natives as "inferior savages," and became "…the first official to deny that aboriginal title had ever existed in BC," as well as regarded the Douglas Treaties as being "inconsequential friendship agreements"(Tennant 1996, 48). Almost immediately, Trutch rescinded Douglas's work by restricting reserves to 10-acre plots per family for their use and access, as he believed First Nations were "nomads" and shouldn't have access to land or have rights to land (Tennant 1996, 48). In the Province of Ontario, families were allocated 640-acres and in the Prairie Provinces they were allocated 80-acres per family (Muckle 1998). Fisher (1992) elaborates on Trutch's desire to minimize land allotment to First Nations and he states,

> Trutch believe British Columbia's future lay in agriculture. Therefore, the colony's development had to be fostered by "large and liberal" land grants to settlers, and Indian land claims could not be allowed to hinder this development. In contrast to Douglas, who wanted to protect the Indians from the progress of settlement, Trutch wanted to move them out of the way so that settlement could progress (p. 162).

In 1866, the Colonial government passed a Land Ordinance and it prevented First Nations from using "pre-emption" [131] to acquire title to unoccupied lands, unless they had written

131 "Pre-emption was a method of acquiring provincial Crown land by claiming it for settlement and agricultural purposes. Although it was possible to pre-empt land and not live on it, all pre-emptions were intended solely for cultivation. The pre-emption process existed from as early as 1859 until 1970 when the Land Act was amended to eliminate this method of acquiring Crown land. Individuals, as well as companies and partnerships, could apply to settle and work ("improve") the land. A Crown grant to the land was not issued until the pre-emptor made specified improvements and met the citizenship requirement. The Crown grant also had to be registered with a Land Title

permission by the governor (Fisher 1971-72). In 1871, Trutch would become BC's first Lieutenant Governor, a position he retained until 1876 before being appointed as a 'Dominion agent for British Columbia' until his retirement in 1899. Fisher (1971-72) explains the importance of Trutch's new position and he states, "…as lieutenant-governor he was determined to defend that policy against the encroachment of differing ideas held by the federal government on the question of Indian land"(p.21). Nothing would change in regards to First Nations's land question in BC until well after Trutch's retirement.

"Presumably, Trutch's views were shared by the majority of the white population and their elected legislators"(Tennant 1996, 48). Fisher (1971-72) elaborates in "Joseph Trutch and Indian Land Policy" that,

> While Trutch's views on Indian land ran counter to those of Douglas and the imperial government, it seems that they were in accord with the opinions of most of British Columbia's population. To the extent that it is possible to assess the attitudes of the settlers, they coincided with Trutch's. Douglas had embodied many of the attitudes of the old fur-trading frontier, whereas Trutch represented the attitudes of the new settlement frontier. An appreciable number of settlers in the colony adhered to the notions of "manifest destiny," and advocated ignoring Indian rights, or even their extermination (p.18-19).

In 1867, the British North America Act (BNA Act) asserted under section 91(24) that the federal government had jurisdiction (e.g., enact laws) over "Indians and lands reserved for the Indians"(Tennant 1996, 49). Presumably, the BNA Act left no space for provincial laws and jurisdiction to be enacted in regards to First Nations in BC. Ultimately, "…the federal division of powers did not apply"(Tennant 1996, 49).

BC joining Confederation (1871) was pivotal in the development of First Nation policies in BC because First Nations were unrepresented in the negotiations, and "…the Terms of Union proposed by the governor-in council of British Columbia contained no reference to the Indians"(Fisher 1992, 176; Bankes 1986). However, it has been noted by Fisher (1992) that Ottawa added Clause 13 of the Terms of Union in the final terms and there is speculation that Trutch had some responsibility in its existence (Cail 1974). Terms of Union Clause 13 states,

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office to complete the process"(Reference found (March 1, 2014) from website: http://www.bcarchives.gov.bc.ca/general/guides/preemptions-homesteads_research_guide.pdf).

> The charge of the Indians, and the trusteeship and management of the lands reserved for their use and benefit, shall be assumed by the Dominion Government and a policy as liberal as that hitherto pursued by the British Columbia Government shall be continued by the Dominion Government after the Union. [132]

Fisher (1992) states, "…the clause was deliberately misleading" as it was far from "liberal"(p.177). Mills (2008) elaborates further by stating,

> Canada was unaware that "liberal" treatment meant that it had been the practice of the local government to allocate only 10 acres per family of five. Canada's policy had been to allocate, at minimum, 80 acres per family of five, that the Dominion received a formal surrender of all traditional lands, that the community have continued access to hunting, fishing, and trapping lands, an annuity assessed and given, and that "Indians and lands reserved for Indians" were to be administered under the *Indian Act*.

Therefore, the provincial government was enacting land laws not accepted by Canada, and Clause 13 was a way to delay the federal government's involvement in the province's First Nations issues, thereby prolonging the resolution of the land question in BC (Fisher 1971-72). Mills (2008) states,

> It was apparent to the Dominion that the Indian Land Question was not going to be resolved easily. There were concerns and discussions going on about the state of Indian affairs in British Columbia, especially the failure to extinguish title, and the report of the Justice Minister as to whether land laws enacted in British Columbia should be allowed or disallowed by the Dominion government (p.44).

In 1872, the federal Liberal government assigned Israel Wood Powell as Indian Superintendent to oversee federal Indian legislation in BC (UBCIC 2005). He was appalled to learn about BC's 10-acre reserve policy and as a result requested a new policy of administering 80-acres establishing reserves (UBCIC 2005). In 1873, Powell and the provincial government negotiated to a 20-acre reserve size; however, since there was nothing under the Terms of Union or the BNA Act, the province didn't concede to the federal government's pressure (Tennant 1996). The province rejected the newly agreed to 20-acre reserve size (Tennant 1996). This federal-provincial conflict and BC's designation of small reserve sizes resulted in several protests by First Nations throughout the 1870's (i.e., Salish and Gitxsan in 1872, Salish and Tsilhqot'in in 1873). As a result, the federal government set-up a branch titled "Indian and Indian Lands" within the Department of the Interior (UBCIC

132 See the following website for additional information on the 1871 Terms of Union: http://www.ubcic.bc.ca/files/html/McKennaMcBride/bctu.html.

2005, 18). This branch via a board of commissioners administered First Nation affairs throughout the province.

The federal-provincial conflict continued with BC passing a new Land Act in 1874, which authorized the seizure of First Nation territories, as well as set the reserve allotment to 20-acres of land, while providing free land grants of 160-acre free to settlers (UBCIC 2005). As a result, the federal government refused to recognize BC's new Land Act. Is the dichotomous nature of federal-provincial relations in regards to Aboriginal rights in BC a red herring for the power struggle over BC's natural resources? Prior to Confederation, the federal government was supportive of BC's position in regards to Aboriginal issues, so why the abrupt change (Tennant 1996)?

In 1876, the federal government created the Indian Act, which ultimately encompassed all the laws affecting Native peoples in Canada. The Indian Act did recognize "…Indian lands and of the distinct position of Indigenous people" (UBCIC 2005, 19).[133] Woolford (2005) writes,

> …the administrative control of Aboriginal persons through the *Indian Act* derived to destroy traditional structures of Aboriginal governance, deny Aboriginal peoples the right to mount effective political action (especially with regard to land claims), and prevent economic development within Aboriginal communities. At the same time, assimilative policies were put in place that portrayed Aboriginal lifeworlds as savage and profane (p. 53).

Prime Minister John A. Macdonald addressed the House of Commons on Canada's Indian policy on May 5th, 1880 by stating, "…to wean them by slow degrees, from their nomadic habits, which have almost become an instinct, and by slow degrees absorb them or settle them on the land. Meantime they must be fairly protected"(as cited in Jepsen et al 2005, 11-12). In doing so, the federal government instilled provisions under that Indian Act that banned potlatches (1884), rescinded an Aboriginal woman's status if she married a non-Native man (1869) and banned the organizing by Aboriginal groups in the pursuit of land claims (1927) (Woolford 2005). The latter ban would stay in effect until 1951. In 1880, the federal government created the Department of Indian Affairs, whereby Indian agents were

133 This declaration was later utilized by First Nations to argue that there was previous acknowledgement of Aboriginal rights and title in BC.

appointed and deployed throughout BC. Ultimately, the governments' acts to silence hindered the land claims process and thus resource development in BC, because some First Nations' groups would be less willing to negotiate in the future to remedy the land question.

In 1899, the federal government extended Treaty 8 into the northeast corner of the province. Despite BC's approval, the province didn't want to allot the 160-acre parcels of reserve land promised in the Treaty 8 agreement, as BC still refused to recognize Aboriginal rights (UBCIC 2005). It would take until 1961 for the province to transfer the land as pursuant to Treaty 8 obligations to the federal government for reserves (UBCIC 2005).

Land claims and Aboriginal rights and title have become a vital component to First Nation protest throughout BC. For instance, the Cowichan Petition (1909) was a 10-page petition that declared that the Quw'utsun' had "…possession and occupation of their land since 'time immemorial' and involves the 1763 Royal Proclamation as a guarantee that these lands, not having been surrendered to the Crown, remain reserved for the Quw'utsun'"(UBCIC 2005, 23). In receipt of the petition, Prime Minister Laurier sought advice from barrister T.R.E McInnes who at the time "…believes much of the land in BC is subject to unextinguished Aboriginal Title and that Canada has a responsibility to pursue a legal land claim against BC on behalf of the Indians"(UBCIC 2005, 23).

In 1910, Prime Minister Wilfrid Laurier met with BC Premier Richard McBride to resolve the federal-provincial scuffle over Aboriginal Title and reserve size (UBCIC 2005). Ten questions were designed for Supreme Court of Canada of which McBride insisted on the exclusion of any questions involving Aboriginal title, because it "…is a political matter that cannot be decided in court as it would have disastrous effects on BC's financial standing and jeopardize investment in the province"(UBCIC 2005, 23). For the next couple of decades, several commissions, new Acts and policy recommendations occurred, as well as Aboriginal assemblies, protests, petitions and organizations. In 1915, the Allied Indian Tribes of BC[134] lobbied both governments for treaties, as well as larger reserves (Tennant 1996). Tennant (1996) writes,

134 This was "…the first province-wide First Nations organization" in BC (Tennant 1996, 51).

> By this time the terms 'Native claims' or 'land claims' were coming into common use in the province, indicating the increasingly legalistic emphasis Natives placed on their efforts as they realized that the federal and provincial governments were simply unwilling to resolve the old 'Native land question' by the political means of negotiating treaties (p.51).

As a result of all the conflict and the Allied Tribes' requested a hearing at the Privy Council to settle the land question (UBCIC 2005). They asked for funding and sanction to proceed with the request. In 1927, the federal government appointed a Joint Special Committee, which ultimately declared that the Allied Tribes "…has not proven any rights to the land based on Aboriginal or other title. The committee recommends that the matter be closed and, blaming outside agitators for Indigenous resistance, recommends ban on obtaining funds or legal counsel to advance Aboriginal Title cases"(UBCIC 2005, 27). Later that year, the federal government amended the Indian Act, thereby making "…it illegal to obtain funds or legal counsel to advance Aboriginal Title cases"(UBCIC 2005, 27). By 1928, both governments established "a special funding vote", which would provide an annual payment of $100,000, deemed as settling Aboriginal title, to BC First Nations (UBCIC 2005, 27).

As the economy was booming, so too was the growth in protests, petitions and organizations by First Nations groups throughout BC. As non-Aboriginals invaded all parts of the province, First Nations groups formed blockades, demanded larger reserves, Aboriginal rights and title, as well as treaties, in order to secure land to maintain their livelihoods. Driven by economic determinism, (in particular, the need to secure land base for agriculture), officials such as Joseph Trutch refused to acknowledge Aboriginal rights, or reserve sizes set out by his predecessor James Douglas. Also, the lengthy and complex conflict between the federal and provincial governments further exasperated and fueled long-lasting beliefs, values and overall culture against First Nations in BC. As a result, Aboriginal rights and title in BC will involve lengthy and costly legal battles in order to work towards answering the land question in BC. Dyck (2001) states, "Given the continued poverty, growing political militancy and recent Supreme Court rulings, the demands of Aboriginal peoples will be very much on the political agenda for the twenty-first century"(p.39-40).

13.3 Premier W.A.C Bennett, Social Credit, 1952-1972

The W.A.C. Bennett era is symbolic of great change in the provincial landscape, as it was precipitous for the major realignment in provincial politics (e.g., the period of polarization, 1952-1991), as well as the expansion of resource industries and infrastructure.[135] Between 1956 and 1972 (except 1960), the Social Credit party held on to no less than 60 percent of the seats in the legislature, whereas the Liberals held on to two to six legislative seats and the Conservative party held no seats (Blake 1985; 1996b). This transformation in government stimulated the growth in the New Democratic Party (NDP) who would eventually defeat the Social Credit party in 1972. Isitt (2011) writes,

> The 'long boom' of North America capitalism that ran roughly from 1948 to 1972 provided a degree of economic prosperity for BC's working people, who leveraged through their labour collective agreements and through the 'social wage' of an expanding welfare state a level of affluence without historical precedent. It was in this brief window that a majority of BC workers escaped poverty for the first time, with steady rising incomes, holidays with pay, and social protections against illness, workplace injury, unemployment, and old age. During this long boom, many BC workers approached the 'good life' to use a popular Social Credit slogan of the day. But the militant minority demanded more (p.4).

During this era, there was significant growth in natural resource industries such as mining, forestry and fisheries; however, the rapid economic upturn in BC was a result of the Alcan aluminum smelter in Kitimat, the exploration for oil and gas in the north and the development of hydroelectric power in the Kootenay and Peace River regions, as well as on Vancouver Island (Mitchell 1983). In order to acquire the much needed funding for these large infrastructure projects, the Social Credit implemented changes (despite industry protest) to mining policies in BC. For instance, in 1953 they raised the provincial tax on mining income from four to 10 percent and then raised it further in 1968 to 15 percent (Payne 1982). In 1957, BC introduced two pieces of legislation: the Mineral Property Taxation Act (MPTA); and, a series of amendments to the Mineral Act. The MPTA was designed to give power to the government to impose property taxes "…on the value of the minerals in the ground"(Payne 1982, 10). This Act's purpose was to stimulate the processing of iron and steel in the province, rather than export unprocessed ore to Japan (Payne 1982). However, this legislation backfired because the BC iron ore producers ultimately had the legislation

135 These great changes during the W.A.C. Bennett era make this a great starting point for this study.

ruled *ultra vires*[136] by the Supreme Court of Canada. The amendments to the Mineral Act were to "…replace the outright grant of mineral rights to only a twenty-one year renewable Crown lease"(Payne 1982, 10). Despite industry objections and some revisions, the amendments ultimately gave the provincial government (legal owner) the right to regulate and tax the new mineral leases (Payne 1982).

During the 1960's, the mining industry grew rapidly[137] and as a result, the provincial government decided to adopted a non-interventionist stance in regards to mining policy reform because intervention was proving to be a political hazard (Payne 1982). For instance, mining supported an abundant amount of the Vancouver Stock Exchange (VSE) activity during this period, as well as supported many members of the electorate in 10 out of the 55 political ridings in BC (Payne 1982). Therefore, mining gained significant political clout as many of the electorate supported by the industry were professional and business people who are known to be politically active (Payne 1982; Blake 1985) They are also known to utilize the media to get their messages out against the government (e.g., Bill 31) (Payne 1982; Blake 1985).

From 1952 to 1972, there was also phenomenal growth in other sectors such as the service, finance and real estate industries, as well as in the recruitment of labor outside of the province (Blake 1985). As a result, there was an impressive population boom throughout the interior of BC. The expansion of resource development also changed the geographical dispersion of industries such as large-scale sawmills and pulp and paper operations. Historically, these operations were located throughout the lower mainland and on Vancouver Island, e.g., in 1951, 18 of the 29 sawmills (daily capacity over 100,000 board feet) were located in these two regions (Blake 1996b). By 1971, there were 57 mills exceeding this capacity of which 40 of them were scattered throughout the BC's interior (Blake 1996b). All

136 *Ultra Vires* means "Beyond the Powers" (Payne 1982).

137 Despite tax increases from 4 to 15%, the mining industry grew rapidly. Was this a result of high copper prices, low oil prices, and increased BC exploration expenditures, as well as the development of a good geological model for porphyries (see Figure 10, Chart 22)? In my opinion, I feel it is a combination of things that influenced the rapid growth in the industry. Despite increased taxes, the Bennett government facilitated a positive resource development environment, which was minimally inhibited by other PEST factors (as discussed throughout the thesis) such as companies needing to acquire a social license to operate prior to building a new mine in BC. Overall, I think innovation played a key role as it opened the exploration for and the development of copper porphyry deposits in BC. In fact, four of copper porphyry deposits were built in one year (1972).

these changes modified voter demographics throughout the province and support grew for the NDP in the interior of BC. Bennett's public policy regime emphasized BC's strengths through resource development, which ultimately opened up the geographically restrictive province to one that became more homogeneous (Blake 1996b). Bennett's economic development scheme encouraged a new class of workers through the development of new Crown corporations (e.g., BC Hydro and provincially owned railway), as well as new settlement patterns such as 'small town BC,' of which he based his party mandate (Blake 1985; Blake 1996b).

Along with the growth in industry and population were the demands for education, health, welfare and unions. For instance, trade union memberships increased to 55.4 percent of the labor force in 1958 (Blake 1985). Trade unions are known as traditional sources of leftist political support and during this period BC was one of most unionized regions in Canada (Blake 1985). Today, BC is the sixth highest unionized region in Canada (ESDC 2015).[138] Isitt (2011) writes,

> A new and increasingly rebellious working class emerged, made more diverse by the growing participation of women and urban workers from the burgeoning public sector. This New Left, influenced by traditional forms of labour militancy, took part in strikes, occupations, and picketing, visibly challenging the socio-economic status quo and contributing to a change in government, the election of the newly formed New Democratic Party in 1972 (p.i).

Bennett recognized the attitudinal changes amongst the unionists and labor, therefore tried to appease them by providing benefits to workers of large development projects (Blake 1985). This was vitally important, as the CCF (or newly named the New Democratic Party (NDP) in 1961) was gaining popularity amongst the electorate, as a majority of BC trade union memberships at the time comprised of blue-collar workers (see Chapter 12). Blake (1985) states, "…social class differences in party choice are sharper than anywhere else in Canada…"(p.3). The notion of class in BC was redefined by a relatively large portion of the labor force being unionized and blue-collar workers who lived in similar neighborhoods throughout the province (Blake 1985; 1996b). Blake (1985) writes, "British Columbia has a resource-based economy characterized by large-scale enterprises and large, industry-wide

138 For additional information on Unions in BC and Canada see the following website: http://www4.hrsdc.gc.ca/.3ndic.1t.4r@-eng.jsp?iid=17.

trade unions in an atmosphere conducive to labour militancy and class conflict"(p.2). Therefore, a large contingent of the working population in BC was ripe for labor action. By 1945, there were 18 strikes/lockouts involving 6,810 workers in BC and by 1972, there were 101 strikes/lockouts involving 106,399 workers (Isitt 2011). A majority of the strikes/lockouts was lead by this new militant minority known as the "New Left" (Isitt 2011). They were a radicalized generation who had no security or money problems, as they were raised living through the most prosperous years in BC (Isitt 2011) (see Section 12.2). Their parents beforehand, though radicalized during the 1960's, lived through the Great Depression and were less idealized than the new left (Isitt 2011). Therefore, by the 1970's a new generation of radicalized voters emerged who were less concerned about security and money and more so about their environment.

As leader, Bennett's practical and realist attitude, along with his charismatic (some times wacky), visionary and idealistic traits spoke to the electorate who kept him in office for 20 years (Mitchell 1983). However, with all this economic and labor growth came changes in the electorates' character in BC, a change that would become a contributor to Bennett's overall electoral downfall in 1972.

13.3.1 The growth of environmentalism, pre-confederation to mid-1970's

The first 'ecological impulse' or acts of environmentalism during the early 19th century was known as Romanticism. Hay (2002) writes, "The romantic reaction is, however, most properly seen as a reaction against a *particular* science – the technologically applied science in which the all-knowing, all-powerful human stood above and apart from nature, manipulating it in 'his' own interests"(p.5). Later, the works of Aldo Leopold, an American forester and wilderness campaigner, who recounted ecological relationships in "A Sand County Almanac, and Sketches Here and There" (1949) brought political attention to the need for preservationist values and ethics to be applied to the natural world (Hay 2002, 15). Leopold's book stayed in print well into the 1960's. The 'modern' environmentalism moved away from nature observing and theorizing to "…doom-preaching scientists and issued-focused followers…" (e.g., John Locke's work titled "The Tragedy of the Commons") who focused on action through the politicizing of fear from scientific assessments on pollution

(e.g., Rachel Carson's 1962 work titled "Silent Spring") and population (e.g., Paul Ehrlich's 1972 work tiled "The Population Bomb") (Hay 2002, 16). The growing social and environmental movements added pressure to labor unions, as well as to the NDP party in BC. Finding the balance between growth, jobs and the environment would prove to be a significant challenge in a province whose history and livelihood is based on resource extraction. However, anti-capitalist politics would emerge, which would eventually further polarize the parties and electorate and ultimately contribute to Bennett's electoral defeat in 1972.

By the 1970's, ecocentrism appeared in Australia and North America, which readdressed the works of Aldo Leopold and others from the period of Romanticism. Ecocentrism[139] is a nature-centered 'ecophilosophy' that places an intrinsic value using morals and ethics on all living things and their environments, rather than the typified human-centered approach, which determines natures' usefulness and capital value (Hay 2002; Rowe 1994). Prominent events such as the first Earth Day (April 22, 1970), the establishment of Greenpeace (1971) in BC, the United Nations Conference on the Human Environment (1972) held in Stockholm, Sweden and the publishing of the "Limits to Growth" report by the Club of Rome brought light to growth and its relation to the global environment. As a result, the UN Environment Program (1972) was established (Hay 2002). The relationship between the growing action based social and environmental movements in the 1970's and the new left in BC became harmonious as a result of the growing "conservationist ethos"[140] to Bennett's exploitation of natural resources throughout the province (Isitt 2011, 135). Resource development such as mining was seeing resistance by a large contingent of BC voters, who wanted to conserve and protect the environment.

139 "The ecocentric argument is grounded in the belief that, compared to the undoubted importance of the human part, the whole ecosphere is even more significant and consequential: more inclusive, more complex, more integrated, more creative, more beautiful, more mysterious, and older than time. The "environment" that anthropocentrism misperceives as materials designed to be used exclusively by humans, to serve the needs of humanity, is in the profoundest sense humanity's source and support: its ingenious, inventive life-giving matrix. Ecocentrism goes beyond biocentrism with its fixation on organisms, for in the ecocentric view people are inseparable from the inorganic/organic nature that encapsulates them. They are particles and waves, body and spirit, in the context of Earth's ambient energy"(Rowe 1994, 106-107).

140 Or character.

13.3.2 First Nations and the Social Credit government, 1952 to 1972

Bennett's mega development strategy as premier had detrimental affects on First Nations throughout BC. For instance, the development of the John Hart Hydroelectric Dam on Vancouver Island, as well as the Kemano Hydroelectric project in Kitimat displaced (with little to no consultation) First Nations who lived and subsisted off the land (UBCIC 2005). Other examples include the W.A.C Bennett Dam and the Great Eastern Railway.

During the Bennett era, the Nisga'a Tribal Council was reasserting for the second time Aboriginal title as they were seeking its recognition, as well as compensation for its loss (UBCIC 2005). In 1968, the Nisga'a turned to the BC Courts for legal recognition that they had title to their territory and that they never lost it. The Courts ruled that the Nisga'a never had Aboriginal title, as it never existed. Ultimately, the Nisga'a went to the Supreme Court of Canada (*Calder v. Attorney General of BC*),[141] [142] which dismissed the case based on a technicality (Mills 2008). However, this case set a precedent because the Court stated during its ruling "…that Aboriginal title was rooted in the 'long-time occupation, possession and use' of traditional territories"(Jepsen et al 2005, 17; UBCIC 2005). Therefore, the Court recognized that the Nisga'a had title to their land prior to Confederation, which gave a boost to activism (e.g., tribalism),[143] as well as treaty claims throughout the province. As a result, the development of a series of organizations such as the Provincial Regional Forum (1980), the Tribal Forum (1981-3), the Aboriginal People's Constitutional Convention (1982-8) and the BC First Nations Congress (1988-90) occurred (Tennant 1983).[144] The NDP (under

141 *Calder v. Attorney General of British Columbia* (1973) S.C.R. 313.

142 In 1949, Frank Calder, a Nisga'a hereditary chief, was elected as a CCF MLA for the Atlin, BC riding. He would be the MLA in Atlin for over 30 years and he would become a prominent First Nations rights and land claims advocate (Tennant 1996). For example, Calder strove for the recognition of Native title, treaties that granted compensation and more extensive First Nation lands and self-government (Tennant 1996). In 1955, he helped to organize the Nisga'a Tribal Council (the first Native council in BC), which in 1969 took BC to court over land claims issues (Tennant 1996).

143 "Tribalism is "…a social and political revivalist movement based upon the desire of many Natives to return to traditional collective identities and to reaffirm their personal roots in the cultures of their ancestors; it was initially a phenomenon of the coastal people…Tribalism meant that tribal nations, rather than bands or communities, were seen as the entities of primary political legitimacy and therefore as the preferred bases for political action"(Tennant 1996, 52-53).

144 For additional information on the organizations listed see the following website: http:/ /ojs.library.ubc.ca/index.php/bcstudies/article/viewFile/1153/1197.

Premier David Barrett) declined to participate in the process, or recognize Aboriginal title (Tennant 1996).

In 1969, Prime Minister Trudeau and Minister of Indian Affairs Jean Chretien released one of the most controversial documents on Indian policy known as "The White Paper". The paper enraged Aboriginal peoples all across Canada, as its purpose was to end Aboriginal special status and finalize assimilation (Tennant 1996). The paper noted the elimination of the Indian Act, the gradual removal of federal responsibilities and "…redistribution of reserve lands based on individual ownership"(Mckee 2000, 27; as cited in Jepsen et al 2005, 15). The Union of British Columbia Indian Chiefs (UBCIC) was formed in response to the White Paper, whereby 144 BC chiefs and delegates met to discuss it (UBCIC 2005; Tennant 1996). In response, UBCIC ended up publishing a document titled "The Brown Paper". In 1971, the federal government withdrew the White Paper, thereby replacing it with a "Core Funding Program," which ultimately provided Aboriginal peoples with resources that facilitated research, publication and legal action (Jepsen et al 2005).

Driven primarily by economics (e.g., costs and the loss of resources), the province refused to negotiate First Nations land claims in BC. The government's refusal to come to the negotiating table exasperated the level of uncertainty in regards to the land question, as well as promoted protests and court challenges by First Nations people. This reaction ultimately defeated the government's purpose of silencing First Nations, as the electorate over time would strive for the government to settle the First Nation treaties and the land question in BC.

13.4 Conclusion

The foundations of BC's present political system and culture is primarily based on social and economic ideologies. W.A.C. Bennett and his predecessors' priorities were to advance BC's growth and independence from federal control through the development of costly infrastructure projects. To pay for such projects, the government relied heavily on revenue (in particular taxes) from resource industries such as mining. As a result, the industry acquired significant political power, as the government was reliant on its revenue as well as mining employee votes.

The need for riches and power by the elite, the prosperous living conditions as a result of the booming economy and a growth in bi-partisanship led to conflict between governments, labor, environmentalists and First Nations. When times are good and society can provide for their basic needs, values change and conflicts enviably ensue. In BC, this spawned a series of social movements (e.g., labor and environmental). As a result, political parties had to continually redefine themselves to reflect these changes or to maintain votes. Bennett resigned after being the premier of BC for 20 years. His growth strategies, which sponsored value changes, were no longer relevant as they no longer fit into the anti-capitalist ideals growing throughout BC.

In 1871, BC was promised great riches to join Confederation; therefore, had great expectations. First nation land claims stood in the way of this expectation; therefore, the government implemented penalizing acts and policies in order to silence and assimilate First Nations into mainstream society. First Nations endured the power struggle between the provincial and federal governments in regards to who had responsibility for First nations issues in BC. The provincial government refused to negotiate or acknowledge the issues, whereas the federal government waivered from time to time if they were responsible or not, but ultimately created the assimilation manifesto called ‘The White Paper’ in 1969. These conflicts significantly lengthen the negotiating process and a strong First Nations movement emerged. Initially cooperative and willing to negotiate with the federal and provincial governments, it later emerged into a movement of protests, blockades and legal challenges. This movement would bring to light the years of misdealing’s by the federal and provincial government in regards to First Nation issues, as well as highlight the escalating long-term political, economic and social costs of not negotiating treaties in BC. The most prominent cost to the mining industry is land access. Unsettled treaties creates a high level of uncertainty, as companies are less willing to invest in areas where long-term costly legal challenges could ensue over land access, ownership and the corresponding economic benefits.

CHAPTER 14 One NDP and two Social Credit governments and their role in BC's mineral development story, 1972 - 1991

14.1 Introduction

The following section highlights key historical events (e.g., reigning political party and their mandates, environmental movement, federal and provincial relations and First Nation issues) pertaining to each governing party (one NDP and two Social Credit governments) of the day from 1972 to 1991, in order to deduce a sequence of recurring political themes, in order to recognize their influence on mineral development in BC.

14.2 Premier David Barrett, NDP, 1972-1975

Once a social worker, Dave Barrett became the new premier and finance minister of BC after a lengthy battle against the Social Credit party. His background appealed to the new left cohort whom sought control of BC's natural resources, feeling they belonged to the people and not government (Isitt 2011). The strength of populism where "…'people like me' can get things done" and political efficacy[145] helped to fuel the first NDP win, as well as reiterate that the electorate had the power to change BC's political landscape with grassroots activism (Elkin 1985, as cited in Blake 1996a, 4) (see Chapter 12).

Initially, Barrett relied heavily on Bennett's cabinet structure; however, all this would change with the onset of a worldwide recession and his need to bring a record 400 Bills to the House in his first year of office (Mitchell 1983). Some of the Bills were a success; however, many stood out as controversial or failed.[146] Mitchell (1983) notes the public's reaction in regards to these developments and initiatives as being hostile in nature. He writes,

> Farmers complained that they were being made serfs on their own land; developers and development capital fled the province; the mining industry came to a virtual halt

145 During the 1972 election, there was a high level of political efficacy amongst the electorate, especially when compared to the rest of Canada (Blake 1985; 1996a).

146 For instance: (1) The Land Commission Act 1973 and BC Land Commission, a comprehensive set of controls over land use, in particular ALR land; (2) The Minerals Royalty Act 1974, "imposed heavy new taxes and royalty structures on the province's mining industry"; (3) The Timber Products Stabilization Act 1974, centralized control of BC's forest industry; and, (4) The Public Service Labor Relations Act 1974, "grant[ing] full bargaining rights to provincial government employees" (Mitchell 1983, 439). Examples of successful initiatives by the NDP during Barrett's power include: (1) Development of Crown corporations such as BC Petroleum Corporation (BCPC), Insurance Corporation of British Columbia (ICBC) and BC Development Corporation; and, (2) Development of resource companies such as Canadian Cellulose Company and Ocean Falls Corporation (Mitchell 1983, 439).

> in protest against the new mineral royalty legislation; the province's forest industry underwent a period of serious re-evaluation (p.439).

With the onset of these changes, it quickly became clear that Barrett's socialist agenda was to transform the nature and structure of the province's resource-based economy (Payne 1982). Barrett's objectives were to increase taxation of resource corporations, diversify the economy and develop a broad regulatory structure (Payne 1982). His intentions were to redistribute the province's income, break reliance on the export of primary products (e.g. unprocessed minerals) and to protect the public from unrestrained resource development (Payne 1982). Barrett's party platform in 1972 stated,

> From the mining industry, the citizens of B.C. deserve an end to the present government's policy of giving away our mineral resources. Mineral resources such as coal and copper are non-renewable and thus should be charged with fair royalties when they are exported without processing…lighter royalties should be charged on resources processed in B.C. so companies will be encouraged to develop secondary industries that will provide jobs to B.C. citizens (The Province 1975, 5, as cited in Payne 1982, 12).

In 1973, the Barrett government proposed a series of changes to the Mineral Act. The most significant of these changes was the new regulatory procedures in the issuing of 21-year mineral leases. Companies had to include a production plan with their application for a mineral lease that detailed "…economic feasibility, ecological reclamation and safety standards…" as well as "…the best possible method of producing the minerals…"(Payne 1982, 13). If the company was unable to fulfill these requirements, the Minister was able to rescind the mineral lease or tell the company to cease production (BC 1973, as noted in Payne 1982).

The government also wanted to apply a royalty of five percent on production, rather than a tax on income (e.g., Bill 31, the Mineral Royalty Act) (Gazette 1974; Blake 1985; Payne 1982). However, if the minerals were processed or smelted in BC the levy would drop to four percent (Payne 1982).[147] In The Vancouver Sun (March 28, 1974), an article titled "Mine

147 There were only two smelters in BC active during this time and neither processed copper. In 1974, the NDP government appointed a Copper Task Force, which studied "…the possibilities of smelting, refining and fabricating of copper…" in BC (Payne 1982, 23). The report advised, based on the growth of copper mining in BC, that two 'world scale' (125,000 tons each per year) smelter and refinery complexes should be built (Payne 1982). One in the vicinity of the Highland Valley Copper mine and the other along the north coast (Payne 1982). Negotiations ensued with a number of companies about privately funding a smelter, as well as royalty amounts; however, structural

projects threatened" describes how two BC mining projects (e.g., Newmont's Granduc[148] and Similkameen mines) valued at $215 million and provided 1200 jobs would not be able to sustain production due to increased costs associated with the NDP's Mineral Royalty Act (p.34). In the Calgary Herald (Oct 2 1974), an article titled "Politics joins inflation as major fear of investors" emphasized how the NDP's new Mineral Royalty Act jeopardized the province's mining industry. Overall, the NDP promoted initiatives that challenged and taxed the mining industry.[149] An industry that once relished in federal and provincial preferential tax treatment, especially under the Social Credit government (Payne 1982).

Overall, the NDP's policy changes gave the government more discretionary power to regulate the mining industry, as well as manage the province's resources (Payne 1982). This would limit new ventures from raising the necessary capital to get started. For instance, in the Windsor Star (Oct 3, 1974), an article titled "Politics said threatening big business" discusses

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changes from within the NDP party stalled the process and later died as a topic of interest by the party. Since the 1950's, downstream processing has been an issue for the BC government, as well as the industry. The government has applied pressure through royalties to try to promote industry to bring copper smelters on line; however, the cost, as well as the environmental opposition has inhibited their development. Also, the government's reliance on industry to build the much-needed smelters has felt some resistance by industry that felt threatened by an anti-capitalist NDP government (Schreiner 1975). However, the industry had a change of heart in 1975, with the development in central BC of Teck Corporation and Afton Mines Limited's copper mine, mill and smelter (Schreiner 1975). The smelter was only one-fifth of the size needed to be 'world scale' and could only smelt ore containing low sulphur content; therefore, it could only be used for Afton ore (Schreiner 1975). The company received an subsidy, as well as a royalty reduction of $4.3 million (Payne 1998). What roles do the lack of smelters play in the development of new copper mines in BC? If the two recommended smelters were built, would depleting copper production from exhausted mines stimulate new mine development? Would there have been provincial pressure to keep the smelters running and therefore would some of the political issues discussed throughout this thesis be less relevant?

148 Granduc is an underground mine that has costs that are four to five times higher than the cost of an open-pit mine (The Vancouver Sun 1974, 34).

149 For instance, tax policies and mineral royalties have had a significant influence on economic outcomes in BC, particular on the mining industry. On June 21, 1974, 300 miners gathered on the steps of the BC legislator to protest the NDP's Mineral Royalties Act (Bill 31) (Gazette 1974). The legislation designated a 2.5 percent royalty on profits made by mining companies in 1974 and a five percent royalty in 1975. As a result, large mining firms moved north to the Yukon and Alaska to look for mineral resources, decimating mineral exploration throughout the province (Bangor 1974)(see Chart 6). In an article found in The Windsor Star (October 3, 1974) titled "Politics said threatening big business", author Bob Cohen cites Ian McAvity of Draper Dobie and Company as stating, "In every single problem affecting the market today, I find one common threat – politics. That threat is being spun at both the federal and provincial levels and is strangling the core of the economy – resource industry. Companies are in business to make a buck. The rules that governments have written or are contemplating will squeeze profits. Take British Columbia's new Mineral Royalties Act proclaimed last week. If the price of copper, say, is high, Barrett's government is going to rip the whole thing off. If prices fall, the government won't necessarily carry the companies in bad times. It's saying to the companies, 'Fellas, when times are bad, you're on your own'. And Barrett's sitting back wondering why resource companies aren't exploring in B.C."(p.50).

how big business do not want to invest further in BC with the NDP in power (Cohen 1974, 50). The Windsor Star journalist Bob Cohen (1974) describes how mineral exploration has come to a halt because businesses fear that they will be "raped" by government if they actually discover an economically feasible mineral deposit in BC (p.50) (see Chart 5).

The largest opposition to Barrett's political platform came from the BC miners (a highly concentrated industry that is dominated by a small number of large corporations). They launched a vigorous campaign against the NDP, along with the Mining Association of BC (MABC) and the BC and Yukon Chamber of Mines (BCYCM), as well as support from the three oppositional parties: Social Credit, the Liberals, and the Conservatives (Payne 1982). Opposition to the NDP's policies also came from the United States (US). For example, in Barron's Financial Weekly newspaper, an article captioned "Chile of the North?" pointed out that the NDP is "…moving ahead with socialist program rivaling that of the Allende government in Chile"(as cited in Harrigan 1973, 4). The confrontation between the miners and government conveyed the connection between politics, economic policy formation and industry (Payne 1982). Payne (1982) writes, "…an analysis of this campaign provides a striking illustration of the way in which economic power can be translated into political power…"(p.4). Over time, the NDP had to back down in regards to their anti-mining initiatives. The economic recession (e.g., 1973 oil shock)[150] was hitting the province's bottom line and they needed to rely once again on the export of natural resources (e.g., mining was the second largest industry in BC during this period, whereas the forest industry was first) to bolster the province's economy (Payne 1982) (see Chart 1).

The NDP had the "…greatest degree of legislative activism…" while in power; however, by 1974 the party suffered further opposition due to poor management, a skyrocketing welfare budget and a 40 percent fiscal overrun on the provincial budget (Sigurdson 1996, 323). In 1973, the NDP had to "cave in" to the demands of striking ferry, firefighter, as well as ICBC workers in order to get them back to work (Plecas 2006). The unionized voters are the NDP's primary supporters and the party needed their support to stay in power, as well as be an active party in the provincial government.

150 The 1973 oil shock left the mining industry in a dyer situation, whereby three mines were closed and over 1000 workers lost their jobs (Payne 1982).

During this period, BC's political culture became known for being "…active, participative, populist, moralistic and striving…"(Elkins 1985, as cited in Blake 1996a, 3). Despite Barrett's more hospitable election conditions (e.g., extended economic boom, highly unionized workforce, increased party support), he faced significant challenges an economic downturn late in his term that threatened his costly socialist agenda (e.g. high welfare costs) (Plecas 2006). In my opinion, Barrett seemed to forget that the economic mainstay of BC's economy (since the time of Confederation) is resource development and in order to survive an election the party needed to have a balanced budget, promote economic resource development policy and acquire the needed votes from resource industry employees.

Overall, Barrett was criticized for "…do[ing] too much too fast" with very little planning (Sigurdson 1996, 321). The business community (especially the Liberal elite) in BC became leery of the NDP, whereby they joined the Social Credit party despite years of resistance. As a result, the Social Credit party acquired the largest mass membership of any other party in BC, ultimately contributing to the NDPs defeat in 1975 (Blake et al 1991; Blake 1996a).

14.3 Premier Bill Bennett, Social Credit, 1975-1986

In The Spokesman-Review (March 7, 1976), an article titled "B.C. residents seeing red after Socialist experiment" highlights the challenges the newly elected premier, the son of W.A.C Bennett, had to face after winning the 1975 provincial election (Soble 1976). The most notable challenge was an error in the projected provincial deficit of $40 million by the Barrett administration, which was actually $541 million (Soble 1976). As a result, Bennett implemented a restraint program, including a reduction in government worker salaries and other inflationary measures, as well as the need to borrow money due to a shortfall in provincial revenue (Soble 1976).

The Social Credit victory was a political triumph for BC's mining industry, which worked hard to oppose many of the NDP's mineral policies. For instance, during the election campaign the mining industry through television commercials and pamphlets publicized the plight of the industry. In the Province (December 5, 1975) Robert Sheldon, BCYCM is cited as stating,

> [The industry had already lost] several good years…and unless the decline is immediately reversed, British Columbia will have lost the benefit of a decade of mineral exploration…We make no excuse for re-emphasizing our message. Our timing – the climax of the campaign – is intentional (p.18, as cited in Payne 1982, 28).

Bennett quickly dismantled many of the NDP policies that involved the mining industry and after extensive consultation the party introduced two new Bills (e.g., the Mineral Resources Tax Act (MRTA) and a new set of amendments to the Mineral Act), as well as reverted back to the pre-1974 tax system (Payne 1982).[151] As a result, "the mining producers in the province…pay less tax today than they paid under the previous Social Credit Administration"(BCLA 1976, as cited in Payne 1982, 29). The MRTA applied a 17.5 percent tax on mine net income, thereby eliminating the Mineral Royalty Act and Mining Tax Act (Payne 1982). An amendment to the Mineral Act (Bill 30) eliminated the NDP's "resource management" approach, whereby the retraction of section 64 of the Mineral Act that required mining companies to submit and acquire Minister approval for a production plan was replaced with a more moderate clause (Payne 1982). In 1977, a new and less complex Mineral Act was introduced. The new Act reaffirmed the "free miner," whereby miners were ensured access to mineral resources throughout BC (Payne 1982, 30). As a result of these changes, the Social Credit party worked hard to win back investor confidence, which had been lacking for the past three years (The Calgary Herald 1975) (see Chart 5). As a show of confidence, resource company stock prices in BC rose with the election of the Social Credit party (The Wall Street Journal 1979).

By their third election victory (1983), the Social Credit party was forced to make large budget cuts as a result of the economic recession (see Chart 1). BC's unemployment rose to be amongst the highest in all of Canada (The Calgary Herald 1984). The solidarity movement emerged stronger than ever, protesting Bennett's restraint program (e.g., the introduction of 16 new Bills) by having numerous public protests throughout Victoria, as well as in Vancouver (Plecas 2006). Government employees and teachers went on strike. Hoi-Yin (March 16, 1985), a journalist for The Vancouver Sun newspaper writes,

151 For information on pre-1974 mining tax see the following website:
http://www.empr.gov.bc.ca/Mining/Geoscience/PublicationsCatalogue/Papers/Documents/P1979-05.pdf

> Restraint was a product of the recession, a world-wide recession from which no province, no country was immune. And we in B.C. were hurt more than most because of the devastation high interest rates wreaked on the commodity prices of our resource-oriented economy…If there was no belt tightening during the recession, if the government did nothing, or pumped more money into the economy in a futile attempt to buck the world economic tide, there would be no talk of "economic renewal" today, no talk of tax cuts and "renewal initiatives" (p.C1).

In order to end the strike and calm the turmoil occurring throughout the province, Bennett's government had to make concessions (Plecas 2006). By 1985, the government was offering financial breaks (e.g., tax relief, reduced energy and transportation costs) to the mining and forestry industries, as the long economic downturn was taking its toll on the well being of resource industries (The Montreal Gazette 1985). For instance, BC's real GDP growth rate in 1984 was 1.9 percent, the second lowest in all of Canada (The Calgary Herald 1984). A Commissioner of Critical Industries was appointed to help "…create new jobs, attract new investment, increase exports and provide training for the young and those who have been most affected by the international recession"(Star-Phoenix 1985, B8). However, BC's export industries (e.g., mining) were "…at the mercy of outside forces…" such as international markets, interest rates and the value of the dollar, reinforcing the concept that restraint programs have their limits in regards to BC's recovery (The Calgary Herald 1984, E2). However, the backlash from the restraint program along with the recession would push Bennett to retire from the Social Credit party and as premier on May 22, 1986.

14.3.1 Environmentalism and the Social Credit, 1975-1986

During this period, the environmental movement started to make the turn from ecocentrism and growth towards sustainability and sustainable development[152] discourse (Hay 2002). The notion of sustainability emerged as a result of the development of renewable resource management policies, whereby sustainability is noted as being the equilibrium between the harvesting of renewable resources (e.g., forest and fish) and their rate of regeneration (Eggert 2009). This equilibrium allows for indefinite preservation of stock (Eggert 2009). Ultimately,

152 The WECD report titled "Our Common Future" or the Brundtland Report defined sustainable development as "…development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts: the concept of needs, in particular the essential needs of the world's poor, to which overriding priority should be given; and, the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs"(p.43).

sustainable development linked growth with environmentalism, as growth was needed in order to ensure the equitable division of global wealth worldwide (Hay 2002). Hay (2002) writes, "Growth then, but with a strong ethic of global resource distribution contained within it; the yardstick of sustainability being employed was whether or not any given economic policy serves to reduce or maintain the existing stock of environmental resources for future generations"(p.213). Therefore, sustainable development emphasizes the importance in "simultaneously" maintaining or enhancing the quality of environmental, economic and social/cultural characteristics in order to ensure their future viability (Eggert 2009).

Overall, the environmental movement was rapidly progressing and with the help of globalization it was having a significant impact on growth and development worldwide. Countries, regions, locales and corporations were facing opposition to their development projects. For instance, the socialist and peace anti-nuclear movement emerged worldwide, which was later heightened as part of an environmental mandate by Greenpeace as a result of the Three Mile Island accident (1979) in Pennsylvania, US. Uranium became a politically hot topic and although seemingly understood by many, its exploration and mining was ultimately banned in BC (see Appendix 8: Case Study: The Moratorium on Uranium Exploration and Mining in BC).

14.3.2 First Nations and the Social Credit, 1975-1986

By the mid-1970's, treaty negotiations between the federal government and the Nisga'a began. BC was only an observer at the table (Mills 2008). Mills (2008) states,

> British Columbia was willing to sit at the negotiating table as an observer in 1977, but the province was unwilling to "recognize the existence of an unextinguished Aboriginal title to land in the Province, nor does it recognize claims relating to Aboriginal title which give rise to other interest in lands based on traditional use and occupation of the land"(p.62).

A number of First Nations (e.g., Gitxsan, Wet'suwet'en, Musqueam, Gitanyou, Haisla, Nuu-chah-nulth, Haida, Nlaka'pamux and St'at'imv) followed suit and filed Comprehensive Claims with the Office of Native Claims.[153] Since the federal government would only

153 See the following website titled "Resolving Aboriginal Claims - A Practical Guide to Canadian Experiences" for additional information on land claims in BC and Canada: http://www.aadnc-aandc.gc.ca/eng/1100100014174/1100100014179.

negotiate one treaty at a time and the Nisga'a Claim was filed first, very little progress was made on settling the land question in BC during this period.[154]

In 1982, the federal government patriated the Canadian Constitution of which embedded Section 35(1) that states, "The existing aboriginal and treaty rights of the aboriginal peoples of Canada are hereby recognized and affirmed".[155] Boldt and Long (1985) state, "The constitutional status of aboriginal peoples and the constitutional affirmation and recognition of aboriginal rights commit both present and future generations of Canadians to seek resolution of issue [of Aboriginal rights]"(p.3, as cited in Woolford 2005, 8). This created further uncertainty with respect to land access and in regards to business investment in BC. Woolford (2005) writes, "The undefined nature of Aboriginal rights in British Columbia has produced a situation of "uncertainty" in which investors and developers are unsure of the security of projects taking place on Crown land"(p.11). It also created greater uncertainty for First Nations, who now had to rely on the courts to acquire Aboriginal rights and title, as well as file costly injunctions against resource companies in order to stop them from entering and extracting resources from areas with filed claims. For example, in 1984 two Nuu-chah-nulth First Nations (Clayoquot and the Ahousat) blocked access to Meares Island. They had filed a Comprehensive Claim three years prior and felt logging on the island would interfere with Aboriginal title (Jepsen et al 2005). Tennant (1996) writes, "The blockade proved to be the event that led eventually to the province's abandoning its historic opposition to negotiations. The courts, however, played the decisive role in forcing the province's hand" (p.53). As a result, in 1985 the BC Supreme Court granted an injunction halting logging in the area (Jepsen et al (2005). Today, the injunction still stands.

Also in 1984 the landmark Guerin case, *Guerin v. The Queen*[156] [157] was settled. The Supreme Court had recognized "…pre-existing Aboriginal rights both on and off reserve…" prior to

154 It would take until 1991 for the federal government to revise their policy on the number of claims to be negotiated per year per province.

155 For additional information on the 1982 Canadian Constitution Section 35 see the following website: http://laws-lois.justice.gc.ca/eng/const/page-16.html.

156 *Guerin v. The Queen* (1984) 2 S.C.R. 335.

157 In 1955, the Musqueam First Nation held 1.7km2 of land in Vancouver, but made a deal (with the help of the federal government) to surrender "in trust" for lease 0.7km2 of land for the Shaughnessy Heights Golf Club. The 'true' agreement made between the federal

European settlement and that governments have "a fiduciary responsibility" to protect Aboriginal interests (Jepsen et al 2005, 18; Davis 2014).

That same year the Gitxsan and Wet'suwet'en filed a lawsuit against provincial government asking for recognition of their ownership of 57,000 km^2 of land in northwestern BC (UBCIC 2005). They also sought compensation, as well as the right to govern their traditional territories. In 1987, the Supreme Court of Canada heard the *Delgamuukw v. British Columbia* case. In 1997, the Court rejected the province's argument "…that Aboriginal rights had extinguished before 1871;" however, the Court didn't establish if the Gitxsan and Wet'suwet'en held title to their land (UBCIC 2005, 33). However, the Court determined that "…Aboriginal title is not a right of absolute ownership, but a propriety right to 'exclusive use and occupation of land'…"(UBCIC 2005, 33). Woolford (2005) summarizes the ruling by stating,

> The *Delgamuukw* ruling empowers First Nations to enjoy exclusive use and occupation of the land in forms that go beyond traditional usage, but, at the same time, it places inherent limits on this usage, requiring that First Nations not use the land in a way that contradicts or makes meaningless the term "Aboriginal" title; that is, First Nations cannot use the land in a manner that would destroy the Aboriginal nature of this title (e.g., by selling it outright to a third party)(p.6).

This case also clarified the governments' duties of consultation and accommodation. For instance, the Court advised the governments that they have a "moral if not legal duty"…"to settle treaties in 'good faith'…"(Woolford 2005, 2).

By the early 1980's, almost all coastal First Nations had submitted formal statements on their intent to negotiate land claims (Tennant 1996). Many of which put their claims on hold pending the *Tsilhgot'in Nation v. British Columbia*[158] case (Tennant 1996) (see Section 16.2.2). By the mid-1980s, there were significant protests and blockades by First Nation groups throughout the province. They were frustrated over the governments' refusal to negotiate land claims, as well as their willingness to authorize resource development in claim

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government and the golf club was not disclosed to the Musqueam First Nation. In 1970, the Musqueam First Nation discovered the true nature of the agreement and protested that the federal government had the duty to inform the Musqueam First Nation on the nature of this agreement. The Musqueam First Nation took the government to Supreme Court of Canada and won $10 million in damages, as the government had "a fiduciary responsibility" for Aboriginal peoples and their interests (Jepsen et al 2005, 18).

158 *Tsilhqot'in Nation v. British Columbia* (2014) S.C.C 44, (2014) 2 S.C.R. 256.

areas. For instance, in 1983 the Haida blocked a logging companies' access to Haida Gwaii (e.g., Lyell Island) claiming title to the area (UBCIC 2005). The Haida also declared the area a heritage site.[159] An injunction was granted by the BC Supreme Court to stop logging in the area and by 1987 Lyell Island became a designated national park (UBCIC 2005).

14.4 Premier Bill Vander Zalm, Social Credit, 1986-1991

The "millionaire gardener," Bill Vander Zalm became the leader of the Social Credit party after "…the most contested leadership convention (there were twelve candidates) in Canadian history"(Blake 1996b, 75). A market research group polled 402 randomly selected British Columbians' on who should lead the Social Credit party (Persky 1989). Those polled "…thought Vander Zalm the most trustworthy, the candidate most likely to end the confrontation in the province, and most important, the potential leader with the best chance of leading the party to victory"(Persky 1989, 40). Vander Zalm's succession came about by being voted in by 67 percent of the party's veteran activists who were known to be the "most populist, most individualistic, most supportive of restraint and most hostile to government regulation"(Persky 1989, 53). On August 6th, 1986, the charismatic leader was sworn in as BC's premier. In an Edmonton Journal article (October 1986) titled "Winning Charm" the author writes, "The power of optimism and enthusiasm cannot be discounted. If a campaign of charisma can carry the new leader of a hated government to power, it may cause people to find new ways to achieve social and economic growth"(p.A6). Kim Campbell (July 29, 1986) states, "Charisma without substance is a dangerous thing"(as cited in Persky 1989, 38).

Within his first 30 days as premier, Vander Zalm mused on about everything from sales taxes to beer prices (Persky 1989). By six months, Vander Zalm had squashed Bennett's ideology that "BC is not for sale" by selling publically owned resources (e.g., banks, airlines, forestry companies, etc.) to eastern Canada, US, as well as international buyers (Plecas 2006). For example, Vander Zalm's Davis Plan, which proposed to sell the publicly owned BC Hydro to a "profit-seeking private sector," was deemed one of the more controversial attempts to liquidate the province's assets (The Ladysmith-Chemanius Chronicle 1987, A6). Vander

159 Another example: In 1986, the Nlaka'pamux submitted their Comprehensive Claim; however, they to had to acquire an injunction and later a moratorium on logging in the Stein Valley in 1989 (UBCIC 2005). By 1995, the Stein Valley was designated a provincial park.

Zalm's anti-western sentiment seemed to conflict with past Social Credit ideologies. His schemes such as 'decentralization'[160] and "…want[ing] to bring to government high moral standards based on true Christian principles" resulted in many cabinet resignations, as well as a caucus revolt (Blake 1996b, 75; as cited in Persky 1989, 21). John Cruickshank, Globe and Mail's former Vancouver Bureau Chief observed that the past "…election promises to consult, to compromise and to build coalitions are now vague, contradictory memories. Mr. Vander Zalm has initiated an era of impassioned, uneven and unsettling one-man rule"(Cruickshank 1987, as cited in Persky 1989, 147).

Plagued by the recession (known as the "worst since the war") Vander Zalm appointed Jack Davis as the Energy Minister, who later established a Mining Task Force (MTF) in order to study and report on how to revitalize the industry (Persky 1989, 6) (see Chart 1). In 1987, the MTF reported that the government would need to provide the industry with handouts, tax relief and deregulation in order to survive the next 10 years (Palmer 1987). The report noted that the cost to pull the industry out of the dumps would be $137 million, just less than $143 million the industry paid out in government taxes in 1985 (Palmer 1987). Of that $143 million, $128 million came from "non-profit based tax"[161] that the industry had to pay despite its limited profitability in that year (Palmer 1987, B4) (see Chart 1 and 5). A non-profit based tax makes it hard for companies to keep marginal mines open, as well as inhibits their investment in the building of new mines in BC (Palmer 1987). In 1984, a total of five mines closed (see Appendix 6). Questions emerged if the elimination of the non-profit based tax would help, considering that BC's copper industry is reliant on exporting to international markets and is challenged by operators outside of BC who are already state-subsidized, have higher grade ores, cheaper labor and favorable electricity costs (Palmer 1987). During this period, the BC coal industry faced similar challenges as the international markets were already oversaturated with coal (Palmer 1987).

160 Vander Zalm wanted to divide BC into different regions or states with their own head of state, budget, etc.

161 A non-profit based tax is when the industry has to pay taxes despite not making any money/profit due to a recession or a significant downturn in the market (Palmer 1987).

During this period, Vander Zalm spent $55 million of public money to buy preferred shares[162] in Cominco Ltd. (a private mining corporation) (Persky 1989). The purchase of these shares was intended to help the Cominco modernize its lead smelter (for $171 million) in order to stay competitive and save approximately 2000 jobs (Persky 1989; Ottawa Citizen 1986). A move deemed somewhat controversial in the Times-Colonist (August 27, 1986) article titled, "Can we afford Bill's free enterprise?". However, as noted in the Ottawa-Citizen (August 26, 1986), the purchase of these shares was to avoid imbalances and expectations created by giving a grant or loan (p.A5). In actual fact, this could be construed as a relatively politically inert position as the $55 million was an investment and therefore not a handout. The government and people of BC therefore stood to benefit when the market rebounded, assuming the company remained economically viable. Most importantly it showed that the Social Credit government supported the mining industry, especially during tough economic times.

In 1987, Vander Zalm's government explored the idea to include logging and mining in six selected parks (e.g. Strathcona, Kokanne Glacier Park, Tweedsmuir, Wells Gray, Kwadacha, and Manning). The parks' boundaries were redrawn, whereby areas designated as 'recreation' were open to logging and mining. Strathcona Park was projected to lose 16 percent of its area (Munro 1987). According to Munro (1987), "Provincial officials say the changes were largely brought on by a 1985 Supreme Court decision that gave a miner the right to compensation for his frozen mineral claims in B.C.'s Wells Gray Park"(p.c16). As a result of this decision, areas that contained mineral claims were now accessible to claim holders; otherwise the government would be liable for the compensation to settle all outstanding mineral claims. This decision upset environmentalists, who fervently protested the governments' decision to open up the parks for mineral development (Munro 1987). This decision did show the industry and investors that the province was open for mining business and revealed to the environmentalists that environmental concerns were not on the top of the Social Credit agenda (Persky 1989). This disinterest would also roll into the long-standing land claim issues.

162 These shares are non-voting and they were bought over 5 years and had a floating interest rate tied to the price of silver (Ottawa Citizen 1986, A5).

Despite a change in political leadership, political, economic and social challenges carry over from one political term to the next. It is the governing party's mandates and decisions that can turn a relatively mundane issue into a politically contentious one. For instance, on June 2, 1987 approximately 250,000 workers from 500 union locals went on a one-day strike, which became known as one of the largest strikes in Canadian history (Lodi-News-Sentinel 1987, 17). The strike was a result of Vander Zalm's "…plans to cut the power to organized labour" by limiting strike power and restrict wage increases through legislative Bill 19 (Industrial Relations Act) and Bill 20 (Teaching Profession Act) (Lodi-News-Sentinel 1987, 17). According to Allen (1987), Vander Zalm received a lot criticism by opposing parties and labor because prior to the Bills, BC had fewer strikes, as well as relatively modest wages in comparison to the rest of Canada (as noted in Persky 1989, 113). Throughout his campaign, Vander Zalm talked about ending the confrontation between labor, labor unions and the government; however, the opposite came true.

Vander Zalm would be the first of the next couple of premiers to resign as a result of a political scandal (e.g., a conflict of interest involving the sale of Fantasy Gardens).[163] Prior to his resignation, he lost voter confidence, as the party was unable to meet the demands for a more modernized government; in particular, its inability to reconcile to changes in electorates' attitudes in regards to the preservation and conservation of the environment, and the need to settle land claim issues (Blake 1996b). A 1989 poll revealed that 80 percent of British Columbians were supportive of the government entering into treaty negotiations (Jepsen et al 2005).

14.4.1 First Nations and the Social Credit, 1986-1991

To date, despite the number of outstanding court cases ensuing, the government did not deter from their position that there was nothing to be settled in regards to First Nations issues in BC (Persky 1989). However, the *Martin*[164] *v. R. in Right of BC* case and the Oka crisis persuaded Vander Zalm to make some changes (Tennant 1996; Woolford 2005). In 1988, the

163 In 1991, Rita Johnston took over for Bill Vander Zalm as interim Social Credit party leader. She was the first female premier in Canada. She would last only six months, as she was unable to reconcile divisions in her own party, as well as the resentment of voters towards the Social Credit party, and therefore had virtually no meaningful impact on mining or development (Blake 1996b).

164 See Section 14.3.2. Meares Island.

provincial government created the Ministry of Native Affairs and in 1989 a Native Affairs Advisory Council, both of which included numerous First Nations representatives (Tennant 1996). The purpose of the Council was to investigate the government's options in regards to the land question in BC. Vander Zalm and the Council toured the province meeting with the Nisga'a and other major tribal nations (Tennant 1996).

Early 1990, the Oka Crisis occurred in Oka, Quebec. Armed Mohawk warriors barricaded all roads leading to their territory to protest a planned golf course expansion that would infringe on their traditional burial ground (UBCIC 2005). In support of the Mohawks, as well as to push the BC government to enter negotiations, many First Nation communities (not all at once) erected rail and road blockades throughout BC (UBCIC 2005). As a result, First Nation communities' received vast media coverage, as well as added significant political and economic pressure to the government to negotiate land claims (Tennant 1996). As a result, Vander Zalm visited some of the protests and blockades in BC.

In the fall of 1990, after receiving recommendations from the Native Affairs Advisory Council, Vander Zalm despite declining the validity of Aboriginal title agreed to enter treaty negotiations.[165] However, federal and provincial debate ensued soon after as to who would be paying for land claims in BC (Kenna 1990). The negotiation process stalled, as the Social Credit believed that the federal government should compensate the province for any financial costs incurred in the settling of land claims (Kenna 1990). In 1990, a Price Waterhouse study noted that unresolved Aboriginal land claims in BC was hindering $1 billion in economic development (Jepsen et al 2005). Overall, the persistent provincial-federal debate on Aboriginal issues, rights and title continued to stall the negotiation of land claims in BC. This further exasperated investor, as well as electorate uncertainty in regards to First Nation issues, as well as access to natural resources in BC.

165 This declination would be short lived as a ruling by the Supreme Court of Canada in regards to the *R. v Sparrow* case would affirm Aboriginal rights under section 35(1) of the Constitution Act, 1982. The case involved Ronald Edward Sparrow (a member of the Musqueam First Nation) who was convicted on a charge under the Fisheries Act of fishing with a longer drift net than what was allowed under the Band's fishing license (Jepsen et al 2005). Sparrow appealed his conviction and based it on section 35(1) of the Constitution Act, 1982 that he was exercising his Aboriginal rights to fish (Jepsen et al 2005). The Court overturned Sparrow's conviction and ruled that the Constitution provides an affirmation of Aboriginal rights (Muckle 1998).

14.5 Conclusion

Over the past 20 years, three different governments ruled over the political and economic landscape of BC. Two were Social Credit, while the other was the NDP. Each governing party had its own style, mandates and policies; however, each followed a political ideology that was either pro-mining and development or socialist in nature. Each left a legacy of issues for the next leader/party and all three parties had to govern through some form of economic downturn or recession. What is prevalent though is that every four years or provincial election the reigning government has had significant impact on the success of the mining industry through changes in policy.

After the W.A.C. Bennett era, which is characterized by rapid economic growth and resource expansion, Dave Barrett became the first NDP premier. Barrett had a very 'socialist' agenda, passing 400 Bills aimed to 'manage' and take control away from the resource industry. He modified the Mineral Act and the Minerals Royalty Act, as well as increased mining industry taxes. As a result, he increased the level of investor uncertainty thereby driving away the much-needed investment dollars for mining companies to explore and build mines throughout the province. Consequently, the industry became more susceptible to economic downturns, as well as lagged behind in developing projects during economic upturns in the commodities market. As a result, the industry protested Barrett's resource management policies, which resulted in a period described as "the highest degree of legislative activism" by an industry to date. Barrett left the province with a $541 million deficit as a result of his socialist spending during a time of economic recession.

BC's second Social Credit premier; Bill Bennett had a large contingent of supporters from the mining industry who had strategically supported his campaign against the NDP prior to the provincial election. Once elected, Bennett worked with the mining industry to dismantle the NDP's harmful mining policies, as well as create new ones. Their goal was to win back investor confidence, which had been absent for the past three years. Bennett offered tax relief and incentives to the struggling resource sector, but having inherited a substantial deficit while trying to implement restraint during the recession by the early 1980's, he resigned in 1986.

The charismatic Bill Vander Zalm whose campaign promises failed to come to fruition as many of his schemes such as selling public assets, decentralization, or Christian principles left a wake of caucus revolts and resignations. Bills 19 and 20 set forth one of the largest labor strikes in Canadian history. Vander Zalm was unable "to consult, to compromise and to build coalitions" while in office. His party labored under the effects of the recession, despite his government's bail out of the mining industry languishing to keep marginal projects open. His government invested $55 million to help Cominco modernize their smelter in Trail, BC to save 2000 jobs, as well as show that the province was open for business. Like his predecessors, Vander Zalm's government did not deter from the position that nothing needed to be settled in regards to First Nations claims in BC. However, this changed as a result of the *Martin* and *Sparrow* cases, as well as the Oka Crisis. The conflict and litigation forced the government into action to negotiate land claims; however, a dispute ensued over which government (federal and provincial) should foot the costs of settlement.

CHAPTER 15 The four consecutive NDP premiers and their role in BC's mineral development story, 1991-2001

15.1 Introduction

The four consecutive NDP governments (e.g., Mike Harcourt, Glen Clark, Dan Miller and Ujjal Dosanjh), is one of the leading factors according to Bond (2002) as to why BC's economic performance faltered over the next decade. High provincial deficit and taxes,[166] stringent resource policies, labor legislation in favor of unions, concessions made to lobbyists and environmentalists, unsettled First Nation land claims, infrastructure challenges (e.g., congestion, strikes, etc.) and the loss of head offices resulted in the strangling of foreign capital throughout the province's resource industry (Bond 2002). Other contributing factors were: repeated economic recessions resulting in a significant drop in commodity prices, as well as constitutional challenges in regards to the US and Ottawa, as well as BC. Ultimately, it is the voters who elect the governing party of the day and are therefore the primary actors. In my opinion, they are as responsible as the political parties in driving BC's economic performance. However, the NDP government under Mike Harcourt made significant progress in modernizing the government and in the way political parties did business in BC.

The following chapter highlights the key historical events (e.g., reigning political party and their mandates, environmental movement, federal and provincial relations and First Nation issues) on two of the four consecutive NDP premiers (e.g., Mike Harcourt and Glen Clark),[167] ultimately stressing on important factors and actors that left BC's economy and resource industries (e.g., mining) faltering. Both Dan Millar and Ujjal Dosanjh were short-

166 The NDP raised taxes higher than any other BC government to date (Bond 2002).

167 Mike Harcourt and Glen Clark are the focus of this chapter, whereas Dan Miller and Ujjal Dosanjh are briefly discussed. As a result of Glen Clark's early resignation on August 21, 1999, **Dan Miller** (former Forest Minister) served as interim leader of the NDP for six months until the new NDP leader (Ujjal Dosanjh) was elected. During his term, a rail strike/lockout occurred, which would affect BC's recovery including mining after an economic recession. A prolonged rail stoppage would have a detrimental effect on mines and mills throughout BC relying on rail to transport ore to refineries, thereby effecting BC's reputation as a reliable resource supplier (Mertl 1999). It would shut down industries outside BC relying on rail to ship their goods to BC's large ports for export. This illustrates the precarious act that governments have to balance to stay in power; however, it is the interaction amongst factors, actors and sectors that determine their success or failure. **Ujjal Dosanjh** was a lawyer and a civil rights activist who became the first Indo-Canadian provincial leader and premier of BC after being nominated by activists at the NDP leadership convention in February 2001. He served a short time as premier, until he lost the general election in June 2001 to Liberal leader Gordon Campbell. The NDP won only 2 of the 79 seats in legislature. Dosanjh later became a Liberal Party of Canada Member of Parliament from 2004 to 2011 including a period as Minister of Health from 2004 until 2006 when the party lost the election.

term leaders of the NDP party between August 1999 and June 2001; therefore, are only briefly mentioned throughout this chapter.

15.2 Premier Mike Harcourt, NDP, 1991-1996

A storefront lawyer, an activist, as well as the former mayor of Vancouver, Mike Harcourt was BC's second NDP premier. His goal was to make BC "…a better place, a less confrontational place, a less class-conscious place, a more prosperous, sustainable place for all us to live in"(Harcourt and Skene 1996, 4). He resigned prematurely as a result of a scandal (called Bingo-gate), which involved the misuse of charity bingo monies. Ultimately, he was not implicated; however, the damage was done and he lost the confidence of his party (Harcourt and Skene 1996; Morley 1996). Harcourt left a significant legacy of social democratization that ensured the future of the NDP party in the province of BC.

Harcourt's approach involved extensive consultation and negotiation with First Nations, labor and industry prior to developing processes, organizations, as well as changes in provincial legislation. His primary goals as premier were to:

- Build a sustainable economy;
- Bring social justice and fairness to BC;
- Balance the budget;
- Stimulate new economic initiatives through international trade;
- Introduce more participatory democracy;
- A new role in regards to national unity; and,
- Avoid bad publicity (Harcourt and Skene 1996, 69; Carroll and Ratner 2005).

Harcourt utilized the process of consensus building to work towards achieving these goals. Harcourt states, "The most effective form of politics is the ability to reach consensus"(Harcourt and Skene 1996, 185). On March 9, 1991, Harcourt addressed a group of BC business people on wealth creation, which is summarized in the following statement,

> The Harcourt-led NDP believed in wealth creation. The rules were simple. If you paid your fair share of taxes, treated and paid your employees fairly and did not mess up the environment, our government was not opposed to wealth creation. The net result would be a healthy and growing economy, more jobs and a more secure future for all British Columbians (Harcourt and Skene 1996, 62).

Overall, Harcourt's approach changed the face of how political parties did business in BC. Once in power, the NDP had to face "…the largest deficit in B.C.'s history", $1.7 billion

(Harcourt and Skene 1996, 70). As a result, the NDP had to revamp their 48 election platform [168] titled "A Better Way British Columbia," to tackle the deficit through governmental cutbacks and taxes (Sigurdson 1996). [169] The NDP also had to manage expectations of long-term activist members who were eager to make up for lost time, as well as postmaterialists[170] who had gained leverage within the party (Sigurdson 1996) (see Section 11.2).

With the collapse of the Social Credit party, the return to a two-party ideological focused system occurred with the NDP (center-left) and Liberals (center-right), despite a small BC Reform party foothold (Blake 1996b). Harcourt and Skene (1996) write, "The old labels of "leftist," "socialist" and "bleeding hearts" did not fit anymore"(p.59). A new modern government emerged, whereby the old polarized rhetoric and ideals became redundant in political debates. Harcourt's administration three themes were: to have an "…honest government, sustainable development for the province and a dedication to improve the quality of life for all British Columbians"(Harcourt Skene 1996, 60). Harcourt's shift towards a sustainable development ideology resulted in the growth in 100s of environmental companies in BC (Crane 1994) (see Section 14.3.1 and 15.2.1). By 1994, there were approximately 400 environmental consulting companies in BC, employing approximately 8000 people (Crane 1994).

Harcourt's cabinet was the opposite of previous party's cabinets, as the NDP were young[171] and very educated[172] (Harcourt and Skene 1996; Sigurdson 1996). Eight of the 18 ministers were women, the highest number of women in any government in Canada (Harcourt and Skene 1996). His government became known for addressing women's issues, gender relations, aboriginal affairs, human rights and multiculturalism (Sigurdson 1996). The NDP government created the first freestanding Ministry of Women's Equality (MWE), as well as

168 A political platform that was focused primarily on gender and environmental issues and less so on economic policy (Sigurdson 1996).

169 Provincial debt results in the governing party losing control of their party platform and becoming a prisoner to the banks (Harcourt and Skene 1996). The government is obligated first to reduce the deficit prior to implementing new costly strategies. However, by making the required cuts requested by the banks to programs such as social support services, health care, education and Medicare, the government obtains a more favorable interest rate on their bank loans (Harcourt and Skene 1996).

170 See Chapter 12.

171 Average age of 45 years old (Harcourt and Skene 1996).

172 14 of the 18 ministers had at least one university degree (Harcourt and Skene 1996).

strengthened the Human Rights Act and introduced the first Multiculturalism Act (Sigurdson 1996). These developments, along with the NDP's three themes demonstrate a postmaterialist stronghold within the party, as well as the need to modernize government.

Good labor relations were fundamental to the Harcourt government as previous parties faced significant labor strife resulting in numerous protests and strikes. One of Harcourt's first duties while premier was to negotiate new labor contracts with over 40,000 government employees (Harcourt and Skene 1996). As a result, a new BC Labor Code (Bill 84) was developed through the participation, cooperation and consensus of both the BC labor force and business sectors (Harcourt and Skene 1996). Harcourt states, "We had achieved ninety-eight percent agreement between business and labor. It was a marvelous consensus that signified a new political and economic culture of cooperation for B.C."(Harcourt and Skene 1996, 104).

In the early 1990's, a recession hit North America hard; however, BC was somewhat spared initially as the Harcourt government was able to maintain a relatively low unemployment rate, a high growth rate and credit rating, as well as attract foreign investment (Sigurdson 1996) (see Chart 1). However, over the next 10 years BC faced significant economic challenges as a result of the collapsing Japanese market, the end of Hong Kong immigration, the long-term commodity price decline, BC's dependence on the US market and the province's reliance on tourism (Bond 2002, 204-205). BC's focus on growth in trans-Pacific trade and tourism resulted in more than 35 percent of BC's exports being sent to Japan (Bond 2002). The collapse of the Japanese market had a significant affect on BC economics, in particular on the Northeast coal project (see Appendix 8: Case Study The Northeast Coal Project). Additionally, BC lost its jurisdictional advantage of being the gateway to the Far East. The decline in Hong Kong immigration slowed economic growth in BC, as Chinese immigrants usually brought with them a considerable amount of capital, "…post-secondary education and professional skills"(Bond 2002, 205). The long-term decline in commodity prices put pressure on sectors such as mining and forestry to down size, stop production or close facilities (see Appendix 6). With the decline in exports to Japan, a large portion (up to 70 percent) of provincial exports was diverted to the US (Bond 2002). In the 1990's, tourism was the second largest industry (the largest is the forestry industry) in BC (Bond 2002). The

act of terrorism in the US known as 911 (on September 11th, 2001) resulted in a significant decline in the number of tourists that came to BC, thus having a devastating impact on the industry (Bond 2002). With the collapse of the US housing market in 2001 along with US protectionism (e.g., "…countervail tariffs on softwood lumber…") BC's softwood lumber industry collapsed, resulting in the unemployment of over 20,000 workers in the forestry sector (Bond 2002, 205).

In 1992, with the reemergence of constitutional issues the Harcourt government participated in (along with all the provinces except Quebec) and committed to a constitutional package known as the Charlottetown Accord. Harcourt approved the Accord, whilst the BC voters were against it "…by the highest margin of any jurisdiction in Canada"(Black 1996, 40). The Accord (in accordance to BC) covered four basic principles: (1) reform the Senate; (2) offer an agreeable amending formula; (3) recognize Quebec as a distinct society; and, (4) provide BC with a fair representation-by-population in Ottawa (Harcourt and Skene 1996, 76). Harcourt's goal was purely economic as stronger constitutional guarantees ensured prosperous growth for BC, as well as control over the province's natural resources (Harcourt and Skene 1996). Also, Harcourt wanted to put constitutional issues to rest once and for all, as they had been on the political agenda for quite sometime (Harcourt and Skene 1996). However, many of the provinces were against Quebec being recognized as a distinct society, thereby stalling the Accord's approval. In fact, the perception was that certain groups (e.g., First Nations and Quebec) were being given too much jurisdiction and notoriety (Jackson and Jackson 1995, 467-468, as noted in Black 1996, 40).

15.2.1 Environmental issues and the Harcourt government, 1991-1996

During this period, sustainable development ideology became more publically known and by 1992 the Rio Declaration on Environment and Development (Agenda 21) advocated for sustainable development indicators to be used by all countries in order to "…contribute to a self-regulating sustainability of integrated environment and development systems"(UNCED 1992, Paragraph 40.4). Much interest followed; however, very little progress was made by the time the World Summit on Sustainable Development in Johannesburg, South Africa arrived in 2002 (Gibson 2005). Some noted that "unrealistic expectations" for results were

made on very large worldwide challenges (e.g., 1997 Kyoto Protocol targets) (Gibson 2005, 51). Gibson (2005) writes, "Ten years is short space for a global turnaround"(p.51). It was the national or more localized projects that were successful.

The Whitehorse Mining Initiative (WMI) was developed in 1994 as a result of changes in the Canadian landscape in regards to investment, regulation and public policy (McAllister and Alexander 1999).[173] In response, the mining industry along with the federal and provincial governments, labor, Aboriginals and environmental groups worked together to develop a new vision (e.g., shared decision-making) for the mining industry (McAllister and Alexander 1999). An Accord was signed which envisioned "…a socially, economically and environmentally sustainable, and prosperous mining industry, underpinned by political and community consensus"(as cited in McAllister and Alexander 1999, 1). The WMI was revolutionary as it was one of the first initiatives to incorporate sustainability and sustainable development into its mandate. It also brought a diverse group of people together, who in the past had failed to work effectively together. As a result, they developed a new democratic practice of mining policy making in Canada. This method encouraged legitimacy in governments, as well as in industry as they worked towards a common goal of reaching a consensus on conflicting demands such as land use and access (McAllister and Alexander 1999). In 2001, the WMI influenced the federal government to amend their mining regulations and ultimately Natural Resources Canada (NRC) became the trustee of the WMI process (Saleem 2003).

During his term, Harcourt made great strides in regards to environmentalism. Years of conflicting disputes over land use and access, as well as neglect by previous governing parties germinated "…the most vigorous environmental movement…" in Canada (Blake 1996a, 3). Harrison (1996) states, "Environmental politics has been especially heated in British Columbia, where there is an inherent conflict between an economy heavily dependent on resource exploitation and a strong environmental movement intent on preserving those same resources"(p.290). This change in public values, as well as the growth in uncertainty in

173 For additional information on the Whitehorse Mining Initiative see the following website: http://www.nrcan.gc.ca/mining-materials/policy/government-canada/8698.

regards to BC's environmental assessment process contributed to the development of the Environmental Assessment Act in 1994 (see Appendix 7).

Harcourt's challenge while premier was to strike a balance between competing interests (jobs versus environment) in environmental disputes; however, he faced significant challenges as serious confrontations between miners, loggers, environmentalists, First Nations and government ensued. For instance, forestry conflicts during the Harcourt era included: Clayoquot Sound, Stein, Carmanah and Walbran Valleys, whereas the mining conflicts included: Strathcona and the Tatshenshini-Alsek wilderness areas (see Appendix 8 Case Studies: Clayoquot Sound and Tatshenshini-Alsek). These conflicts arose primarily over land access, whereby each actor felt a sense of ownership as a large number of the mineral claims and forests were on Crown land (Hoberg 1996).[174] Also urban-rural[175] and global-local[176] cleavages emerged, which further divided actors on issues, as each had their own interests on gaining or stopping access to Crown lands (Harrison 1996; Hoberg 1996). The NDP government needed to get re-elected; therefore had to alter their actions to coincide with postmaterialists who are known to be avid environmentalists and ultimately supporters of the NDP (Harrison 1996) (see Section 12.2). First Nation groups who filed Comprehensive Claims with the government and were involved with land access conflicts with resource companies filed injunctions to stop access to lands filed under their claim (see Sections 14.3.2 and 14.4.1). These conflicts highlight the shift in values in regards to the environment and economic development in BC, as well as changes in government legitimacy and responsibility. Actors now relied on the courts to settle matters, whereas during the W.A.C. Bennett era the government made all the decisions in regards to land access, etc. However, with the growth in populism and political efficacy, as well as the spread in popular votes (e.g., a non-bipartisanship political landscape, whereby none of the parties (NDP, Liberals

174 For example, the government owns 95 percent of all the forested land in BC (Hoberg 1996).

175 The urban-rural divide is the conflict between jobs and environmental conservation, as rural communities with high unemployment rates want jobs (e.g., resource development) and the urban center want to conserve the environment.

176 The global-local divide is a conflict in regards to a project's environmental scope or impact outside of the local area. For instance, the Windy Craggy mine project was located in an area now designated as the Tatshenshini-Alsek Wilderness Park, which bordered the US. Concerns arose in regards to the scope of the project, as it was adjacent to a river system that drained into US land and waters. Significant conflict ensued between BC, Canada and the US in regards to if the project should be built (See Appendix 8: Case Study Tatshenshini-Alsek).

and BC Reform) won the majority of the popular votes) W.A.C. Bennett's methods were no longer relevant (Hoberg 1996) (see Section 13.3).[177] As a result, the Harcourt government choose an alternate model to settling the conflicts by implementing "…a shared decision-making, or consensus-based approach"(Hoberg 1996, 275). This approach moved away from traditional or legislative decision making to actually delegating authority to stakeholders. The Harcourt government attempted to utilize this new approach while working with stakeholders in regards to the Clayoquot Sound conflict (see Appendix 8: Case Study Clayoqout Sound). For instance, in 1989 the Clayoquot Sound Sustainable Development Task Force (CSSDTF) was developed and as a result in 1990 the Clayoquot Sound Sustainable Development Steering Committee (CSSDSC) was formed. However, by 1992 due to turmoil within the committee and its eventual disbandment the NDP government established the Commission on Resources and the Environment (CORE) whose mandate was to set up a more comprehensive land use planning process for BC, rather than the province trying to settle conflicts on a claim by claim basis (Hoberg 1996) (see Appendix 8: Case Study Tatshenshini-Alsek). However, due to the complexities revolving around the Clayoquot Sound conflicts, it was exempt from the CORE process.

Overall, the power of the vote became paramount in regards to the growing environmental politics and policies in BC. The move away from a bipartisan political system, loss of the majority votes, past party interests in environmentalism, as well as the growth in political efficacy altered the way the NDP government did business. As a result, the Harcourt government brought greater balance in policies in regards to environmental sustainability and pro-development values, hence a change that will outlast economic recessions and future governments (Hoberg 1996).

15.2.2 First Nations and the Harcourt government, 1991-1996

Once in office, the Harcourt government began a new Aboriginal land and treaty settlement process in BC. The government started off by renaming and expanding the role of the Ministry of Aboriginal Affairs, recognized aboriginal title, rights for self-government and implemented (along with First Nations and the federal government) the BC Treaty

177 For additional information on BC voting statistics see the following website: see http://www.votemining.ca/mining-facts/.

Commission to act as impartial representative to oversee the treaty process (Sigurdson 1996; Tennant 1996; Woolford 2005). This was a rapid and progressive change when compared to previous BC governments. Tennant (1996) writes, "For the first time, BC had a government that was more responsive than the federal government in dealing with aboriginal concerns"(p.62).

In December 1990, the BC Claims Task Force (BCTF) was established which involved the federal and provincial governments, as well as the First Nations Congress (FNC).[178]. Two years later, a landmark BC Treaty Commission Agreement[179] was signed and a report (with 20 recommendations on how to proceed with land claims)[180] was established. Also, both the federal and provincial governments agreed to share the treaty costs. The agreement involved the provincial government providing land and the federal government would provide cash, as well as allowed for more than one Comprehensive Claim to be filed at a time (Tennant 1996; UBCIC 2005).

In 1993, the BC Treaty Commission started to accept 'statements of intent to negotiate' from Tribal Nations, as well as First Nation communities. Negotiations began in 1994 and within a year there were 47 separate negotiations, which included 198 Aboriginal communities (Tennant 1996). As a result, 16 separate tribal councils were acting for 99 First Nation communities, while the remainder acted independently (Tennant 1996). Despite the initial progress of the BC Treaty Commission, by 1995 public concern grew over BC's treaty process. The media, the public and the opposing parties criticized the process, whereas roadblocks and standoffs illustrated some of the First Nations opposition (Harper 1992; Simpson 2010; Sigurdson 1996). For instance, the Okanagan, Nlaka'pamux and Shuswap tribal nations who supported the UBCIC opposed the BC treaty process (Tennant 1996; UBCIC 2005). As a result, major roadblocks (e.g., Douglas Lake and Adams Lake) were erected, as well as an armed standoff between some Shuswap individuals and RCMP at Guftafsen Lake (Tennant 1996; UBCIC 2005).

178 For further details on the FNC 1992 report see the following website:
http://www.bctreaty.net/files/pdf_documents/bc_claims_task_force_report.pdf.

179 The first of it's kind in Canada, where Aboriginals participated and designed a treaty process (Tennant 1996).

180 For additional information on the 20 recommendations see the following website:
http://www.gov.bc.ca/arr/reports/bc_claims_task_force.html.

Despite all these challenges, the Harcourt government completed an agreement-in-principle with the Nisga'a Tribal Council and the federal government. This agreement set Harcourt's government apart from the others, as it was the first Comprehensive Claim signed in BC (Woolford 2005). Significant opposition arose as a result of the signing of this agreement. For instance, the Liberals threatened to end it if they won the upcoming provincial election, while the BC Reform came out and called the deal "racist" as it was perceived to give certain groups' special rights (Sigurdson 1996, 332). The media and interest groups fed into the opposition's views and preceded to barrage the public sphere with anti-treaty propaganda, which also highlighted that First Nations were getting special rights and treatment; a view that was in the forefront for many British Columbians' who opposed the Quebec sovereignty movement (Sigurdson 1996; Turner 1994). Overall, the Harcourt government made great strides in regards to land issues, as well as treaty negotiations in BC; however, much debate would ensue in regards to the Nisga'a treaty which continued into Glen Clark's term as BC's premier.

15.3 Premier Glen Clark, NDP, 1996-1999

In March 1996, Glen Clark took over for Mike Harcourt as the next NDP premier of BC. It was the first consecutive NDP majority government in BC.[181] Issues such as the deficit, health care and education became prominent issues, while obstacles such as the media,[182] scandals, [183] HELP BC[184] and the capitalist economy challenged the party, as well as the province's growth towards social democratization.

181 For voting results see the following website: http://en.wikipedia.org/wiki/Politics_of_British_Columbia.

182 See Appendix 12.

183 A day before becoming premier Glen Clark faced his first scandal in regards to BC Hydro officials, as well as friends owning shares in BC Hydro. However, by 1999 a scandal - a conflict of interest whereby Clark had been 'gifted' work in exchange for a casino license - would help end Clark's political career as the leader of the NDP party. Clark would be the third consecutive premier to resign as a result of a scandal. Also, the 'Fast Ferries Scandal' occurred when the government spent $460 M on three catamaran ferries that ultimately were taken out of service due to numerous technical difficulties.

184 In 1996, David Stockwell created an organization called Help Eliminate Lying Politicians in BC (HELP BC). His sole purpose as a Liberal supporter was to get the NDP, in particular Glen Clark, thrown out of government. Stockwell took the government to Court in order to hold the NDP "…accountable for projecting a balanced budget during their election campaign…" when it wasn't (Tyabji-Wilson 2002, 60). The case would not be heard until July 2000 and the judge ruled against Stockwell's petition. Despite these results, the NDP government faced significant backlash for the years prior to judgment and this would ultimately hurt their chances at the upcoming election. Organizations such as HELP BC who are typically funded by a coalition (somehow associated with an opposing party) are external

Clark initially re-energized the NDP party and the BC economy, as well as influenced social policy by establishing two initiatives: Investing in the Future: A Plan for BC; and, the BC Benefits program (Sigurdson 1996). The first initiative entailed a spending increase on skills and training, infrastructure and "…value-added natural resource projects"(Sigurdson 1996, 336). The second initiative entailed the expansion of social programs, whereby Clark revamped the social 'safety net' thru the BC Benefits program (Sigurdson 1996). However, in the mid-1990's both initiatives would 'somewhat sputter out' as a result of an economic downturn in the BC economy (see Chart 1). As a result, Clark had to increase taxes to pay for the ever-increasing provincial deficit, which ultimately scared away capital investment in BC (see Sections 4.8 and 4.9). In The Daily News (August 22, 2011), the author(s) state,

> In the mid-1990s then-premier Glen Clark had a 'jobs agenda," which was undermined by a weak economy. However, the NDP's Clark made matters worse by harbouring a hostile attitude to business (which was reciprocal) and introducing wrong-headed policies, such as hiking stumpage fees on lumber and rolling out reams of red tape making it uncompetitive in export markets. The mining industry was also flat on its back.

Also, the forest and mining industries were angry about the increase in the number of provincial parks and the cut back on clear-cut logging, as well as the concessions made to lobbyists and environmentalists while the NDP were in power (Connelly 2001). In particular, the mining industry was upset over the NDP government withdrawing Rio Tinto's Alcan permit and as a result mineral exploration slowed considerably during this period (see Chart 5).[185] Clark's behavior would eventually encourage the forest and mining industries to contribute $3 million dollars (over the next four years) into the Liberal's coffers (Connelly 2001). This would be a contributing factor, along with the NDPs drive towards brokerage politics,[186] the NDP's alienation of the business community, the vilification of the NDP by the media and the slumping economy that would ultimately end the NDP's reign in 2001 (see

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influences on the government and the electorate (Tyabji-Wilson 2002). They are a way to reach the masses to sell a message during elections, whereby the opposing party is not directly involved.

185 Rio Tinto wanted to increase power-generating capacity near their already established smelter and had already spent in access of $500 million on the project prior to the permit being withdrawn (Bond 2002).

186 Many of the electorate were turning to social movements as a way to explore and acquire support on single issues such as Clayoquot Sound (see Appendix 8). A fundamental shift in electorate values and perspectives occurred as a result of the reduction in the left/right party division, as well as a significant increase in populist rhetoric, which resulted in a shift towards brokerage politics (Blake 1996a; Carroll and Ratner 2005). Brokerage politics is where a party tries to opportunistically appeal to a vast range of electoral interests in order to acquire consensus, despite the "…costs of disorganizing social democracy's political base"(Carroll and Ratner 2005).

Appendix 12).[187] As a result, the Liberals under Gordon Campbell would take over power and lead the province until 2011.

15.3.1 Glen Clark's anti-environmentalist rhetoric

According to a 1995 poll, the public rated the NDPs record on protecting the environment favorably when compared to the opposing parties' history (Harrison 1996). However, Clark turned up the rhetoric on environmentalists to dangerous levels by denouncing them as "enemies of BC"(Crary 1997, A20). His reference is in regards to an additional 20 Greenpeace protestors joining the blockade of International Forest Products (Interfor) logging operation on King Island (The Record June 16, 1997). Clark states, "…Greenpeace is nothing but an international money-making machine that should get out of British Columbia forests"(The Record June 16, 1997, B4). Clark's anti-environmentalist rhetoric spun a web of counteraction by forestry workers who publically released the names and addresses of environmentalists interfering with their livelihoods. Russ Hellberg, the former mayor of Port Hardy states, "We're returning fire with fire"(The Spokesman-Review 1997, B2). Darcy Henton believes that Clark's comment in regards to environmentalists being "enemies of BC" was a big mistake. He writes, "At that time there wasn't a lot of unity within the environmental movement in B.C. and abroad, but when he called us enemies of B.C., it angered so many people from the mainstream organizations to the radical organizations"(Toronto Star 1998, 1). Perhaps tensions as a result of the economic recession,[188] or tensions between Canada and the US[189] resulted in Clark wanting more

187 As a result of Glen Clark's early resignation on August 21, 1999, Dan Miller (former Forest Minister) served as interim leader of the NDP for six months until the new NDP leader (Ujjal Dosanjh) was elected. During his term, a rail strike/lockout occurred, which would affect BC's recovery including mining after an economic recession. A prolonged rail stoppage would have a detrimental effect on mines and mills throughout BC relying on rail to transport ore to refineries, thereby effecting BC's reputation as a reliable resource supplier (Mertl 1999). It would shut down industries outside BC relying on rail to ship their goods to BC's large ports for export. This illustrates the precarious act that governments have to balance to stay in power; however, it is the interaction amongst factors, actors and sectors them that determine their success or failure.

Ujjal Dosanjh was a lawyer and a civil rights activist who became the first Indo-Canadian provincial leader and premier of BC after being nominated by activists at the NDP leadership convention in February 2001. He served a short time as premier, until he lost the general election in June 2001 to Liberal leader Gordon Campbell (of which the NDP won only 2 of the 79 seats in legislature). Dosanjh later became a Liberal Party of Canada Member of Parliament from 2004 to 2011 including a period as Minister of Health from 2004 until 2006 when the party lost the election.

188 During the 1990's, eastern Canada suffered greatly as a result of the economic recession, whereas BC faired better. Therefore, Ottawa implemented policies that were detrimental to BC's resource-based economy (Black 1996).

control over BC's natural resources. Ultimately, he contradicted past NDP environmental values and beliefs (e.g., Mike Harcourt) by denouncing the environmental movement in BC (Black 1996) (see Appendix 8: Case Study Foreign Relations, Constitutional Issues and the West Coast Salmon Fishery).

15.3.2 First Nations and Glen Clark, 1996-1999

Clark's term as the premier of BC started off with a rather ostentatious comment by Dale Lovick, the NDP's Minister of Indian Affairs, in regards to First Nations treaties in BC. Lovick states, "This generation of British Columbians will do that which has eluded all others before. We are going to conclude the unfinished business of an entire century"(Crary 1998, D3). A rather lofty goal considering the electorates' and opposition parties' long-term 'unsettled' view on the BC treaty process (Crary 1998) (see Section 15.2.2). An article in the Daily Gazette on August 4th, 1998 titled "British Columbians disagree on treaty with Indians" makes reference to the Nisga'a being "…[r]ewarded for 111 years of persistence"(Crary 1998, D3). The opposition parties at the time were demanding a referendum on the Nisga'a treaty, which would ultimately cost taxpayers in excess of $200 million (Crary 1998). An article in the Bangor Daily News (August 4, 1998) titled "Treaty with Indians splits British Columbia: Key opponents calling for a referendum on pact" cites Gordon Campbell as stating, "We are creating a whole new order of government…The least they could do is allow the public a say"(p.A7). Clark rejected the call for a referendum. Instead, $1.5 million was spent on a public relations campaign in order to build support for the treaty process (Crary 1998). Crary (1998) writes, "A key selling point is that British Columbia – its economy now reeling – needs treaties to end the uncertainty faced by mining and forest companies as they consider new projects on land claimed by Indians"(p.D3).

The Nisga'a treaty was the first treaty to be negotiated by the BC government in over 100 years. The treaty took 20 years to draft and was approved by the House of Commons in December 1999. The Nisga'a Final Agreement Act was passed by Parliament on April 13, 2000. The treaty gave the Nisga'a people $126 million over 15 years, as well as title to 745

189 The 1988 Free Trade Agreement (FTA) was a "false promise" for British Columbians', as it didn't protect BC's softwood lumber industry from US lumber producers (Black 1996).

square miles in the Nass Valley (Lawrence Journal-World 1998). The treaty also provides the "…right to self-government and the authority to make laws…" as well as their own justice system (Lawrence Journal-World 1998, 6A). Joes Gosnell, chief Nisga'a negotiator states, "…the costs to taxpayers is dwarfed by value of fish, timber and minerals taken from Nisga'a territory in the past decades"(Lawrence Journal-World 1998, 6A). The Liberal party opposed the Nisga'a treaty and the party filed a motion that the treaty was not constitutionally valid with the Supreme Court of BC. In July 2000, the Court upheld the deal.

In late 2000, the Sechelt Indian Band signed an agreement-in-principle with both the federal and provincial governments. In the agreement, the 900 band members would receive $42 million in cash and land with resource rights (CBC 2000). Clark stated that the agreement was a "shining light for B.C."(Girard 2000). Overall, Clark's lofty goal of "concluding unfinished business" in regards to the BC treaty process seems more talk than action considering how little was accomplished during his term.

15.4 Conclusion: What is good business and what is smart politics?

The past 20 years illustrates how one party with four governments had a significant effect on BC's economic performance, in particular on the resource industry. The party's 20-year social mandate sent a message to investors that BC wasn't open for business. In fact, the lack of 'certainty' created by a whole host of long-term issues drove investors away from the province. A government without the necessary funds cripples innovation and production, as does brokerage politics, which creates a political environment that lacks coherence (Carroll and Ratner 2005). Resource industries need political coherence as they face numerous obstacles (e.g., commodities market, boom and bust cycles, etc.) trying to bring products to market. The mere change from a capitalist democracy to democratic socialism can set an industry back years. However, as illustrated the media and capitalist society are the main deterrents to social democratization and played a large role in ending the NDP's 20-year reign (see Appendix 12).

Harcourt's term as premier clearly demonstrates the underlying challenges of resource development in BC. He showed how important it is to modernize government by becoming more democratic in order to acquire votes from a growing postmaterialist electorate, despite

it being in some cases a detriment to industry. However, the legitimacy of government comes into question by industry who felt unheard and/or not understood in regards to its importance to provincial GDP, direct jobs (e.g., the mining sector is the largest employer of First Nations in BC) and the long-term economic well being of communities, regions and the province (Hogg 2008, as noted in Wilson 2008, 3). The industry also felt burdened by the ever-increasing mandate for environmental and land use regulations, as well as felt left alone pitted against the environmentalists and First Nations while the government tried "…to avoid making enemies, by committing to procedural, rather than substantive reforms"(Harrison 1996, 306).

Mike Harcourt had been quite successful at satisfying both labor and environmentalists by creating the Forest Renewal Plan, which compensated for lost jobs (see Appendix 8). This somewhat tempered the impact of environmental preservation and conservation on industry and workers (Harrison 1996). In regards to industry, the government tried to make amends by approving logging in the Clayoquot Sound, as well as compensating for the loss of the Windy Craggy project (see Appendix 8). However as Harrison (1996) notes, the Harcourt government successfully appeased environmentalists, labor and industry, but believes their votes were ultimately bought with taxpayer dollars (p.307). Connelly (2009) states, "When the whole world is watching, your market is global, and your government is up for re-election, doing the "Green" thing can be good for business and smart politics".

The NDP party came to power with a large contingent of supporters (e.g., organized labor) at a time when social movements were flourishing throughout the province, illustrating the role of the voter in BC's economic performance, as well as the drive towards 'single issue' politics. The government's main objective was to be re-elected and in doing so, they had to minimize bad publicity, as well as modify their actions to reflect electorate values.

Glen Clark was hampered by scandals, the fast ferry debacle, the salmon war and a recession. He was accused of causing more trouble than resolving it. However, his greatest challenge was the 'ever' shifting values by the electorate and opposition in regards to BC treaty issues, as well as the US and Ottawa relations. It seems that economic recessions may modify the electorate's priorities and values in regards to issues involving taxpayers' monies. For

instance, would the BC treaty process receive less opposition, especially the Nisga'a treaty, if the treaty process was mandated, debated and resolved when the BC economy was prosperous, rather than in decline? Would the salmon wars have been a 'war' if the BC economy wasn't slumping and the current NDP premier wasn't facing numerous challenges and scandals? In my opinion, it seems in desperate times issues such as land access or fish stocks become more pronounced, whereby the electorate can be easily misinformed and mislead by the media, politicians and NGO's (see Appendix 12). During these times, fear plays a role as people wonder about their jobs, as well as how they will be able to provide basic needs for their families. Despite Clark's numerous blunders, he did invest in oil and gas exploration in northern BC, which is noted as being the starting point in the industry's boom.[190] An industry the province will come to rely on in future years to come.

In the case of the mining industry, in order to stay ahead of the (boom) wave the province and industry must maintain long-term supply through the use of forethought. What this means is that industry can't continuously be in a state of peril, paddling up stream to negotiate development and production timelines amongst treaty and land access issues, combined with the US, as well as environmentalist/NGO conflicts. It has become imperative for the success of the industry that a strong and long-term thinking leader heads the province as premier. This would grant industry time and space to become innovative, thereby leading the wave on conservation, preservation and environmentalism. Otherwise, we are asking the industry to be our social, political and economic ambassadors, while negotiating financial and political cyclical markets.

190 Carole James (2006), a past leader of the NDP, is quoted as stating, "It was the New Democrats who really kicked off the oil and gas sector in the northeast of the province"(The Vancouver Sun 2006b). In the 1990's, the NDP reduced royalty rates and allowed for a $100,000 credit against future royalties if companies shoulder the extra cost of dispatching the drill crews during the summer months (The Vancouver Sun 2006b). Companies prefer to drill in the winter months when the muskeg is frozen, as it is easier on the equipment and crew, as well as on the environment. The NDP also indorsed a similar royalty credit for the drilling of deeper wells of 2,000 meters or more (The Vancouver Sun 2006b). These three incentives generated over $900 million in additional natural gas royalties for BC, as well as a three-fold increase in the number of wells being drilled during the summer months (The Vancouver Sun 2006b).

CHAPTER 16 Two Liberal governments and their role in BC's mineral development story, 2001-present

16.1 Introduction

The following section highlights key historical events pertaining to two Liberal governments (Gordon Campbell and Christy Clark) from 2001 to present.

16.2 Premier Gordon Campbell, Liberal, 2001-2011

Under Gordon Campbell's leadership, the Liberal Party grew dramatically from 13,000 in 1994 to 50,000 members in 1995, making the Liberals at the time the largest political party in BC (Blake 1996b). In 2001, Gordon Campbell won a majority government with 76 out of the 79 seats in the BC Legislature.[191] Connelly (2002) called Campbell's government "…an elected dictatorship". The electorate that once supported the NDP, now voted for the Liberals. Why?

The province's poor economic performance, along with a variety of stringent policies derived from the NDP over the last 20 years resulted in many supporters defecting to the Liberals. Also, the Liberals ventured out during their campaign to the center-right of the political spectrum in regards to policies, thereby drawing many from the left. For instance, Campbell promised to implement a variety of programs over his term, such as tax cuts, a reduction in the size and cost of government, as well as to eliminate subsidies to businesses (Blake 1996b). Most importantly, he promised not to cut social spending (Blake 1996b). Lastly, the re-emergence of two-party politics (NDP vs. Liberals) with the decline in BC Reform also facilitated the restructuring of voters' decisions in regards to which party to support (Blake 1996b).

When Campbell took over government, the BC economy was starting to prosper after an economic slowdown, and in order to further stimulate economic growth and development Campbell implemented a variety of initiatives such as the Asia Pacific Gateway and Corridor Initiative (see Chart 1). The Initiative entailed an expansion of the port in Prince Rupert, as well as upgrades to roads and rail (for $3 billion) was completed **(**CNW Newswire 2007).

191 For additional information on BC election results see the following website: www.electionsbc.net.

These upgrades made BC more globally competitive, created jobs[192] and allowed for goods to be moved more efficiently. Campbell states, "The world's economic power is shifting to the Asia-Pacific and it is important we make significant investments in B.C.'s transportation infrastructure if we are to take full advantage of our geographical position as Canada's Pacific Gateway"(CNW Newswire 2007).

In order to further provincial economic growth, as well as support mine development the Campbell government proposed the development of the Highway 37 power line in Northwestern BC (see Appendix 11). The purpose of the project was to extend BC's electrical grid to the 'Golden Triangle,' in order to support several proposed BC mining projects such as KSM, Galore Creek, Brucejack and Schaft Creek (see Figure 7). When completed, the Highway 37 project will support 10 potential mining projects, requiring more than $15 billion dollars in investment, generate 10,700 jobs and produce $300 million in annual tax revenues (Caulfield 2008) (see Section 6.5).

In 2005, the Liberal government invested $4.5 billion in oil and gas initiatives, as well as regulatory streaming in northeastern BC (Park 2005). That same year, the government outlawed mining, as well as oil and gas development in the Flathead Valley. The valley was projected as having potential revenue of $7 billion dollars (Testa 2010) (see Appendix 8: Case Study The Flathead Valley). Despite this closure, by 2008 the oil and gas industry contributed $1.03 billion in royalties, as well as $2.66 billion in lease revenues to the government (The Vancouver Sun April 17, 2009). By 2009, the oil and gas sector became the largest contributor to the BC government's revenue stream (The Vancouver Sun April 17, 2009). Did this new revenue stream drive governmental focus away from metal mining in BC? In my opinion, it may have as the oil and gas sector was providing a significant amount of revenue to the government, it was a relatively new industry in BC with limited regulations (i.e., fracking) and it was a priority during election times, as the industry would provide new jobs to British Columbians. Whereas, the metal mining industry was being highly scrutinized by various stakeholders, no new copper mine had been built in the last decade and it was no

192 By the mid-2000's, BC's unemployment rate dropped to 6.5 percent and BC's GDP grew faster than the rest of Canada (Schaffer 2005).

longer BC's sunset industry as jobs were being minimized through economies of scale, technology and the need for operations to downsize as a result of repeated recessions.

By early 2008, Canada was amidst a worldwide financial crisis, whereby 'environmental concerns' seemed to drop in the electorate's priority list (see Chart 1). For instance, there was talk about dropping the Carbon Tax to help the economy during these tough times (Lammam and Veldhuis 2010) (see Section 15.1.1). In order to re-energize the economy, the Campbell government implemented tax cuts and reforms, as well as reduced public jobs. The government initiated a School Property Tax Rebate for industry and cuts to personal income tax, as well as decreased the general corporate income tax to 10.5 percent in 2010 from 13.5 percent in 2002 (Lammam and Veldhuis 2010).

The financial crisis destroyed investment and credit, and mining companies could not explore new claims (see Chart 1 and Chart 5). Additionally, there was a worldwide decline in the demand for commodities. Since exploration companies are small, thereby more susceptible to economic downturns and no new mines were developed during Campbell's term, the Campbell government committed to numerous fiscal incentives to assist in the mining industry's competitiveness in world markets. For example:

- Under NAFTA, firms located in BC can access markets, as well as source materials and equipment in the USA and Mexico duty-free (MEMPR 2009, 6);
- The sales tax (7 percent) is lower than in other Canadian provinces. The GST flows through the company's books like a value-added tax and is payable by the end consumer (MEMPR 2009, 6);
- Corporate capital tax and the provincial sales tax have been eliminated on production machinery and equipment (MEMPR 2009, 6);
- The expansion on what qualifies for provincial sales tax exemption now applies to parts, components, catalysts and direct agents that are used in mineral processing;
- BC does not have provincial payroll taxes (MEMPR 2009, 6); and,
- Developed two special mining exploration tax credit programs;
    - BC Mining Exploration Tax Credit (BC METC), a 20 percent refundable provincial income tax credit for grass-roots exploration. In mountain pine beetle areas, an additional 10 percent is applied (MEMPR 2009, 7); and,
    - BC Mining Flow Through Share Tax Credit Program (BC MFTS), a non-refundable 20 percent provincial income tax credit program for individuals investing in flow-through shares that finance grass-root exploration by companies in BC (MEMPR 2009, 7).

It was estimated that the BC mining industry might need an additional 15,000 people in the

near future for upcoming vacancies created by retirements, as well as expected growth in the industry (MABC 2009). In order to counteract the labor shortage, the BC government created a few initiatives to attract, recruit and train workers across the province. For example:

- Industry Training Authority (ITA) created a training tax credit program for employees and employers engaged in apprentice programs (MEMPR 2009, 12);
- Trade, Investment and Labor Mobility Agreement (TILMA), an incentive where goods, services, certified workers and investments can move freely between BC and Alberta (MEMPR 2009, 13);
- The Provincial Nominee Program (PNP), a program that facilitates the speed in the immigration process for skilled immigrants with job offers in BC (MEMPR 2009, 13).

The government took steps to ensure the industry's viability by providing tax incentives for companies, investing $37.5 million dollars into a state-of-the-art Earth Science Education and Research Facility at the University of British Columbia, as well as supplying more than $36 million dollars to Geoscience and $3 million dollars to British Columbia Geological Survey programs (PWC 2009).[193] Other initiatives that help to ensure the viability of the industry in BC were:

- Mineral Titles Online;
- MapPlace;
- Geochemical and Geological Surveys;
- Industry Exploration Reports; and,
- Mineral Occurrence Inventory and Property File (MINFILE) (PWC 2009).

In 2009, Campbell adopted the Harmonized Sale Tax (HST) program.[194] A poll by Ipsos Reid revealed the 85 percent of British Columbians opposed the HST (The Vancouver Sun August 6, 2009). In a 2010 poll, Campbell was ranked as "…Canada's most unpopular premier, but also the least popular premier in B.C.'s history" for the way his government introduced the HST in BC (Lammam and Veldhuis 2010).[195] Despite support from industry,

193 For additional information on the UBC Earth Sciences building see the following website: http://www2.news.gov.bc.ca/news_releases_2005-2009/2009OTP0066-000672.htm.

194 For additional information on the HST see the following website: http://www.bcchamber.org/news/files/Ten_Things_You_Need_to_Know_about_HST.pdf.

195 The Fraser Institute ranked premier Gordon Campbell first (89.1/100) overall as the best fiscal manager when compared to ten other provincial premiers (Lammam and Veldhuis 2010). Niels Veldhuis (2010), a Fraser Institute senior economist states, "Of the 10 premiers examined, premier Campbell simply did a better job than the others of managing his province's public finances and pursuing sound long-term economic policies"(as cited in Marketwire 2010). Campbell ranked on the top on two of the three components: government spending and taxes, whereas ranked fifth on debt and deficits (see www.fraserinstitute.org). For instance, between 2001/02 to 2009/10 Campbell's

on November 3, 2010 Campbell resigned as the leader of the Liberal Party, as well as the premier of BC due to the electorate's significant opposition to the HST program.

16.2.1 Environmental issues: A change of heart?

About midway through Campbell's term as premier, he had a change of heart. Once an opponent to the Kyoto Accord and Aboriginal rights he became a vast supporter who instigated a number of actions that would change the face of politics forever in BC. In the Vancouver Courier (2008) an article states, "Environmentalism is the fastest growing religion in the Western world...In 2008, Green is God…This new normal has transformed Canadian politics. Most politicians-from Gordon Campbell to Stephen Harper-sing off a green song sheet". Was this change of heart a result of the Campbell government winning only 46 of the 79 seats in the BC Legislature during the 2005 election, whereas the NDP won 33 of the seats?[196] Girard (2005) notes that this electoral change is a result of the voters being tired of Campbell's "ham-fisted politics". As seen in the past, postmaterialists' believe in environmental conservation; therefore, in order to retain their votes for the next election Campbell's government needed to perhaps have a change of heart to be re-elected.

The Kyoto Accord (2002) called "…for a six percent reduction in Canada's greenhouse gas emissions…" by 2012 compared to 1990 levels (CTV 2002). In 2002, Campbell opposed the ratification of the protocol because it would hurt BC's oil and gas industry (CTV 2002). However, in 2007 without public consultation Campbell proposed a 33 percent reduction of greenhouse gases by 2020 (The Vancouver Sun May 5, 2007). Campbell (February 14, 2007) states, "Climate change is real, and British Columbians are telling us we must do more as a government and as individuals"(ENS 2007). Ultimately, Campbell proposed a reduction in greenhouse gases, the creation of a climate action team and the reduction of CO2 emissions from cars by 30 percent (The Vancouver Sun May 5, 2007). In The Vancouver Sun (May 5, 2007) article titled "B.C. not exactly California North on climate action*"* Campbell is noted as going "…from a Kyoto skeptic to California-style, global warming fighter…" essentially overnight. As a result of this change of heart, as well as the ban on uranium mining,

government balanced the books and recorded a small surplus (0.13 percent of the GDP), as well as reduced BC's net debt from 18.5 percent in 2001/02 to 15.7 percent in 2009/10 (Lammam and Veldhuis 2010).

196 For additional information on BC voting statistics see the following website: http://www.votemining.ca/mining-facts/.

Campbell's behavior was seen as not reflecting a modern and democratic government (see Appendix 8: Case Study The Moratorium on Uranium Mining in BC). Chris Johnson from The Vancouver Sun (July 19, 2008) writes,

> Democracy requires a government in office to behave in a transparent and responsible manner and demands that decisions be determined through rational policy analysis, a public process, endorsed by a cabinet and ratified by legislature…The backroom deal-making approach to governing creates an "us-against-them" culture, leading to the paranoia that is becoming increasingly apparent in the Campbell government.

In 2008, Campbell increased the price of fuel (e.g., diesel gasoline, jet fuel, coal, natural gas, and propane) through a new Carbon Tax, in order to entice businesses, as well as citizens to lower green house gas (GHG) emissions (Meissner 2011a). BC was the first and only jurisdiction to enact the Carbon Tax in North America (Meissner 2011a). As a result of the tax increase, Campbell's government dropped in the polls because the tax was hard on rural and northern residents (e.g., businesses, farmers, ranchers, etc.) who rely on fuel for their well being (AngusReid 2010). However, the liberal government won support from some of the environmentalists, thereby helping to hold his lead in the polls (Connelly 2007). Connelly (2007) states, "The question hanging over Campbell is whether British Columbia is genuinely "going green" or undertaking a "greenwash" to look good, particularly for the 2010 Winter Olympics". The fallout of the tax during elections is what is known as an "electorate distraction," whereby the electorate are distracted from other more politically pressing issues (e.g., The Northern Gateway Pipeline proposal) that should be more prevalent in election campaigns (Connelly 2007). Also, the cost of the Carbon Tax on the electorates' personal finances weren't initially realized. An Angus Reid 2010 poll revealed that more than 56 percent of British Columbians household finances were "severely" or "moderately" affected by the tax, whereas in the north the number of households affected exceeded 80 percent (AngusReid 2010).

16.2.2 Sustainable development and the mining industry

During this period, the implications of sustainable development on the mining industry were profound in regards to corporate responsibility, mine management and the bottom-line. Companies had to change the way they were doing business, as they were the proprietors of the mineral industry in BC. Usually, the government would act on behalf of society, thereby

establishing frameworks for sustainable development; however, in the case of the BC mining industry companies had to step in (e.g., government cutbacks, etc.) and design and implement their own sustainable development initiatives (Eggert 2009). In 1998, Placer Dome Inc. established a company sustainable development policy and issued the first sustainability report titled "It's About Our Future" (van Zyl 2012). That same year, nine of the largest worldwide mining and metal company CEOs met in Switzerland to discuss ways to improve the mining industry's worldwide image (van Zyl 2012).

In 2000, the industry launched the Global Mining Initiative (GMI) to look at the relationship between sustainable development and the mining industry, as well as prepare for the 2002 World Summit on Sustainable Development (WWSD). The GMI promoted the development of the Mining, Minerals and Sustainable Development (MMSD) project and ultimately a report titled "Breaking New Ground".[197] A part of this report is the Seven Questions Framework, which was very broad; however, it opened up the dialogue for detailed examinations on the projects long-term effects on social, cultural, economic and environmental sustainability.[198] During this period, the International Council on Mining and Metals (ICMM) was developed, which eventually took over the work started by MMSD.[199] Between 2001 and 2003, an Extractive Industries Review (EIR)[200] was completed by the World Bank to explore their role, in particular in financing and promoting the mining sector as it pertains to sustainable development and poverty alleviation (Eggert 2009).

In 2004, the Mining Association of Canada (MAC)[201] established Towards Sustainable Mining (TSM)[202] initiative for Canadian mining companies, hence mandatory for all MAC members. Its purpose is to ensure that the industry could meet the long-term needs of society

197 For additional information on "Breaking New Ground" see the following website: http://www.iied.org/mining-minerals-sustainable-development-mmsd-background-publications.

198 For additional information on the Seven Questions see the following website: http://www.iisd.org/pdf/2002/mmsd_sevenquestions.pdf.

199 For additional information on ICMM see the following website: http://www.icmm.com.

200 For additional information on the EIR see the following website: http://www.ifc.org/wps/wcm/connect/Industry_EXT_Content/IFC_External_Corporate_Site/Industries/Oil,+Gas+and+Mining/Development_Impact/Development_Impact_Extractive_Industries_Review/.

201 For additional information on MAC see the following website: http://mining.ca.

202 For additional information on TSM see the following website: http://mining.ca/sites/default/files/documents/TSMProgressReport2013.pdf.

for minerals, metals and energy. In order to meet this mandate, the companies have to be accountable, credible and transparent, thereby act in a social, economical and environmental manner (MAC 2014). Companies are measured based on a set of criteria, which are substantiated by qualified verifiers, and then the reports are sent and viewed by a review panel made up of a variety of different stakeholders.[203] The companies are rated on six performance areas, whereby they receive one of five scores (e.g., a triple AAA rating (excellence) to a C rating (no systems in place)) (MAC 2014). Within this rating system, companies are noted on if they participate in a number of international standards and programs (e.g., ICMM Sustainable Development Framework,[204] PDAC e3,[205] etc.), thereby guiding companies to go beyond the status quo (MAC 2014). In 2011, the MABC was the first association to adopt the TSM initiative.[206]

In 2005, the World Bank and ICMM established a mining and community-focused toolkit titled "Community Development Toolkit".[207] It contains 17 tools to aid in community development over the life of the mine. Between 2003 and 2008, three other voluntary initiatives (e.g., Equator Principles)[208] involving mining were also instigated. Overall, the mining industry took a relatively proactive stance on sustainable development initiatives, despite them being costly and voluntary in nature. Interestingly enough, many of the mining initiatives were developed during one of the lowest commodity price periods, hence emphasizing their importance and significance in the development of new projects worldwide (see Chart 1).

16.2.3 Social license to operate and the mining industry

During this period, the development of a new and somewhat controversial initiative titled Social License to Operate (SLO) emerged. Many say it was a result of negative publicity

203 For additional information on TSM requirements see the following website: http://mining.ca/towards-sustainable-mining.

204 For additional information on the framework see the following website: http://www.icmm.com/our-work/sustainable-development-framework.

205 For additional information of PDAC e3 see the following website: http://www.pdac.ca/programs/e3-plus.

206 For additional information on MABC adopting TSM see the following website: http://www.mining.bc.ca/our-focus/towards-sustainable-mining.

207 For additional information on ICMM Community Development Toolkit see the following website: http://www.icmm.com.

208 For additional information on Equator principles see the following website: http://www.equator-principles.com.

resulting from environmental mishaps (e.g., chemical spills, a breach of tailing dams);[209] however, it also emerged at a time when sustainable development initiatives were becoming prevalent throughout the resource industry (Thomson and Boutilier 2011). SLO is dynamic, intangible and requires renewal over the entire life of a project (Nelsen 2007). It is not an actual license, but rather a type of insurance obtained from stakeholders while working towards project certainty. SLO is granted by stakeholders (e.g., community members, First Nations) who evaluate and approve the project in accordance to their values, beliefs, perceptions and opinions (Nelsen 2007). In a sense, SLO is a shift in the power dynamic, whereby stakeholders (ultimately voters) voice their support or concerns in regards to a project, thereby making the 'traditional' process less relevant. For instance, no longer are conventional methods (e.g., EIA process, not implementing 'best practices' into mine design) 'the' determining factor in granting project approval. Companies must meet stakeholder expectations or 'best practices' and are no longer able to stronghold stakeholders (e.g., corporate donations) in order to get a project approved in BC. For example, despite receiving approval by government to log parts of Clayoquot Sound, MacMillan Bloedel had to face a large contingent of stakeholders who protested their access to and potential logging of the Sound (see Appendix 8: Case Study Clayoqout Sound). This conflict cost the company time and money, as well as their reputational capital.[210]

As discussed throughout this thesis, voter dynamics have changed in BC. Voters have greater political efficacy, as well as populism. No longer are voters siting in their armchairs watching W.A.C Bennett on TV, they are in the trenches making changes based on an ever evolving belief system. They want equity, environmental preservation and conservation and a say on what happens throughout BC. During this period, this contradicted corporate philosophy, thereby resulting in conflict between companies and environmentalists. Just as sustainable development, the emergence of SLO illustrates the 'sign of the times'!

209 For additional information on Mining Accidents see the following website: http://en.wikipedia.org/wiki/Mining_accident.

210 For additional information, as well as case studies in regards to SLO see the following website: https://circle.ubc.ca/handle/2429/31783.

16.2.4 First Nations issues, landmarks and the Campbell government, 2001-2011

Despite criticism in regards to the mail-in ballots, questions and process, the Campbell government held a province-wide referendum on First Nations treaty negotiations in 2002 (CBC 2004).[211] Despite some saying the process was "racist" or it being "a mockery of democracy" and Angus Reid calling the process "one of the most amateurish, one-sided attempts to gauge the public will that I have seen in my professional career" over eighty percent of the respondents voted 'yes' to the eight proposed principles (as cited in CBC 2004). The referendum cost approximately $9 million; however, some speculate the lawsuits and appeals as result of the plebiscite will cost between $400 and $500 million (CBC 2004).

In 2004, the landmark *Haida Nation v. British Columbia (Minister of Forests)* case was settled. In 1961, the province issued a Tree Farm License (T.F.L. 39) to a forest company that allowed for the harvesting of trees in Block 6 on Haida Gwaii.[212] By 1999, the province transferred T.F.L. 39 to Weyerhaeuser. A court case ensued, as the transfer to the forest company by the province was made without the Haida Nation giving consent.[213] The Supreme Court of Canada (SCC) "…found that the government had a moral, not a legal, duty to negotiate with the Haida"(The Grand Council 2004). Later, the Court of Appeal overturned the SCC decision, stating that the province and Weyerhaeuser Co. "…have a duty to consult with and accommodate the Haida with respect to harvesting timber from Block 6"(The Grand Council 2004). This case reinforced the province's duty to consult and accommodate First Nations, as well as highlighted the importance of infringement as the Haida had a strong case of occupation in regards to the lands claimed (Davis 2014).[214]

211 For additional information on the Province-Wide Referendum on First Nations Treaty Negotiations, as well as the eight questions see the following website: http://en.wikipedia.org/wiki/British_Columbia_aboriginal_treaty_referendum,_2002, or (CBC 2004).

212 *Haida Nation v. British Columbia* (*Minister of Forests).* (2002), 5 B.C.L.R (4th) 33, 2002 BCCA 462, 2004, SCC 73.

213 *Haida Nation v. British Columbia* (*Minister of Forests).* (2002), 5 B.C.L.R (4th) 33, 2002 BCCA 462, 2004, SCC 73.

214 "Aboriginal title is based on occupation prior to the assertion of sovereignty (BC, 1846). Occupation sufficient to ground title must be found using the following three criteria: sufficiency, continuity and exclusivity"(Willims et al 2014). See the following website for additional information: http://www.fasken.com/files/Event/e60813a7-31a1-4ad9-8265-91bf1538fd60/Presentation/EventAttachment/c332d5c0-8ef4-4c55-8364-d9df1952d7c6/PRESENTATION%20BOOKLET-Aboriginal%20Update%202014%20Roger%20William%20Decision.pdf

In 2005, the BC government updated the Mineral Tenure Act (MTA), providing for online mineral staking.[215] This new process simplified the staking process, as well as opened it to anyone with a computer and a credit card. As a result, the total area staked in the province increased in 2008 to 5.2 million hectares, a significant rise from 1.1 million hectares in 2004 (Ecojustice 2010). Ultimately, this will possibly lead to additional land use conflicts in BC. Karen Campbell (2004) states,

> Free entry thwarts sensible land use planning and elevates miners to a form of extraordinary privilege. It has negative fiscal implications for governments, it interferes with the exercise of Aboriginal Title and Rights, and the exercise of private property rights. While free entry may have been viable in the 19th century, when there were relatively few other uses for land, when mining occurred far away from human settlement, and when it did not occur in the large scale industrial manner in which it is now conducted, it is clearly anachronistic in the 21st century (as cited in Clogg 2013, 4).

A Harvard Law School study (2010) notes that, "BC mining laws are unfair to native people"(Hume 2010). Bonnies Docherty is quoted as stating,

> Under international law…there is a pretty clear principle that indigenous people should receive special protection in recognition of the connection they have with the land…that isn't happening. They have a right to be part of the decision-making process and to be taken seriously…the current system is not taking their opinions fully into account…While some first nations have benefited from mining within their boundaries, in general, first nations bear an unfair burden at every point in the mining process, from the registration of claims to exploration, production and abandonment of closed sites. Urgent law reform is needed to shift at least some of that burden onto government and industry (as cited in Hume 2010).

Modernizing the MTA would provide rules, as well as protect land access in areas under the Comprehensive Claims Treaty process.

In 2005, Campbell introduced the New Relationship Agreement, which established a shared decision-making and revenue sharing mandate with First Nation groups. The mandate states,

> This document is the result of discussions with senior provincial government officials on how to establish **a new government-to-government relationship based on respect, recognition and accommodation of Aboriginal title and rights**. The document sets out a vision statement, goals of the parties, principles of a new relationship and some action plans. The action items represent the next steps that must

215 Prior to online staking, there was a period of one week where applications were faxed, mailed or emailed to First Nations groups. The company paid a $100 referral and the First Nation groups had one week to review the stake (Mills 2015).

> be done to advance this new relationship and the common vision. Both ourselves and Premier Campbell have committed to making this work a priority. We are seeking your support to continue to work with the Province to develop and make workable the New Relationship (BCAFN 2005).[216]

This was a material change from his days of promoting the Referendum and challenging the Nisga'a Treaty process. In 2006, Grand Chief Stewart Phillip of the UBCIC openly supported the Liberals in the hopes that Campbell would be elected for his third term in the 2009 provincial election. A traditional NDP supporter, Phillip stated that he started to believe in Campbell after he instituted the "New Relationship" (CBC November 3, 2006). Chief Marilyn Baptiste (2010) states, "It is increasingly easy to believe that the New Relationship that once gave BC First Nations so much hope was merely a ploy by Premier Gordon Campbell to buy peace for the 2010 Winter Olympics"(as cited in CNW Newswire 2010). In 2007, the Campbell government spent $2.8 million dollars on mine industry training for youth from First Nations and rural communities in northwestern BC (M2 Presswire 2007). Whatever Campbell's motive, the New Relationship opened up the treaty process in BC.

By 2006, the cost of the BC treaty process was approximately $500 million (The Vancouver Sun September 15, 2006). It seems with each passing day whereby no treaties are settled; the cost of BC treaty negotiations escalates. Tony Penikett a former Yukon Premier is quoted as stating,

> Governments might convince themselves that it's cheaper to talk forever than to strike a deal, but that's a dubious premise when you look at the impact of uncertainty on business investment and resource development. Not to mention that it means there's no treaty, which is an essential tool for aboriginal people to break the cycle of poverty and dependence (as cited in The Vancouver Sun September 15, 2006d).

In 2006, both the federal and provincial governments approved the first treaty since the development of the BC Treaty process with the Lheidli T'enneh First Nation. The Treaty gave the band 4,360 hectares of land, which included 1,160 hectares of mostly Crown land on the outskirts within the city limits of Prince George, as well as other resources (CanWest August 2, 2006). This was the first treaty in BC involving urban land. Others followed: five Vancouver Island First Nations signed a treaty worth $500 million, as well as 24,000 hectares

216 For additional information on the New Relationship see the following website: http://www.ubcic.bc.ca/issues/newrelationship/#axzz3EjNgwTde.

of land (CBC December 9, 2006); and, the Tsawwassen First Nation treaty for $120 million, including cash, a share of the salmon fishery and 724 hectares (CanWest July 26, 2007). In the last 13 years, the government has spent just under $1 billion on the treaty process (Times Colonist June 14, 2007).

In 2006, NovaGold struck a landmark participation agreement in regards to the Galore Creek copper gold project with the Tahltan Central Council representing the Iskut and Tahltan bands in BC. Curtis Rattray, Chair of the Tahltan Central Council states, "This agreement establishes a high standard against which all proposed resource development projects in Tahltan Territory will be measured" (NovaGold 2006). Rick Van Nieuwenhuyse, President of NovaGold states, "NovaGold's commitment to open, transparent, and mutually beneficial relationships with local communities is at the heart of our strategy for successful resource development and we are very proud to be working with the Tahltan Nation at Galore Creek"(NovaGold 2006).[217]

Despite the landmark Tahltan agreement, the Galore Creek project was put on hold in November 2007 due to technical issues (see Appendix 8: Case Study Galore Creek). The project remains on hold but is being thoroughly studied by NovaGold and their new partner Teck Cominco (now Teck Resources). The halting of this project temporarily stalled the development of the Highway 37 power line project; however, Campbell resurrected the power line project despite opposition speculation that his decision was based on the upcoming election and that the Liberals were behind in the polls (Caulfield 2008). Questions remain if the Tahltan still support the Galore Creek project, as the project has been put on hold for the last seven years. The Tahltan's recent ban of Fortune Minerals from mining

217 Highlights of the NovaGold and Tahltan participation agreement include: (1) Recognition of the Tahltan's traditional rights, title and interests to the project area as well as NovaGold's rights to explore and develop mineral resources in the Galore Creek Valley; (2) Mutual cooperation for completing an efficient and effective Environmental Review and Permitting Process and commitment to mitigate adverse environmental impacts caused by the mine; (3) Establishment of measures and procedures that will fully engage the Tahltan in all aspects of environmental protection; (4) Maximize training and employment of Tahltan members throughout the mine life and create processes for ongoing dialogue regarding advancement; (5) Ensure access for Tahltan businesses to maximize business opportunities for the supply of goods and services throughout the mine life and during mine closure; (6) Financial contributions by NovaGold to the Tahltan Heritage Trust Fund, which will be used to mitigate any adverse social and cultural impacts of mine development. During mine operations, Trust Fund payments are guaranteed to be no less than $1,000,000 annually. Upon reaching certain agreed financial targets, and subject to positive mine operating cash flow, the trust will receive the greater of $1,000,000 or a 0.5% to 1.0% net smelter royalty each year; and, (7) Tahltan assurances to investors and support for the project as NovaGold arranges financing during the year ahead (NovaGold 2006).

Mount Klappan for coal north of Dease Lake, BC, leaves questions as to if they still support the Galore Creek project.[218]

Taseko's New Prosperity project seems to be the new poster child for what ails the BC mining industry (see Appendix 8: Case Study New Prosperity). When you think of modern day mining in BC, this project comes to mind due to its lengthy controversy, low copper and gold grades, opposition by the Tsilhqot'in First Nation, as well as the company's obvious support of the Liberals (see Section 11.4). According to Chief Joe Alphonse, a tribal chairman for the Tsilhqot'in National Government, Campbell is quoted as stating in an October 1, 2010 speech to the Union of BC Municipalities that, "… his support for an environmentally destructive [Prosperity] mining project is in [Tsilhqot'in] best interest"(McLeod 2010). In response, Chief Joe Alphonse is quoted as stating,

> We don't need another race of people coming in and telling us what's good for us. We don't need a group of individuals coming in and telling us what's good for Indians…If Campbell really wanted to aid First Nations he could come up with their own solid plans for how to manage them (McLeod 2010).

In an article titled "Premier Campbell's Pitch for Mine as a sign of Desperation" the author writes,

> In his speech Friday, the Premier promoted the fallacy that this specific mine project is the way forward for mining in BC. In doing so he tacitly endorsed the view that BC must approve any mine, no matter how destructive of the environment and no matter how abusive of First Nations rights and culture (CNW Newswire 2010).

Chief Marilyn Baptiste (2010) states, "Even many in the mining industry privately question why the BC government would have chosen such a clearly incendiary project to champion. Could it really be that political donation lines to the BC party have played a role in this?"(CNW Newswire 2010) (see Section 11.4). Despite New Prosperity being opposed by many of the Tsilhqot'in First Nations, the company pushes forward in spite of obvious limitations. This sets a reputational legacy for the province's mining industry, as well as for the BC Treaty making process. Within days of the Supreme Court of Canada *Tsilhqot'in v. British Columbia* verdict, Taseko issued the following statement: "The ruling confirms that Taseko's New Prosperity gold-copper project is located in an area where aboriginal title does

218 For additional information on Fortune Minerals and Tahltan see the following website: http://www.tahltan.ca/press-coverage/first-nation-bans-fortune-minerals-mining-mount-klappan/.

not exist"(Stockwatch News 2014a) (see Section 16.2.2). In order for the land questions to be answered, the provincial government must manage projects outside of the electoral process. Perhaps an independent panel such as the Yukon's Environmental and Socio-Economic Assessment (YESAA) should be utilized in BC, in order to get projects built in a fair and efficient manner. Also, companies may need to make choices "for the good of the industry," rather than for the company and its shareholders when it comes to such controversial projects in BC (see Section 6.11).

Direct revenue sharing was first enacted in the province of BC by the mining industry with First Nation groups (Hoekstra 2008). The Resource Revenue Sharing Agreement (RRSA) is subject on a project-by-project basis, whereby the size of the mine and First Nation, as well as the economic needs for the area and First Nation will be considered (Hoekstra 2008). Gordon Hogg, Minister of State for Mining states, "Revenue sharing on new mining projects will place a strong focus on community development to assist First Nations in achieving their social and economic goals"(Hoekstra 2008). The Mining Association of BC is noted as saying that "…resource revenue sharing can help increase certainty for access to land and resource development, by providing a stream of revenue for First Nations involvement and income from resource development"(Hoekstra 2008). For instance, the Maa'nulth have a resource revenue agreement with the BC government. The First Nation receives an annual payment based on resources revenues generated by BC from Maa'nulth traditional territory.[219] Other agreements include: Nak'aldzi First Nation Economic and Community Development Agreement; McLeod Lake Indian Band Economic and Community Development Agreement; and, Stk'emlupsemc of the Secwepemc Nation Economic and Community Development Agreement.[220]

In 2009, Campbell proposed a new Recognition and Reconciliation Act (RRA), which recognized Aboriginal rights and title, whereby the "…governments could no longer use

219 For additional information on Maa'nulth Revenue Sharing Agreement see the following website: http://www.maanulth.ca/downloads/presentation_resource_revenue_sharing.pdf

220 For additional information on other Revenue Sharing Agreements see the following website: http://www.workingeffectivelywithaboriginalpeoples.ca/wordpress/wp-content/cache/page_enhanced/workingeffectivelywithaboriginalpeoples.com/resource-revenue-sharing-and-aboriginal-peoples/_index.html_gzip.

arguments that deny the existence of First Nations" in court (The Vancouver Sun March 6, 2009). In 2009, over 200 First Nation bands in BC defeated the RRA (The Vancouver Sun March 6, 2009). Overall, Campbell established a New Relationship with First Nations people in BC, as well as advocated three treaty agreements and promoted Resource Revenue Sharing - a vast shift forward considering that past premiers were reluctant to work on resolving the land question in BC.

16.3 Premier Christy Clark, Liberal, 2011-present

Christy Clark took over leadership from Gordon Campbell during the worldwide financial crisis (see Chart 1). This was very high risk, as well as a difficult task, especially considering the party's movement away from Campbell's environmental priority (away from center) to more a pro-business focused agenda. Clark's immediate task was to set a clear agenda, while keeping an open government that is focused on families and jobs (Haluschak 2011). Clark is quoted as stating, "My commitment to putting families first starts with job creation and fighting poverty"(as cited in MacDonald 2011). She goes about this by setting up a BC Jobs Plan, which is a continuation of Campbell's Pacific Gateway Strategy (Fletcher 2011).[221] The plan focuses on eight sectors that the Liberal party believes will generate the most revenue (e.g., mining, liquefied natural gas, forestry, agrifoods, knowledge-based sectors, tourism and infrastructure sector).[222] The focus is on private sector jobs created by the resource sector in rural areas of BC. The Liberal government forecasted that the BC Jobs Plan will put BC amongst "…the top two provinces in Canada in terms of GDP growth by 2015…" and in new job growth (Bailey 2011). The goal is to create jobs (from the resource sector) with higher yearly incomes, in order to draw young families into the rural areas of BC (BC Jobs Plan 2011). The foundation of the plan is built on the following: training, cutting red tape and accelerating the approval for industrial projects, as well as the "strengthening" of infrastructure and market expansion to Asia Pacific (BC Jobs Plan 2011). Also, the plan

221 The cost of the BC Jobs Plan is approximately $300 million, which includes port and rail facilities at Prince Rupert and Tsawwassen (Luk 2011). Also, another $24 million went to the increasing of staff at the Natural Resources permit offices, which is backlogged due to cutbacks during the Campbell government (Fletcher 2011). Another $50 million went towards improvements to "…the provincially owned corridor that connects the Delta port terminal to Canada's rail transportation network…" as part of a $200 million terminal expansion that will add between 600-800 jobs (BC Jobs Plan 2011).

222 For additional information on the BC Jobs Plan see the following website: www.bcjobsplan.ca.

proposes to complete 10 non-treaty agreements with First Nations by 2015, in order to improve economic certainty (BC Jobs Plan 2011).

The competitive advantage for BC is the province's geographical location to the Asia Pacific. In order to strengthen and grow the BC economy, the Liberal government needs to create opportunities through infrastructure upgrades to ease transport of BC goods to foreign markets. In 2011, US (the largest importer of BC goods) imported approximately $1.3 billion in BC products, whereas China was $528 million and Japan was $520 million (News1130 2011). Coal is approximately 50 percent of BC's exports (Luk 2011). BC is always at the mercy of world events (e.g., US housing market crash, Asian Crisis), whereby opening up new markets for BC goods makes the province less susceptible and more certain as a wise investment. Clark is cited as stating, "…it's time the province capitalizes on high demand for minerals, especially in Asia. If government can get out of the way and ease the process for mines to get going in BC, our goals can be reality, I have no question about it"(as cited in Bernard 2011).

Baldrey (September 28, 2011) writes about the BC Job Plan being "…relatively modest one that does not set some kind of lofty job creation target". However, the plan forecasts the opening of eight new mines by 2015, with upgrades or expansions to nine already existing mines (Fletcher 2011). The projects and mines to be opened or expanded are not specified in the plan. The opening and expansion of mines "…would generate $1.6 billion per year in additional revenue for the government and create 1,800 new jobs"(Bailey 2011). However, who will fill these jobs as the mining industry is currently challenged by a human resources crisis (see Section 6.6)? Clark is cited as stating,

> We have to make sure that British Columbia is a stable place where investors can feel confident in coming and we have to make sure that we are educating our workforce properly, because that underpins the whole plan. You cannot enable the creation of jobs and build infrastructure across the province and open up markets unless you have people who are ready to work at these jobs (Fowlie 2011)

In 2012, Thompson Creek's Mt. Milligan project faced significant challenges in regards to skilled labor shortages resulting in costs escalating between 10 to 20 percent over budget (The Vancouver Sun February 29, 2012) (see Appendix 8: Case Study Mt. Milligan). The CEO for Thompson Creek, Kevin Loughrey is quoted as stating,

> It is going to cost us between 10 and 20 per cent more than we originally had planned. While this is unfortunate it is, in fact, what is happening in the mining community right now. We haven't seen any projects get done at the numbers people have projected (The Vancouver Sun February 29, 2012).

The BC Jobs Plan outlines steps towards training, as well as funding for the recruitment of more international students, as well as an apprentice training tax credit for employers.

Considering that it takes a minimum of 10 years in BC to get a major mine project from the exploration to the development phase, it seems Clark has some lofty and perhaps not so obtainable goals. For instance, NovaGold and Teck Cominco are still determining if the Galore Creek project is economically feasible and need a few more years to complete their studies, obtain an environmental assessment, as well as renegotiate with the Tahltan First Nation. There is no way the Galore Creek project will be in production by 2015. Many other projects are hung up in the federal and provincial environmental assessment process.[223] For instance, the New Prosperity project has been in the environmental process for 18 years (see Appendix 8: Case Study Mt. Milligan).[224]

Under The BC Jobs Plan, Clark wants to simplify government processes for such things as licenses and permits in order to shorten the time it takes for a project to get to the operating stage. However, over simplification can result in further project and government uncertainty, especially for opponents of the project, who may question its validity and the government's need for re-election. This could make the government and process more susceptible to lawsuits and costly panel reviews. In 2012, Pacific Broker Minerals Inc. sued the provincial government over the government's rejection (refused to issue a certificate) of the Morrison mine project. In December 2013, the BC Supreme Court overturned the province's rejection of the project since it "failed to comport with the requirements of procedural fairness"(as cited in Stueck 2013). The Court ordered the government to reconsider the project. Clark is cited as stating,

223 For an up-to-date (Sept 29, 2014) Environmental Assessment project list see the following website: http://a100.gov.bc.ca/appsdata/epic/html/deploy/epic_home.html. For an up-to-date (Sept 29, 2014) Canadian Environmental Assessment Agency project list see the following link: http://www.ceaa-acee.gc.ca/050/index-eng.cfm.

224 For additional information on New Prosperity see the following website: http://www.newprosperityproject.ca.

> I've set very ambitious goals for new mines. We are not looking for reasons not to build new mines. But we do want to make sure the ones that happen, happen in an environmentally sound way. People voted for economic development in the election, there is no doubt about it, but they didn't vote for economic development at any cost (Stueck 2013).

The provincial government is currently reviewing the Morrison project. Will the project obtain a certificate from the provincial government? If so, will they pass the federal government review process or will they be denied? What would this denial mean for BC's mining industry? In my opinion, it would be detrimental, as it would create greater investor uncertainty, as well as reinforce the incongruous relationship between the federal and provincial governments, thereby reinforcing questions on validity in regards to provincial environmental assessment, as well as government.

A week after being elected Premier, Clark made minor changes to the Mines Act. The changes allowed mining companies to conduct low risk explorations (e.g., small drill programs in areas were no roads are required) without having to go through a permit process (Meissner 2011a). In an article (November 20, 2011) titled "Mines Act changes signal B.C. ready to dig in against environmentalists" highlights how these changes aren't sitting well with environmentalists (Meissner 2011a). George Heyman, the president of the Sierra Club is cited as stating,

> We're not anti-mining, I want to be clear about that. But if the government is going to stake B.C.'s economic future on mining, then we should do it in an environmentally responsible way that's transparent, science-based and has good environmental processes (Meissner 2011a).

Clark's change seems reasonable, considering how minimal the impact would be; however, changes like these create fear for those already questioning the environmental assessment process in BC. For instance, the controversial approval by the provincial government on the New Prosperity project with no current federal government approval to date makes some wonder if the provincial system is flawed (Meissner 2011a). What is the solution to the province's environmental assessment process? Is it "one project, one review process"? Is it more provincial funding? In my opinion, perhaps an independent process outside of government similar to YESAA in the Yukon is the solution for BC, as it would potentially minimize political influence on environmental assessment decisions. Also, it would

potentially streamline the process, thereby minimizing irregularities in regards to the evaluation and the monitoring of projects/mines in BC.

In 2014, Clark announced that BC's mineral exploration tax or flow-through share tax credit would be extended into 2014 (Kolenko 2014) (see Sections 4.7 and 17.1). This incentive is to increase mineral investment in BC. Clark states, "B.C.'s mineral exploration and mining industry is a great comeback story. It's a vital part of our strong economy, supporting good paying, secure jobs in communities across the province – and the best is yet to come"(Kolenko 2014).

16.3.1 BC's competing pipeline projects.

Multiple controversial resource projects simultaneously on the provincial docket can create confusion amongst constituents. Currently, Enbridge is looking to build the Northern Gateway Pipeline from near Edmonton, Alberta to Kitimat, BC, whereas Kinder Morgan has proposed expanding the existing TransMountain system to increase crude oil volumes from Edmonton, Alberta to the Lower Mainland, BC (AngusReid 2010). Also, multiple companies are proposing pipelines for Liquefied Natural Gas (LNG) throughout north central BC.[225] There is also the very controversial proposed Keystone XL crude oil pipeline from Alberta, Canada to Nevada, US. In 2010, an Angus Reid poll titled "British Columbians Troubled by Competing Pipeline Projects" revealed that 49 percent of the respondents thought the projects were a bad idea, whereas 33 percent thought they were a good idea as they would benefit the BC economy. With all these proposed projects, where will all the skilled labor come from? For instance, if approved the Northern Gateway project would require "…62,700 person-years of employment over a three-year construction phase, as well as more than 1,150 long-term jobs in maintenance and operations"(Catteneo 2011). The project would also inject $5.5-billion into the economy (Catteneo 2011). According to Cattaneo (2011), it seems this project would ease what is owed in regards to the HST.[226] What will happen if the price of oil

225 For additional information on LNG pipeline proposals see the following website: http://northwestinstitute.ca.

226 On August 26th, 2011, 54.73 percent of BC voters rejected the HST (The National Post 2011). Clark's government has no choice but to disband the HST and go back to a PST and GST system. The cost of changing the HST over the next few years will be $3 billion, of which $1.6 billion we 'borrowed' and has to be paid back (Cooper 2011). Baldrey (June 15, 2011) states, "This how we ended up with the HST,

drops close to marginal costs? Will new metal mine projects in BC become a new priority for the provincial government, especially considering what is owed to the federal government in regards to the HST? Would other resource projects become a priority and acquire provincial approval to move forward into the development phase?

In the third quarter of 2014, there was a significant drop in the price of oil,[227] resulting in the collapse of the oil and gas industry in BC. Only a few months later (October 14, 2014), the Site C Clean Energy project (which proposes a hydro-electric dam on the Peace River)[228] received provincial environmental approval despite years of controversy and resistance by stakeholders' province-wide. Is this approval a result of the collapse of the oil and gas industry, whereby the provincial government feels pressure to revitalize the BC economy, or are other things at play? In my opinion, only time will tell. The project must receive federal approval prior to moving into the construction phase of development. If the federal government does not pass the project, further questions will emerge on the reliability of the provincial environmental assessment process, as well as the validity of the government. Overall, constituents can get overwhelmed and sidetracked by the nature, complexity and shear number of projects being proposed in BC, as well as sidetracked as to how certain projects are approved despite years of controversies.

16.3.2 First Nation issues: Blockades, treaties and aboriginal rights, 2011+

As Clark stepped into her new role as premier she was faced with potential blockades from various First Nation groups throughout BC. For instance, the Skeetchestin Band intended to disrupt the operations of Teck Resources, West Fraser Timber, CN, BC Hydro, CP, Pembina Pipeline, Spectra Energy and International Forest Products operating on the Skeetchestin band land and traditional territory (Matas 2011). Mike Anderson, the band's natural resource

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remember. The worldwide economic recession blew a huge hole in the B.C. government's revenues almost overnight, and so when Ottawa came calling with a $1.60 billion "incentive" to implement the HST, the Campbell government lunged at the cash".

227 See the following website for a one year chart on the price of oil: http://www.stockwatch.com/Chart/Advanced.aspx?action=go&time=1&symbol=XEG&region=C

228 For additional information on Site C hydroelectric project see the following website: http://www.cbc.ca/news/canada/british-columbia/site-c-dam-approved-by-b-c-government-1.2874433.

manager is cited as stating, "We'd like them [the corporations] to come to the community, sit down and talk with us a bout impacts and benefit agreements"(Matas 2011).[229]

In the last 15 years Impact Benefit Agreements (IBAs) have made a significant impact on negotiations between First Nations and corporations in regards to resources on First Nation lands. Due to the confidential nature of the reports, very little is publically disclosed. The Tsilhqot'in National Government tribal chair and Chief Joe Alphonse had a similar message as Mike Anderson. Chief Alphonse is cited as stating, "If you're coming into the Chilcoltin, you're going to work with us. If you choose to work against us, I guarantee you're not going to get anything approved"(Matas 2011). The Kwakiutl First Nation went beyond threats and actually blocked a BC ferry at Port Rupert in regards to their aboriginal rights and title in the Port Rupert area (D'Amour 2011). Despite all the conflict, several treaties were signed during this period. By mid-2011, the Yale First Nation signed a final agreement in regards to the Yale Treaty despite opposition by the Sto:lo First Nation. "The final agreement provides 1,966 hectares of proposed treaty lands, including 1,749 hectares of provincial Crown land and 217 hectares of existing reserve land"(Yale 2014). There is also a capital transfer of $10.7 million dollars (Yale 2014). In November 2012, the Tla-o-qui-aht First Nation signed an amended incremental Treaty agreement. The agreement states,

> Signing of the agreement-in-principle triggers the transfer of a total 28.3 hectares in the resort municipality of Tofino. The amendment to the ITA is part of B.C.'s efforts to ensure First Nations are able to benefit from treaty in advance of final agreements. B.C. is also providing $200,000 in capacity funding to the Tla-o-qui-aht, the final payment of $600,000 associated with the ITA (Tlaoquiaht 2014).

In 2013, the signing of a 13-year Economic Benefits Agreement (EBA) with Blueberry River First Nations, which provided '…annual revenue sharing and seven land and resource management agreements"(Energeticcity 2013). Later that year, the Blueberry River First Nation terminated the EBA citing "…its failure to consider the cumulative effects of development in their traditional territory"(Energeticcity 2013). Overall, the Clark government is making process in regards to land access issues; however, it will take more time to resolve the many conflicts and treaty issues on the provincial docket.

229 A list of BC Impact Benefit Agreements (IBAs) can be found on the following website: http://www.impactandbenefit.com/IBA_Database_List/.

On June 26, 2014, the Supreme Court of Canada ruled on the landmark *Tsilhqot'in Nation v. British Columbia* case that the Tsilhqot'in[230] hold Aboriginal title over certain lands in the central Cariboo-Chilcotin area.[231] Known as the William decision, this judgment is the first of its kind in judicial history as it clarified Aboriginal title for semi-nomadic groups, as well as devised how to test[232] for it (Davis 2014). In 2002, Chief Roger William of the Xeni Gwet'in First Nation filed an extensive claim (which does not overlap with any other claim in BC) for Aboriginal title on behalf of all members (eight bands) [233] of the Tsilhqot'in Nation. "The Tsilhgot'in Nation requested specific Aboriginal rights, as well as damages and 438,000 hectares in the Nemiah Valley"(Willims et al 2014). [234] In the end, the SCC concluded that the Tsilhqot'in have Aboriginal title to a portion of the claimed area.[235] This case highlights the importance of due diligence, that no other First Nation group has claimed the area, and the claim was filed by "…the Tsilhqot'in community rather than the individual bands"(Willims et al 2014).

This judgment creates a certain level of uncertainty in regards to resource development in BC, in particular the SCC's language in respect to what defines a project, project infringement and the Crown's ability to cancel a project if it infringes on titled lands (Willims et al 2014). For instance, is a pipeline in the ground pumping oil considered a project and if title is proven will this "project" have to stop? Also, questions of ownership have arisen in regards to subsurface mineral rights and Aboriginal title (Willims et al 2014). Are the Tsilhqot'in outright owners of subsurface rights within the claim titled area? Also, questions have emerged in regards to the viability of the New Relationship model, which comprises of 208 bands (Willims et al 2014). As per this recent judgment, bands may have to

230 A semi-nomadic Aboriginal group.

231 *Tsilhqot'in Nation v. British Columbia* (2014) SCC 44.

232 The test comprises of three occupation criteria: Sufficiency, Continuity and Exclusivity and is based on the Delgamuukw title test (See Delgamuukw v. British Columbia, (1997) 3 S.C.R. 1010, and/or the following website: http://www.projectlawblog.com/2014/06/27/742/.

233 Tsilhqot'in Nation is comprised of eight bands: Xeni Gwet'in; Tl'esqox; Tsi Del Del; Tletinqox-t'in; ?Esdilagh; Yunesit'in; and, some members of the Ulkatcho First Nation (Willims et al 2014).

234 For additional information on Roger William Decision see the following website: http://www.fasken.com/files/Event/e60813a7-31a1-4ad9-8265-91bf1538fd60/Presentation/EventAttachment/c332d5c0-8ef4-4c55-8364-d9df1952d7c6/PRESENTATION%20BOOKLET-Aboriginal%20Update%202014%20Roger%20William%20Decision.pdf.

235 A portion is 2 percent of traditional territory identified as being exclusively occupied by the Tsilhqot'in (Willims et al 2014).

group together like the Tsilhqot'in Nation to successfully obtain Aboriginal title to lands in BC. What does this mean for the New Relationship model in BC (Willims et al 2014)? [236]

Russell Hallbauer, president and chief executive officer of Taseko reports on the Roger Williams decision and how Taseko's New Prosperity project falls outside the Tsilhqot'in territory. He states,

> The question of whether, and to what extent, aboriginal rights and title exists has been a complicating factor in advancing the New Prosperity project. Today's decision helps significantly in resolving that complication by removing any doubt about aboriginal title in the area. The ruling confirms that Taseko's New Prosperity gold-copper project is located in an area where aboriginal title does not exist. As such, New Prosperity is the only proposed mine in British Columbia that people know for sure is not in an area of aboriginal title. Now that these matters have been settled, the opportunity exists for a constructive and mutually beneficial way forward for the New Prosperity project. We welcome and look forward to the opportunity to re-establish a positive dialogue with the six Tsilhqot'in bands represented by the Tsilhqot'in national government about New Prosperity and its potential to assist them with advancing community priorities (Stockwatch News 2014a).

In response, Joe Alphonse (tribal chairman of the Tsilhqot'in) states, "I think Taseko has a very twisted view of things. I think it's very irresponsible"(Hoekstra 2014). This project among others, show the complex nature of resource development in BC, as stakeholder interests conflict. Despite the Tsilhqot'in having rights to fish and hunt in the area of the New Prosperity project, "…the requirement for the Crown to consult and accommodate over those rights is not as strong as for title or property rights"(Hoekstra 2014). Therefore, this could have an influence in regards to the potential future of the project. Currently, the Federal Court of Appeal is reviewing the project, as the company believes "…the environmental review was badly flawed…"(Hoekstra 2014). A Federal Court of Appeal decision in regards to the New Prosperity project is expected at the end of 2014 or early 2015.

Overall, First Nations endured the power struggle between the provincial and federal governments in regards to who had responsibility for Aboriginal rights and title in BC. The provincial government refused to negotiate or acknowledge the issues, whereas the federal government waivered from time to time if they were responsible or not. These conflicts

236 As the judgment is relatively new, all the questions asked above will be clarified overtime as the industry and governments need time to absorb and make modifications to policies, etc in accordance to these recent changes.

significantly lengthen the negotiating process, as well as precipitated racism against First Nation peoples in BC. A strong First Nations movement emerged. Initially cooperative and willing to negotiate with the federal and provincial governments, it later emerged into a movement of protests and blockades, as well as resorted to legal avenues in order to be heard in regards to Aboriginal rights and title in BC. This movement would bring to light the years of misdealing by the federal and provincial government in regards to First Nation issues, as well as highlight the escalating long-term political, economic and social costs of not negotiating treaties in BC. The most prominent cost to the mining industry is land access. Unsettled treaties creates a high level of uncertainty, as companies are less willing to invest in areas where long-term costly legal battles would ensue over land access, ownership and the corresponding economic benefits. However, once treaties are settled rules for resource development still apply such as consultation, minimal impact, accommodation and compensation (e.g., revenue sharing) (Mills 2015).

16.4 Conclusion

Gordon Campbell was premier of BC for over 10 years. His leadership is an example of the ever-shifting electorate values, in particular on First Nations treaty issues, as well as on environmentalism. For a pro-development style government, Campbell had to find a 'winning' balance amongst all the competing parties in order to be re-elected each term. For instance, Campbell's government did a lot to attract business and workers back to BC by lowering taxes, restraining spending growth and reducing regulations (Katz and Veldhuis 2008). As a result, BC was one of the top provinces in economic growth, business investment and job creation for a period while Campbell was premier (Katz and Veldhuis 2008). However, the government "…shifted away from pro-economic growth policies to more environmental initiatives…" which ultimately threatened BC's investment climate (Katz and Veldhuis 2008). Campbell also established a New Relationship with First Nations people in BC, as well as advocated three treaty agreements and promoted Resource Revenue Sharing. A vast shift forward considering that many of the past premiers were reluctant to work on resolving the land question in BC.

During the 2009 provincial election, the Liberal government promoted environmental and Aboriginal rights in BC. In response, the NDP changed route and promoted the need to eliminate the Carbon Tax, as well as keep a tight hold on public spending. It's ironic that the NDP have shifted away from their historic platform of environmentalism and the growth in public sector, which have been the NDP's largest supporter (see Sections 14.2, 15.2 and 15.3). The Carbon Tax changed the face of the environmental movement in BC, whereby the David Suzuki Foundation questioned the NDP's position on 'axing the tax' (Jackson 2009). As a result, the Foundation all but endorsed the Liberal party of BC (Jackson 2009). With decades of opposition, Campbell opened his arms midway through his time as premier and endorsed environmentalism and Aboriginal rights. Despite questions in regards to Campbell's sincerity in reach to his change of heart, he was responsible for guiding the province out of the "lost decade" of NDP rule and into a period of economic turnaround (Lammam and Veldhuis 2010).

It seems the BC Jobs Plan is Christy Clark's provincial whip to reinvigorate the BC economy faltering under a lingering worldwide financial crisis. Clark's approach is certainly resource industry pro-development and pro-business, while trying to balance the contingent of environmentalists. Clark has been in power since March 14, 2011 and was recently re-elected in May 2013, despite a close NDP race. In the end, the electorate voted in a leader who could reinvigorate the BC economy. However, to meet her BC Jobs Plan goals she will need to revamp the faltering provincial and federal environmental processes, as well as carry-on negotiating First Nation treaties, in order to answer the BC land question while building investor confidence in BC. However, the recent landmark judgment by the Supreme Court of Canada in regards to the Tsilhqot'in Nation adds a series of elements to land access issues; however, it provides some clarity in regards to Aboriginal title for nomadic groups and how to test for it.

CHAPTER 17 Part 2 conclusion

17.1 Conclusion

The foundation of BC's political landscape is built on economic determinism. The need for riches and power acquired through partisanship led to significant change and conflict amongst parties, populace, environmentalists and First Nations, as well as the elimination of third party competition early in BC's history. The W.A.C Bennett era is symbolic of the great change that occurred in the provincial landscape, as it was precipitous for the major realignment in provincial politics, as well as the expansion in resource industries and infrastructure. Bennett opened the geographically restrictive province to one that is more homogeneous. As a result, he changed the relationship between the government and society by redefining BC's social class with the growth of the middle class, as well as unintentionally aligning blue-collar trade union workers with the NDP. During times of economic prosperity when society can provide for more than their basic needs, values change and conflicts enviably ensue. In BC, this spawned a series of social movements (e.g., labor and environmental) and changes in the natural resource landscape.

Each governing party of the day throughout history represents the "sign of the times". In many respects, it is reflective of the voter's view of their political, economic and social priorities. Each government represents some form of dichotomy (e.g., socialism versus capitalism, anti-development versus pro-development, etc.), which ultimately effected BC's mining industry. The two-party structure was very polar, not moderate; therefore, lacked a middle ground between pro-and-anti-developments. The NDP is known for their socialist agenda, hence anti-development, whereas the Social Credit is known to be pro-development. The Liberals are relatively pro-development; however, lean more center-right on the political spectrum as they are "jobs agenda", industry and environmentally focused. As it stands, Gordon Campbell's government leaned more to the center than the current Christy Clark government, who has promised the development of 17 (eight new and nine expansions) mines by 2015 (BC Jobs Plan 2011). As of late 2014, a BC Jobs Plan update from the provincial government states the following:

- Five new[237] mines have opened (Copper Mountain, New Afton, Mt. Milligan, Bonanza Ledge and Yellow Giant) creating 1,320 jobs (BC Jobs Plan 2014);
- Red Chris Mine is nearing completion of construction and is anticipated to be operational by end of 2014 (BC Jobs Plan 2014);[238]
- Four more mines are also under construction or approved (BC Jobs Plan 2014); and,
- Seven expansions of major mines have been approved supporting 3,000 existing jobs and creating 300 new jobs (BC Jobs Plan 2014).

Over the last 60 plus years the government of the day has been challenged by the power exercised by the electorate, industry, media, opposition parties, federal government, party activists and interest groups. All have interests in BC's natural resources, but rarely if ever, were these interests aligned. Each has grown in significance; and therefore has shifted power away from the provincial government. For instance, the electorate became more politically literate and populist, therefore wanted more say in the public's natural resources. The growth in postmaterialist values resulting from a significant increase in wealth and education sponsored a significant rise in the social and labor movements throughout BC. Despite socialist agendas or neglect of industry, each government ultimately relied heavily on natural resource revenue to pay for their political, social and environmental agendas. This gave industry power in the political arena, as governments relied on them for donations, revenue and votes.

Politicians walk a fine line in regards to the media as they can make or break a political career. Bill Vander Zalm, Mike Harcourt and Glen Clark were 'vilified' by the media, which ultimately ended their political careers. The media also contributed to political efficacy, as the populace was able to connect to and learn about BC's politicians and parties. The political opposition helps to keep the governing party accountable as they monitor their day-to-day activities, as well as policies.

The federal government is also a key stakeholder who can significantly affect the political landscape. The federal government can withhold federal transfer payments if they feel a provincial policy is against national standards (e.g., three-month waiting period for welfare) (Morley 1996). They can also grant or withhold final regulatory approval for many large-

237 'New' defined by the provincial government includes re-starts of old brownfield projects, where there is already existing infrastructure, etc.

238 As of January 2015, the Red Chris mine is still under construction.

scale natural resource projects, which without approval could have a detrimental effect on provincial revenue/GDP. In fact, BC has many projects on the federal docket awaiting approval (e.g., New Prosperity, Ajax), leaving the industry and province in a very compromising position, especially since copper production is declining in BC (see Chart 4).[239] As a matter of fact, industry has commenced legal action against the federal government as they feel the federal government's environmental assessment was incorrect or was based on incorrect data (e.g., New Prosperity project). For instance, BC currently has 38 resource projects tied up in court worth more than $25 billion dollars (Hume and Wright 2014).[240]

Party activists are long standing members of a political party, who hold significant power in regards to the party's leadership, governing style, policies and election campaigns. They control and constrain party leadership and party direction. Non-government organizations (NGO's) play a large role in the redistribution of political power over time, as their presence and visibility add to the complexity of today's governance. BC has many NGO's based in the province, many of which trademark this province as their birthplace (e.g., Greenpeace). Many were founded on conflicts regarding access to, and harvesting of BC's natural resources (e.g., Clayoquot Sound) in the last 20 plus years.

Cut backs to the civil service, as well as the ever-growing turmoil in power and belief systems has sponsored the recent development of think tanks such as the Fraser Institute in BC. These organizations produce policy suggestions to government and can act as lobbyists, who can shape public opinion. Lobby groups are vital to the mining industry, which at times suffers from a negative image or environmental legacy issues (e.g., Britannia Mine). Mining companies can utilize think tanks to inform the public on mining matters and recommended policy changes in the interest of the industry. Each actor influences government, thereby shaping the government's, mandates, policies, actions and ultimately their power. The days of W.A.C. Bennett who held onto a significant amount of power and authority are gone and

239 For additional information in regards to projects awaiting CEAA approval see the following website: http://www.ceaa-acee.gc.ca/050/navigation-eng.cfm.

240 For additional information see the following website: http://www.theglobeandmail.com/news/british-columbia/11-bc-resource-projects-and-the-court-actions-theyve-inspired-in-detail/article21701447/?from=21712987.

today's government is challenged by and has to placate numerous internal and external forces in order to acquire their votes, and to ultimately be (re)elected.

The government is also challenged by external global phenomena beyond their control such as economic recessions, which tend to exacerbate the weaknesses in their policies and their inability to implement them. Economic recessions are found in each governing term, are generally unpredictable and can contribute to a party's ultimate demise. In regards to policies, the NDP failed from the lack of planning and coordination, as well as timing (e.g., trying to implement new policies near an upcoming provincial election), whereas the Social Credit set the groundwork for the NDP policies by implementing amendments to the Mineral Act, as well as building a socialist workforce. Currently, the Liberals have set lofty employment and development goals and hopefully they will come to fruition as the copper price remains relatively high, although it has seen a significant decrease in the last six months.[241] Overall, there are many influencing factors and actors that act upon and shape provincial governments and it is these influences that affect mining and mineral policies in BC.

Today, building a mine in BC is far more complex and regulated than when companies explored and built mines during the W.A.C. Bennett era. Countries, regions and locales worldwide face similar challenges; however, this thesis focuses on the change in dialect amongst BC stakeholders and natural resources overtime. Four main themes discussed throughout this thesis, in particular in chapters 13 to 16, highlight this fact and are briefly discussed below: (1) First Nation and their land claims; (2) Environmental movement and protected areas; (3) Regulatory duplication and inconsistencies; and, (4) Provincial, Federal and International relations.

17.1.1 Aboriginal rights and title: The BC journey to the treaty process

Canadian history has left a legacy of significant events that have had a profound effect on today's treaty process, as well as on the development of new mines in BC. Unsettled land claims brought forth questions in regards to land access and use, as well as ownership. The

241 The copper price for the last six months can be found on the following website: http://www.nasdaq.com/markets/copper.aspx?timeframe=6m.

province was promised great riches to join Confederation; therefore, had great expectations. Aboriginal rights presented an obstacle to realizing this expectation; therefore, the government implemented penalizing acts and policies in order to silence and assimilate First Nations into mainstream society. Over the last 60 plus years, other challenges prevailed that stalled the treaty process. For instance:

- The change in the governing political party (approximately) every four years. Each government had their own philosophies, prejudices and mandates in regards to First Nation issues, as well as resource development. There was no consistency in support and understanding in regards to Aboriginal rights and the process ultimately had to filter into the court system to head towards some form of resolution. Ultimately, the four-year term would appear to be relatively inadequate to address long-term land claim issues.
- Up until the recent Tsilhqot'in and Delgamuukw decisions, the inability to define and measure Aboriginal title created a whole host of issues in regards to settling comprehensive claims. Now that it has been defined and can be measured for nomadic and non-nomadic peoples, a potential new era has arrived, whereby perhaps the settling of land claims can become a priority in BC.
- The BC treaty process has been voluntary and it has been up to the First Nations to decide if they want to participate or not.
- The complex nature of First Nation claims (e.g., bands, overlapping claims) added a whole host of challenges in determining who had rights, title and ownership of lands. Much of the legal process was stalled by conflicting claims between bands, number of bands, and conflict over process, rather than on determining who had legal title to the lands.
- Conflict amongst First Nations, associations and councils over the treaty process, land claims and Aboriginal rights and title stalled the settlement of claims.
- The First Nations had limited resources to fight for Aboriginal rights and title in BC. They had to motivate the governments to settle land issues through protests and disputes, as well as set up councils and associations. This reinforced negative stereotypes, as well as hindered the claims process.

Certain governments set themselves apart from others in regards to completing historic agreements with First Nations. In 1992, the Harcourt government signed the landmark BC Treaty Commission Agreement with the federal government and the First Nations Council. In 2000, the Glen Clark government completed a historic agreement with the Nisga'a Tribal Council and federal government despite significant anti-treaty opposition by other parties and the media. The NDP government paved the way towards today's treaty process, negotiations and settlements. However, changes in electorate values perhaps sponsored this change. Voters, industry and investors wanted certainty when it comes to land and resource ownership (in order to facilitate an investment decision), as well as to land access in BC.

Therefore, they pressured the government to settle land claims by withholding votes and political donations, as well as through media pressure. Willims et al (2014) note, "Business and industry are ahead of government as they have been consulting with First Nations, where the province has not". Questions have emerged with respect to the government's intent, lack of resources and reliance on the courts to settle these issues. The recent landmark *Tsilhqot'in Nation v. British Columbia* Supreme Court of Canada judgment granted the Tsilhqot'in Nation Aboriginal title to two percent of their claimed land in the central interior of BC. The judgment clarified Aboriginal title (for nomadic peoples), as well as how to prove it. Many key events[242] have lead to this recent judgment; however, the most significant development is the provincial government's long-standing role of not engaging in the process and leaving it to the courts to decide the fate of BC's land question. This certainly has become a time consuming and costly journey for all parties involved; however, with each passing day the province loses revenue and investors who will not invest in BC because the level of uncertainty in regards to the land question is too high.

17.1.2 Environmental movement: What areas will be protected in BC?

There are examples of areas in BC that were once open to exploration and mining that have subsequently become restricted, despite the existence of mining claims in the area. For instance, in 1993 the NDP government converted the areas involving the Windy-Craggy mining project in northwestern BC into the Tatshenshini-Alsek Wilderness Park (see Appendix 8: Case Study Tatshenshini-Alsek). In 1997, the NDP government created a 4.4 million hectare park in the remote Muskwa Kechika area of the Northern Rockies (Eugene Register 1997). This pushed the percentage of parkland in BC from 9.4 to 10.6 percent, which is still below the United Nations standard of 12 percent (Eugene Register 1997). The mining industry felt the increase in parkland or the loss of land base for mining would further infringe on future foreign investment in BC (Eugene Register 1997). Therefore, in order to meet the United Nation standards another 1.4 percent or 5.13 million hectare of land still needs to be designated as parkland in BC. These standards are based on the ever-changing values of a postmaterialist society who seek to preserve, conserve and protect the

242 *Delgamuukw v. R. of British Columbia* (1997) 3 S.C.R. 10010; *Guerin v. The Queen* (1984) 2 S.C.R. 335: *R. v. Sparrow* (1990) I S.C.R. 1075; and *Haida Nation v. British Columbia* (Minister of Forests), (2004). S.C.R. 511. (see Davis 2014).

environment. Historically the NDP would be more likely than the Liberals to facilitate conversion of the remaining 1.4 percent of land needed to meet the required standards than the Liberals, should they be re-elected.

17.1.3 Regulation duplication and inconsistencies: The art of a four-year political term!

There are numerous examples of regulation inconsistencies and irregularities that could be drawn upon to highlight the challenges imposed on industry by each successive new government (see Chapters 13-16). At least every four years, there is a potentially new governing party in BC with vastly different mandates, style, ideologies and agendas. In 1974, NDP Dave Barrett enacted the Minerals Royalty Act, which imposed heavy 'new' taxes and royalty structures on the mining industry. The ensuing conflict between government and industry ultimately contributed to Bill Bennett winning the 1975 election. Once in power, Bennett quickly dismantled the NDP policies and after extensive consultation with industry, introduced two new bills: the Mineral Resources Tax Act and a new set of amendments to the Mineral Act. In a period of just over four years, the mining industry went through vast changes as a result of irregular and inconsistent regulations that did not support mineral development in BC. The NDP implemented anti-mining initiatives, which significantly eroded investor confidence in an industry already trying to manage a cyclical market and a change in societal values. Therefore, it would be vital for governments to work together and build a consistent and long-term regulatory regime, which negates polarized politics and governments.

In 1995, the first Environmental Assessment Act was enacted in BC (see Appendix 7). The Act replaced the environmental assessment system that was deemed disjointed and unorganized. The Act provided greater certainty for industry as it created timeframes and provided information on what is required by the proponent; however, the industry faced higher environmental expenditures, regulation duplication and an overlap in regards to requirements by the federal and provincial governments.

Changing governments and polices resulted in a perception that the BC environmental process lacked stability, as the process timelines fluctuated and the system was over taxed. Additionally, questions in regards to political bias have arisen, whereby decisions made are

influenced by politicians or lobby groups rather than by science (e.g., New Prosperity, Red Chris, Morrison) (Wilson et al 2013a). In fact, companies such as Imperial Metals Inc. have had to utilize the legal system to advance their project (Red Chris) in BC.[243] It is the overall lack of predictability that drives this uncertainty; thereby a more streamlined process would help to minimize costs and expedite resolution in regards to project approval. Timing delays not only increase project risk (changes in ideologies, commodity price, elected officials and technology), but also decrease the time value of money. For example, a project that was approved six months from the completion of its feasibility is worth considerably more than one that has tied up invested capital for a period of seven years. This uncertainty adds further instability to mining investment, which is compounded by the other factors discussed throughout this thesis. Perhaps, a politically independent environmental process (e.g., YESAA) may be the best alternative for expediting project assessments.

17.1.4 Provincial, federal and international relations: The power struggle in BC!

There has been a long legacy in BC of power struggles between the federal and provincial governments. A large part of the struggle (as discussed throughout chapters 13 to 16) pertains to the management of BC's natural resources, as well as the BC First Nation treaty process. For example, the BC environmental process requires provincial and federal approval prior to a 'recognizable' mining project being granted permission to start construction. Several projects have been granted provincial approval, but have been refused federally. As a result, the project sits in limbo while the company goes through the federal protocol, which may include significant revisions to their projects and feasibility studies in order to get approval. In some cases, the company has to rely on the Supreme Court of Canada (SCC) to resolve the issues found by the federal government. Ultimately, the federal government has the 'final say' on BC's significant mining projects, which is somewhat contrary to the concept of the province being responsible for its own natural resources. Since there has been a long history

243 In 2007, MiningWatch Canada filed a claim with the Supreme Court stating that the public was not consulted during the project's CEAA process. The company and the federal government appealed and in 2010 the Court determined that the environmental assessment was complete and that a comprehensive study was not required. Despite the challenges associated with BC's environmental assessment process, this decision added clarity in regards to the scope of a project and the type of environmental assessment needed, as well as ensured federal-provincial cooperation (CEAA 2010b). However, MiningWatch's claim further exasperated investor uncertainty, as it was felt that environmentalists had significant power to infringe on or stop projects in BC.

of anti-nationalist rhetoric by British Columbians, it is not surprising that conflict has emerged. Case studies discussed throughout this thesis have highlighted this long-term conflict, as well as brought forth questions in regards to why some projects were approved and others were not over the last sixty years. Ultimately, these conflicts further exacerbated investor uncertainty, thereby adding significant pressure on industry and the provincial government to build new mines in BC.

The four main themes discussed previously (First Nation and unresolved land claims, the environmental movement and protected areas, regulatory duplication and inconsistencies; and, Provincial, Federal and International relations) highlight the growing complexity in the development of new copper mines in BC. For instance, the provincial government's long-standing role of not engaging in the First Nation treaty process, have brought forth questions and challenges in regards to land access and use, as well as its ownership in BC. The ever-changing values of a postmaterialist society who seek to preserve, conserve and protect the environment have further limited land access as a result of more areas being conserved for wilderness areas. Inconsistent and irregular regulations challenge the industry that has a small window of opportunity to build a mine. The process creates uncertainty as it instills an image that the process lacks stability and a predictable permitting path. The long legacy in BC of power struggles between the federal and provincial governments has further exasperated the land question, as questions and conflict emerged with regards to ownership and actual rights of BC's natural resources, and ultimately the revenues and benefits they produce. Overall, the challenges in regards to these four main themes evolve from the political system. With each successive government, each issue is compounded and remains unresolved. This increases investor uncertainty[244] and ultimately adds significant pressure to industry to build new mines in order to keep mining viable in BC. In order to better understand the relationship between factors and actors, the following chapter will analyze what role they played in sponsoring or demoting mineral development in BC.

244 Investor uncertainty is already exacerbated by low copper prices, high inflation rates and high oil prices, as well as environmental and social movements.

CHAPTER 18 Part 1 and 2 analysis

18.1 Introduction

The following sections analyzes and discusses the relationship between economic parameters (e.g., real copper and oil prices, exploration expenditures, and number of mines built) discussed in part one, and the political factors and actors (discussed in part two) in regards to BC's copper mining industry from 1952 to 2012. In order to acquire a better understanding of this relationship, tools such as relationship coefficient, a PEST metric framework and SWOT analysis are used. This section opens with an overview of the key political time periods and highlights the key trends and observations. A discussion of each key period raises numerous questions regarding causality and influence with respect to economics and political parties and their leaders. These theories and questions are then further tested to try and draw conclusions regarding political factors and actors and their influence on mine development in BC.

18.2 Is there a relationship between factors and actors?

Chart 22 illustrates BC's political parties, exploration expenditures, mine development and real copper and oil prices, 1952-2013. The annual exploration expenditures are a proxy for investor confidence in BC's mining sector. Companies rely on investors to explore and build mineral resources, and when there is growing 'uncertainty' or risk as a result of perhaps the governing party of the day and their policies, it can negatively impact investor confidence.

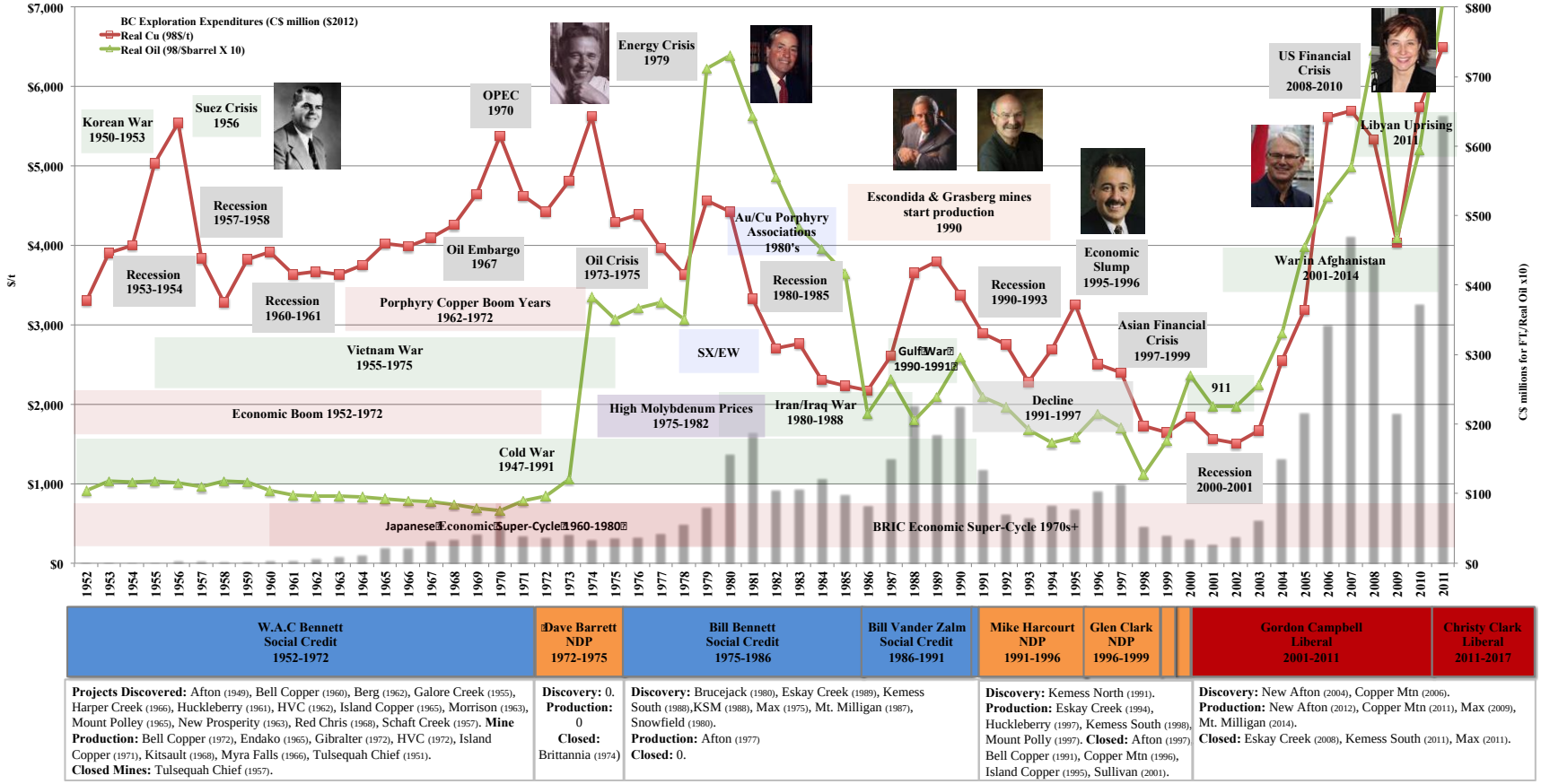
Throughout this thesis, relationships can be found that link the governing party of the day and their policies to a loss of investor confidence and an overall decline in the number of mines built in BC. For instance, the NDP's Minerals Royalty Act (1974) fostered fear with investors who felt BC projects could not sustain production as a result of increased costs associated with the Act (Calgary Herald October 2, 1974). As illustrated in Chart 22, from 1973-1975 there was a decline in exploration expenditures despite the initial rapid growth and later decline ($5,500/t Cu to $4,000/t Cu) in copper prices. Also during this period, there were no new 'significant' discoveries made and no new mines put into production. The closing of the Britannia copper mine as a result of depleted resources also occurred during this period.

Does the party in power and/or their policies have an effect on exploration expenditures and mines built in BC? In my opinion, it would seem so as there was a slight drop in expenditures when the NDP Minerals Royalty Act was implemented and no mine was built while Barrett was premier of BC (see Chart 22). Also, comments made by industry and investors who were against the Act and the decline in investment were prominent throughout various newspapers during this period (see Chapter 14). Overall, it would appear that there is a relationship between political party, exploration expenditures, copper prices and mines developed in BC.

During 1990 and 1993, there was a significant decline in exploration expenditures in BC. Despite a few periodic increases (1994, 1996, 1997), exploration expenditures remained low when compared to previous years (1981-1986) when the Social Credit was in power. They too faced an overall decline in copper price and a significant increase in oil price. Therefore, one could speculate that the overall decline in the rate of exploration expenditures in BC was because the NDP were in power, as well as for the declining copper price. For instance, while Harcourt was in office, there was a significant rise in 'public' conflicts between governments, environmentalists and First Nations in regards to land access, as well as forest and mining practices throughout the province. Therefore, his actions and mandates could have potentially contributed to investor uncertainty, thereby dropping exploration expenditures in BC. Ultimately, the drop in expenditures could have had 'a lag effect' on the number of projects discovered and mines built in BC. This seems to be what is evident after the Liberals took power in 2001, as companies turned to brownfield developments to maintain their reserves, rather than greenfield projects. Only one 'significant' mine has been built since 2001.

Glen Clark followed in his predecessor's footsteps; however, Clark's anti-environmentalist rhetoric only served to exacerbate the conflict between industry and environmentalists, as well as between BC and Ottawa. The conflicts brought to the forefront land access issues, which made investors nervous, as they did not want to invest in a project that may never be built. Nonetheless, while the NDP were in power four new 'significant' mines

Chart 22 British Columbia's political parties, exploration expenditures and real copper prices, 1952-2013



Source: Reinkensmeyer 2008; Strang 2007; USGS 2014; EMPR 2013; Wikipedia 2014; Appendix 5

(i.e., Eskay Creek gold mine (1994), Huckleberry copper mine (1997), Mount Polley copper mine (1997) and Kemess South copper mine (1998)) were put into production despite low copper/commodity prices. Also during this period, five mines were closed (e.g., Afton gold-copper mine (1997), Bell Copper mine (1991), Copper Mountain mine (1996), Island Copper mine (1995) and Sullivan lead-zinc mine (2001)), primarily as a result of depleted resources. Low exploration expenditures, low copper prices and four mines built seem to contravene what happened while Dave Barrett was in power. How did four mines get built while the socialist, anti-development NDP were in power? Perhaps the NDP's maligned image as anti-development was more rhetoric than reality. However, there was a significant lag in time from when the pro-development governments were in power and when mines were actually built and put into production.

Since 2001, the Liberals have been the governing party of BC during some of the highest real copper prices, as well as exploration expenditures ever (see Chart 22). There was only one true period of economic recession from 2008 to 2010. Known for being pro-development, only one new 'significant' mine was built (e.g., Mt Milligan copper-gold mine (2013)) and three restarts (Copper Mountain mine (2011), New Afton gold-copper mine (2012) and Max molybdenum mine (2009), suspended in 2011) since the Liberals have been in power (see Chart 22). In fact, the Mt. Milligan copper-gold project is the first new BC porphyry mine to be built in 15 years and took 27 years from discovery to reach production.

Between 1975 and 1991, there was one new 'significant' mine (Afton Mine, 1977) developed while Bill Bennett and Bill Vander Zalm were in power. However, high exploration expenditures resulted in the generation of seven new 'significant' mineral discoveries (e.g., Brucejack, Eskay Creek, Kemess South, KSM, Max, Mt. Milligan and Snowfield) in BC (see Chart 22). It would take another seven years (1997) for a new significant copper mine (Huckleberry) to be put into production in BC. Why only one new 'significant' mine built while the pro-development Social Credit was in power for 16 years? Was it because the NDP government was in power the three years prior, thereby generating a lag in mine development in BC? Or was it the overall decline in the copper price?

The previous Social Credit government under W.A.C Bennett experienced the development of seven new 'significant' mines between 1952 and 1972 and the discovery of 12 new mineral deposits (see Chart 22). During this period, the price of copper was range bound with a couple of spikes; nevertheless, the overall price was higher than the subsequent 'great commodities depression' years from 1981 to 2001. Overall, the above section generated more questions than answers; therefore, the following section looks deeper into the relationship through a study on using the relationship co-efficient.

18.2.1 The relationship co-efficient

As noted above, this research generated many questions as to why mines were built or not built during certain political party terms over the last 60 plus years. As a result, an analysis was completed using the statistical formula known as the linear relationship co-efficient[245] in order to evaluate the strength of the relationship (e.g., positive or negative)[246] between BC real exploration expenditures (dependent variable) and real copper and oil prices (independent variables) from 1952 to 2012 (see Table 12). Exploration expenditures are BC reflective, meaning it's the investors risk response to the BC mining industry, whereas copper and oil prices are reflective of worldwide supply and demand. Therefore, other risks such as province specific anti-development governments and policies, land access issues and regulation irregularities contribute to the level of investor uncertainty or decline in BC exploration expenditures. The purpose of this analysis is to acquire an understanding of the linear relationship between the dependent and independent variables, as well as non-quantitative risk variables (e.g., political party). By evaluating the quantitative variables one might infer the potential degree of influence of non-quantitative variables such as political party and mandates on mineral development in BC over time.

Table 12 illustrates the relationships between BC exploration expenditures and copper and oil prices in accordance to historically relevant time periods. From 1952 to 2012, there was a moderate relationship between exploration expenditures, and copper (r = 0.51) and oil (r =

245 Correlation equation: $Correl(X,Y) = \frac{\sum (x-\bar{x})(y-\bar{y})}{\sqrt{\sum (x-\bar{x})^2 \sum (y-\bar{y})^2}}$

246 For instance, if the relationship co-efficient has the value of r = 1 there is a perfect positive relationship between the two variables studied, whereas r = 0 states there is no value and r = -1 means there is a perfect negative relationship between the two variables.

0.77) prices. However, from 1986 to 2012 there was a very strong relationship (r = 0.96) between exploration expenditures and copper price, whereas other periods have low or negative relationships. Why was there a strong relationship between these two variables after 1986 and a negative relationship prior to 1986?

In 1986, the federal government implemented flow-through financing. Flow through funding allowed issuers (exploration companies) to renounce or transfer their exploration expenditure credits to individual investors (see Section 4.7). As many exploration companies would never use these deductions, the deductions were transferable to the investor, who could save income taxes by utilizing the losses generated by the exploration company investment As a result of these deductions, retail investors started to participate in higher risk BC exploration expenditures and this could partially explain the strong relationship between the two variables. Also, this period saw some of highest real oil and copper prices, further explaining their strong relationship with BC exploration expenditures.

Table 12 The relationship study: BC exploration expenditures (EE), copper and oil prices and specific time periods

Time Period	Significance	EE/Cu Rel'n-ship	EE/Oil Rel'n-ship	New Discover-ies	New Mines	Thesis Reference
1952 to 2012	The period of the study.	0.51	0.77	20	14	-
1952 to 1986	The period prior to the administration of flow-through shares.	-0.36	0.83	15	9	Section 4.7
1952 to 1991	The period of polarization.	0.60	0.57	19	9	Sections 4.3-4.7
1986 to 2012	The period when flow-through shares were available.	0.96	0.93	4	5	Section 4.7

Source: USGS 2014, EMPR 2013.

Between 1952 and 1986, there was a strong relationship (r= 0.83) between low exploration expenditures and low oil prices, and a negative relationship (r= -0.36) with high copper prices. During this period, low fuel costs (low oil prices), high copper prices, increasing exploration expenditures (investor confidence) and pro-development governments (1952-

1972; 1975-1986) sponsored the development of new mines throughout BC (see Chart 22). For instance, 18 new 'recognizable' discoveries were found and nine recognizable mines were put into production (see Chart 22). No other period studied matched this discovery and new mine construction rate.

It must be noted that although exploration expenditures are seen as a proxy for investor confidence, it is still quite different than the investor confidence required to make a capital investment decision required to build a mine. Retail and institutional investors typically fund exploration expenditures, whereas corporations make construction decisions. During W.A.C. Bennett's tenure as premier of BC (1952-1972), with exploration expenditures at all time lows, seven new recognizable mines were built. This reinforces the concept that investor confidence in mineral exploration is quite different from investing in mine construction (see Chapters 5-9).

Table 13 further analyzes the dependent and independent variables by political party and premier. For instance, between 1972 and 1975 NDP leader Dave Barrett was premier of BC. During his premiership, there was a negative relationship between exploration expenditures, and oil (r= -0.38) and copper (r= -0.76) prices. Also, there was no new discoveries made and no new mines were put into production during this period (see Chart 22). Why the negative relationships? Copper and oil prices were on a steady rise, whereas exploration expenditures slightly declined during this period (see Chart 22). Perhaps it was the rise in oil prices that had an influence on investor confidence resulting in a relatively strong negative relationship between the two variables. Maybe it was because of Barrett's anti-mining mandate (e.g., Bill 31) that deterred investors from financing BC exploration and mining projects. Or perhaps both?

Between 1991 and 1996, the NDP's Mike Harcourt was premier of BC and there was a weak relationship (r= 0.20) between exploration expenditures and copper price, as well as a moderate relationship (r= 0.66) between exploration expenditures and oil price. Chart 22 illustrates a surge in the copper price, which should have driven up exploration expenditures; however, expenditures dropped significantly and stayed relatively low and steady during his term in office. Perhaps Harcourt's strong social and environmental mandate effected investor

confidence; therefore, initially decreasing exploration expenditures when he became the premier of BC. Perhaps his struggle to find a balance between competing interests in environmental disputes, along with the establishment of the CORE program that left investors wary of participating in BC's exploration market while he was premier. Perhaps it was the recession from 1990 to 1993; however, each premier faced an economic recession at one time or another; therefore, one could question its relevancy here. It is apparent that during this period variables other than copper and oil price have had an effect on BC exploration expenditures, as well as on new recognizable mine development in BC.

Table 13 The relationship study: BC exploration expenditures (EE) and copper prices by political party/premier

Political Party	Premier	Time Period	EE/Cu Rel'n-ship	EE/Oil Rel'n-ship	New Discover-ies	New Mines	Thesis Reference
Social Credit	W.A.C Bennett	1952-1972	0.48	-0.86	12	8	Section 13.3
NDP	Dave Barrett	1972-1975	-0.38	-0.76	0	1	Section 14.2
Social Credit	Bill Bennett	1975-1986	-0.29	0.66	3	0	Section 14.3
Social Credit	Bill Vander Zalm	1986-1991	0.88	0.32	4	5	Section 14.4
NDP	Mike Harcourt	1991-1996	0.20	0.63	1	1	Section 15.2
NDP	Glen Clark	1996-1999	0.98	0.69	0	3	Section 15.3
NDP	Other	1999-2001	0.34	-0.47	0	0	Section 15.1
Liberals	Gordon Campbell and Christy Clark	2001-2012	0.95	0.97	0	1	Sections 16.2 –16.3
-	-	**Mean**	0.39	0.15	2.5	2.37	-

Source: USGS 2014, EMPR 2013

Between 1996 and 1999, the relationship between exploration expenditures and copper price, while NDP Glen Clark was premier, was the highest of all parties/premiers studied (r = 0.98) (see Table 13). Why? It seems investors responded very favorably to copper price decreases during this period. Does this near perfect relationship make everything else that influences investor confidence irrelevant, especially as it pertains to exploration expenditures? No. Despite the decrease in copper prices, exploration expenditures were on the rise prior to Glen Clark's election and they continued to climb for the next year after his election. Perhaps this continued rise in investor confidence was a result of Clark taking on national and international opponents, in order to save the BC salmon industry (see Appendix 8). Ultimately, exploration expenditures fell sharply along with the copper price from 1998 to 2001. During this period, four new recognizable mines were put into production. The lag in time from a development decision to production is certainly relevant here, as it takes years to get a mine ready to produce copper.

Although increased exploration expenditures and copper price intensifies the probability of finding a significant mineral discovery and perhaps in the construction of a new mine, they are not reliable metrics in determining if a deposit or discovery will result in a mine being built. For instance, between 2001 and 2012 only one new 'significant' mine was put into production, despite the highest real copper prices and BC exploration expenditures[247] recorded. The premier from 2001 to 2011 was Liberal leader Gordon Campbell and from 2011 to present is Liberal leader Christy Clark. Both governments support mine development; however, only one recognizable (copper) mine was built during the last 13 years. Why?

While W.A.C. Bennett (1952-1972) was premier, there were 12 new 'significant' discoveries and seven new mines built in BC (see Chart 13). During his 20-year pro-development mandate, there were relatively low exploration expenditures, moderate to high copper prices, low oil prices, lax environmental regulations (no Environmental Assessment Act until 1995), modest First Nation issues and higher grade and larger deposits (four of the mines are still

247 Between 2004 and 2014, exploration expenditure growth exceeded the CPI (see Chart 5).

operating). Could this success be a function of "the easiest mines are found first" as BC copper mining was in its infancy, or did many other factors align?

When comparing W.A.C. Bennett and Gordon Campbell's terms in office, they both were in office for a lengthy period of time, had pro-development mandates and experienced moderate to high copper prices. However, Campbell had to face significant challenges while in office such as high oil prices (costs), restrictive environmental regulations, extensive social and First Nation movements, a significant shift in electorate values and modest copper deposits, which ultimately had an influence on copper mine development in BC (see Section 18.3). Despite high exploration expenditures, only two modest discoveries were made near already depleted deposits. The copper mineral development landscape had changed and the aforementioned factors challenged the success of the BC mining industry.

Overall, the analysis using the relationship co-efficient revealed the following:

- There is a relationship between exploration expenditures, oil prices and copper prices;
- There seems to be a strong relationship between exploration expenditures and copper price after 1986 due most likely to the implementation of flow-through shares;
- There seems to be a relationship between pro-development governments and higher exploration expenditures in BC;
- It seems that anti-development governments and policies, land access issues and regulation irregularities contribute to the level of investor uncertainty or decline in exploration expenditures in BC;
- There seems be an ever increasing amount of time between discovery and mine production; and,
- It seems that a number of factors have to align for a copper mine to be built in BC.

In conclusion, the relationship co-efficient seems to generate more questions than answers; therefore not the greatest tool to answer why mines were built or not built during certain political party terms over the last 60 plus years. However, it did highlight the evolving complexity in BC mine development over time and that there is some degree of influence non-quantitative variables (e.g., political parties and policies) have on the viability of the industry.

The following section looks at PEST metrics, and applies quantitative metrics to these qualitative variables, in order to study the evolution of the BC mineral development landscape from 1952 to present. This analysis will provide a better visual understanding on

this shift dialect between society and natural resources, as well as highlight further on the influence non-quantitative variables (e.g., political parties and policies) has had on the viability of the industry.

18.3 PEST metrics

In order to provide a better visual understanding on this shift in dialect, as well as the nature of influence non-quantitative variables (e.g., political parties and policies) has on the viability of the industry, PEST Metrics were designed (see Figure 13) (See Appendix 15). Using the themes,[248] volume of data collected and overall analysis from the literature review, the top three political, economic, social and technological factors or indicators (which best represented the scope of the study) were chosen (see Section 18.5) (see Appendix 2). In particular, the factors for the economic, and technological categories were discussed in part one of the thesis, whereas the factors for the political and social categories were discussed in part two (see Figure 2) (see Section 17.1).[249] The metrics allow for a cross case analysis of the political premiers (parties) in power from 1952 to present (see Figure 13) (see Appendix 2). The metric ranks (using a 5-point Likert scale) the twelve PEST factors for each premier, thereby generating an overall PEST score, as well as a score per factor (see Figure 13).

The five-point metrics were designed from the well-known Likert scale (e.g., extreme, moderate, somewhat, slightly and none), in order to determine the level of positive influence each factor had over mine development in BC from 1952 to present (Guppy and Gray 2008). For instance, under the social category the scale used to measure society's concern about the environment is:

1. Society is *extremely* concerned about the environment.
2. Society is *moderately* concerned about the environment.
3. Society is *somewhat* concerned about the environment.
4. Society is *slightly* concerned about the environment.
5. Society is *not at all* concerned about the environment.

When there was concern, the level of points given per premier declined based on severity. For instance, when society had an *extreme* level of concern over the environment, the

248 For additional information on themes see Section 2.4 titled Literature Review.

249 A thesis reference is provided along with PEST scores as to where to find the relevant data used in the analysis (see Table 15).

premier received only one point, whereas when society had *no* concern the premier received five points. Society's concern for the environment indicates their level of resistance in regards to mine development in BC. Overall, the higher the points the more influence that factor has had in encouraging mine development in BC.

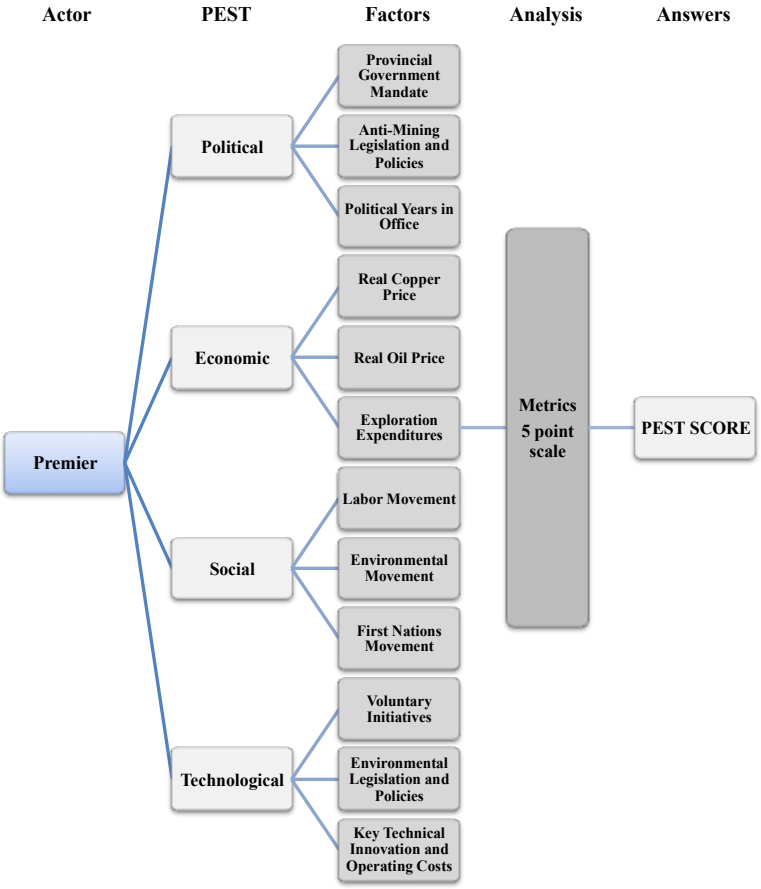


Figure 13 PEST metrics outline

The Likert scale was also used for the political and technological categories. However, under the economic category, the scale used to measure the influence of the oil and copper prices, as well as exploration expenditures on mine development in BC was the statistical measurement called *mean* (see Chart 1) The mean or average is the sum of the values over time divided by the number of values (see Appendix 15). Since the copper price fluctuates on a minute-by-minute basis, each measurement was calculated using a yearly average price per year divided by the number of years the premier was in power (see Appendix 15). This chosen scale eased cross case comparison due to the volatile nature of the copper price, as

well as by lessening the sheer volume of data to be measured and analyzed.[250] For instance, the average copper price while W.A.C Bennett was in power was US(98)$4,132.86/t Cu, whereas the average copper price while Glen Clark was in power was US(98)$2,067.50/t Cu. The higher the copper price, the greater chance a mine will be built, therefore the higher level of points given. For instance, the scale used to measure the influence the copper price (US(98)$/t) has on the development of new mines in BC is as follows: 1. $0-$1500; 2. $1501-$3000; 3. $3001-$4500; 4. $4501-$6000; and, 5. $6001+. If we compare Bennett's average copper price of $4,132.86 to the scale, Bennett would receive three points, whereas Clark's would receive 2 points.

If we account for all 12 factors, W.A.C Bennett's total PEST score (the highest) is 65, whereas Gordon Campbell's score is only 29 (see Table 14). Bennett scored high (5) on factors that promoted mineral development in BC; such as having a pro-development mandate, as well as on the number of years he held office (the longest consecutive ruling party in the province's history) (see Table 15). In regards to factors such as environmental and First Nation movements, voluntary initiatives, and environmental legislation and policies, Bennett received high scores as these factors were not a priority for society or government while Bennett was in power (see Table 15). Overall, during his time as premier 12 recognizable discoveries were made and seven new mines were built (see Table 14). However, when reviewing Gordon Campbell's scores, the three latter factors were a major disruption to his pro-development mandate as they were a priority of the electorate (see Table 14 and 15). These factors received low scores (high severity against mine development) while Campbell was premier. Overall, during his term no recognizable discoveries were made and no new mines were built (see Table 14). Therefore, each premier represents a period in political history that signified the BC electorate's values and beliefs, and Table 14 and Table 15 represents these shifts in values, as well as a path to answering *why it is so difficult to build new copper mines in BC?*

Table 15 ranks each premier on his or her overall PEST score. The results of the subjective metric clearly demonstrates that with each subsequent premier an ever-increasing growth in

250 As we are only comparing each premier's total time in office, it is not necessary to break down the data by year. Also, studying the other indicators would prove to be time consuming and beyond the scope of this study.

anti-mining philosophies has occurred, thereby inhibiting new copper mine development in BC. The PEST metrics and the results are discussed in detail below.

Table 14 Each premier ranked in accordance to their overall PEST score

Premier	Party	Year	Discoveries	Mines	PEST Score
WAC Bennett	Social Credit	1952-1972	12	8	**65**
Bill Bennett	Social Credit	1975-1986	3	0	**43**
Bill Vander Zalm	Social Credit	1986-1991	4	0	**39**
Dave Barrett	NDP	1972-1975	0	1	**32**
Christy Clark	Liberal	2011-Present	0	1	**31**
Gordon Campbell	Liberal	2001-2011	0	0	**29**
Glen Clark	NDP	1996-1999	0	3	**28**
Mike Harcourt	NDP	1991-1996	1	1	**27**
Other	NDP	1999-2001	0	0	**23**

18.3.1 Political metrics

The political metrics used to evaluate the governments are: provincial government mandate (pro or anti-development),[251] anti-mining legislation and policies and political years in office (see Table 15). Governments that scored highest had strong pro-mining/development mandates and remained in office for many years. For instance, W.A.C. Bennett (Social Credit) was in office for 20 years, whereas Dave Barrett (NDP) was in office for less than four years. Long-term, pro-mining governments provide stability allowing mining companies the confidence to make investments. As illustrated in Table 14 and 15, the NDP governments tend to score low, whereas the Social Credit and Liberal parties tend to score high in this category.

18.3.2 Economic metrics

The economic metrics studied are: copper price, oil price and exploration expenditures (see Table 15). These metrics were extensively discussed throughout Section 18.2; however, Table 15 illustrates the average yearly price for oil and copper, as well as the average yearly exploration expenditures for each premier in power. The premiers with the highest economic scores tend to have the greatest opportunity to build new mines in BC, as they were in power

251 Pro or anti-development are a designation that is given to each consecutive government by voters, media and political parties. They are well-used and well-known terms to describe a political party in BC.

during the most economically favorable periods (e.g., high copper prices, and low oil prices). BC copper projects and mines are known for being "low grade and high cost" operations; therefore a high copper price and a low oil price is ideal, as a high copper price will give the greatest returns, whereas a low oil price will decrease costs (Bacal 2014; Els 2014). High exploration expenditures increase the likelihood of finding new mineral discoveries, in particular one with world-class attributes; therefore periods with high exploration expenditures received a high score. While Bill Bennett and Bill Vander Zalm were both premiers, exploration expenditures were high; and seven recognizable discoveries were made during this period of time (see Table 15). During this period, the discovery that copper porphyry deposits were enriched with gold increased exploration expenditures in BC (see Section 4.7).

Premier Christy Clark has the highest exploration expenditures and copper prices of all the other premiers studied, despite being in office for the shortest period of time. With such a high economic score (11 points), Clark has the greatest economic opportunity to turn things around. Having a government motivated to seek balance between conflicting factors (especially during periods with high copper prices, exploration expenditures and low oil prices) will support the development of new mines in BC. The premiers with the lowest overall economic scores and exploration expenditures are: Dave Barrett, Mike Harcourt, Glen Clark and Other NDP[252]. All are NDP governments and all have the lowest total PEST scores of all the premiers studied. These results reaffirm an emerging trend that anti-development governments have a significant influence on investor confidence in BC. Table 15 also shows that despite the NDP no longer being in office, their presence has had a long-term effect on new mine development in BC. No new mines were built for many years after each NDP government was in power.

18.3.3 Social metrics

The social metrics include: labor, environmental and social movements. Table 15 illustrates that the labor movements in BC ranked between somewhat moderate to intense over the last 60 plus years, thus illustrating the electorates' "…active, participative, populist, moralistic

252 Other NDP: Dan Millar (1999-2000) and Ujjal Dosanjh (2000-2001).

and striving…" nature (Elkins 1985, as cited in Blake 1996a, 3). For instance, W.A.C. Bennett faced significant labor unrest with the rise of a 'new left' contingent of voters while

Table 15 PEST metrics (see Appendix 15)

PEST ANALYSIS & METRICS			ACTORS									
PEST	**Factors**	**Metrics**	**WAC Bennett Social Credit 1952-1972**	**Dave Barrett NDP 1972-1975**	**Bill Bennett Social Credit 1975-1986**	**Bill Vander Zalm Social Credit 1986-1991**	**Mike Harcourt NDP 1991-1996**	**Glen Clark NDP 1996-1999**	**Other NDP 1999-2001**	**Gordon Campbell Liberal 2001-2011**	**Christy Clark Liberal 2011+**	**Thesis Reference**
1. Political	**1.1 Provincial Government Mandate.**	*1. Political party has an extensive anti-development mandate in place.* *2. Political party has an moderate anti-development mandate in place.* *3. Political party has an somewhat anti-development mandate in place.* *4. Political party has an moderate pro-development mandate in place.* *5. Political party has an extensive pro-development mandate in place.*	5	1	4	3	1	2	2	3	4	Sections: 2.9, 4.1, 4.13, 7.9, 12.1, 12.2, 12.5, 14.5, 15.2.1, 16.3, 17.1, 13.4.1, 2.7, 14.2, 16.2, 16.3.1, 17.1.2,
	1.2 Anti-Mining Legislation and Policies.	*1. Extensive anti-mining policies are in place by the current government.* *2. Anti-mining policies are moderately developed by the current government.* *3. Anti-mining policies are somewhat developed by the current government.* *4. Anti-mining policies are slightly developed by the current government.* *5. Anti-mining policies are not developed by the current government.*	5	1	5	4	1	2	2	3	3	Sections: 9.5, 11.6, 13.3, 14.2, 15.2, 15.3
	1.3 Political Years in Office	*1. 0-4-years* *2. 4-8 years* *3. 8-12 years* *4. 12-16 years* *5. 16+ years*	5	1	3	2	2	1	1	3	1	Sections: 9.5, 11.6, 13.3, 14.2, 15.2, 15.3, 16.2, 16.3
2. Economic	**2.1 Cu Price (International).**	*Mean US(98)$/t* *1. $0-$1500* *2. $1501-$3000* *3. $3001-$4500* *4. $4501-$6000* *5. 6001+*	3	4	3	3	2	2	2	3	5	Section: 3.1, 7.4-7.7, 18.2, 18.3.
	2.2 Oil Price (International).	*Mean US(98)$/barrel* *1. $41+* *2. $40-$31* *3. $30-$21* *4. $20-$11* *5. $10-$0*	4	3	1	3	4	4	3	1	1	Section: 18.2, 18.3
	2.3 Exploration Expenditures (British Columbia)	*Sum C(98)$ million/t* *1. $0-$300* *2. $301-$600* *3. $601-$900* *4. $901-$1200* *5. 1201+*	2	1	4	4	2	2	1	5	5	Section 4.2-4.12.
3. Social	**3.1 Labor Movement**	*1. Actions (protests, strikes, unions) by labor and unions are extensive.* *2. Actions (protests, strikes, unions) by labor and unions are moderate.* *3. Actions (protests, strikes, unions) by labor and unions are somewhat moderate.* *4. Actions (protests, strikes, unions) by labor and unions are slightly moderate.* *5. Actions (protests, strikes, unions) by labor and unions are minor.*	1	2	2	1	1	2	2	3	3	Sections:11.6, 12.2, 12.3, 12.4, 12.5, 13.2, 13.3, 14.2, 14.3, 14.4, 15.2, 15.3, 16.2, 16.3.
	3.2 Environmental Movement	*1. Society is extremely concerned about the environment.* *2. Society is moderately concerned about the environment.* *3. Society is somewhat concerned about the environment.* *4. Society is slightly concerned about the environment.* *5. Society is not at all concerned about the environment.*	5	4	3	2	1	1	1	1	1	Sections: 3.4, 4.4, 6.8-6.10, 11.6, 12.1-12.6, 13.3.1, 14.2, 14.3, 14.4, 15.2, 15.3, 16.2, 16.3, 17.1.2, 17.1.3.
	3.3 First Nations Movement	*1. Society is extremely concerned about the First Nations movement.* *2. Society is moderately concerned about the First Nations movement.* *3.Society is somewhat concerned about the First Nations movement.* *4. Society is slightly concerned about the First Nations movement.* *5. Society is not at all concerned about the First Nations movement.*	5	5	4	3	3	2	2	1	1	Sections: 6.11, 13.2.2, 13.3.2, 14.3.2, 14.4.1, 15.2.1, 15.2.2, 15.3.2, 16.2.4, 16.3.2, 17.1.1
4. Technological	**4.1 Voluntary Initiatives, Equator Principles, etc.**	*1. Extensive voluntary initiatives are in place (>10 initiatives).* *2. A moderate number of voluntary initiatives are in place (6-10 initiatives).* *3. A somewhat moderate number of voluntary initiatives are in place (4-6 initiatives).* *4. A small number of voluntary initiatives are in place (1-4 initiatives).* *5. No voluntary initiatives are in place (0 initiatives).*	5	5	5	5	4	3	2	1	1	Sections: 4.2-4.12, 14.3.1, 15.2, 15.2.1, 16.2, 16.2.2. 16.2.3.
	4.2 Environmental Legislation and Policies, NI 43-101, etc.	*1. Extensive policies with respect to the environment are in place.* *2. Policies with respect to the environment are moderately developed.* *3. Policies with respect to the environment are somewhat developed.* *4. Policies with respect to the environment are slightly developed.* *5. Policies with respect to the environment are poorly developed.*	5	4	3	2	1	1	1	1	1	Sections: 3.4, 4.4, 6.8-6.10, 11.6, 12.1-12.6, 13.3.1, 14.2, 14.3, 14.4, 15.2, 15.3, 16.2, 16.3, 17.1.2, 17.1.3.
	4.3 Key Technological Innovations and Estimated Average Operating Costs (US(2009)$/tonne ore) for the Western World (Schodde 2010b).	*Average US (2009)$/tonne ore* *1. $41+* *2. $40-$31* *3. $30-$21* *4. $20-$11* *5. $10-$0*	1	1	2	3	3	3	4	4	4	Sections: 3.3, 4.4, 4.7, 6.4-6.7, 7.4, 9.5-9.8, 9.12.
	New Recognizable Mineral Discoveries	*Actual number of discoveries made.*	12	0	3	4	1	0	0	0	0	
	New Recognizable Mines put into Production	*Actual number of mines put in production.*	7	0	1	0	1	3	0	0	1	
	PEST Score		65	32	43	39	27	28	23	29	31	

he was premier, while Gordon Campbell faced moderate unrest, whereby advanced labor and civil legislation mediated much of the conflict.

W.A.C Bennett faced very few issues involving environmentalism, as this movement didn't rise in BC until the late 1980's (see Section 14.3.1). Table 15 illustrates the progressive change in environmental values by society over time, thus signifying the growth in anti-mining and development sentiment (see Factors 3.2, 4.1 and 4.2). The increased activism ultimately hindered mine development and investor confidence in BC, as well as increased the costs (e.g., to acquire a social license to operate) to bring already marginal copper projects into production. Such factors did not exist during the W.A.C. Bennett era, or were immaterial in terms of opposition.

The First Nations movement has been long-standing in BC. There have been a vast number of protests, and conflicts between the federal and provincial governments, as well as with the electorate (who frequently changed their opinions) on First Nations issues. Table 15 illustrates the level of concern society has had over First Nations issues in BC over time. As a result, there is a progressive transition from having 'no concern' during the W.A.C. Bennett years, to 'extreme concern' today. The level of corporate and investor uncertainty in regards to First Nations issues has also progressed with that of society. It has become increasingly more difficult to build a mine while the land question remains unresolved.

Overall, all three metrics illustrate the active nature of the BC electorate and how their changing values have had an influence on mineral development in BC. As conflict increased, so too did the challenges facing the provincial and federal governments and the mining industry. The industry went from just building mines, to becoming political, economic, social and technological ambassadors for BC, while navigating the ever-changing financial, social and political cyclical markets.

18.3.4 Technological metrics

The technical metrics are: voluntary initiatives, environmental legislation, and key technical innovations and operating costs. Table 15 illustrates that there was a very significant and positive change in the number of voluntary industry initiatives from 1990 to 2012 (see

Sections 15.2.1 and 16.1.2). Implemented by various organizations (including the BC mining industry) these initiatives represent the worldwide recognition of sustainable development thinking and the need for companies to change the way they conduct business. In BC, these initiatives also represented the shift in electoral values, as well as the shift from government monitoring to industry self-monitoring. Traditionally governments acted on behalf of society, thereby enacting sustainable development frameworks; however, government cutbacks resulted in industry having to design and implement their own initiatives. By the mid-2000s, the BC mining industry was proactively enacting sustainable development initiatives they had designed despite low commodity prices and moderate to high industry costs.

Table 15 illustrates the intensity of environmental legislation and policies acting on the BC mining industry over time. The growth in the environmental movement signaled for new legislation and policies to be enacted in BC (see Section 18.3.3). Therefore, by the early 1990s there was an extensive growth in environmental legislation and policies acting on the BC mining industry. As a result, it was becoming increasingly difficult to build copper mines in BC, as water contamination resulting from ARD is severely frowned upon by the electorate, NGO's and our neighbors in the US (see Appendix 8). The negative environmental legacy of historic mines such Britannia near Squamish, BC reaffirms concerns about mining and ARD in BC (see Section 4.2).

The increase in technological innovation and lower average operating costs promoted copper mine development in BC. From 1952 to 1999, the industry was challenged by high operating costs; however, key technological innovations such as the development of good geological models for porphyries in the late 1960's and the discovery of porphyry gold-copper associations decreased costs and contributed to the increase in the number of mines built and discoveries made in BC (see Section 3.3) (see Figure 10) (see Chart 22). Even though the province has some of the highest operating costs in Canada innovation has helped to lower costs, as well as counteract opposing factors that inhibit new discoveries and mine development such as low grade, moderate size, taxes, etc. (see Chapter 5 and 6).

18.3.5 Discussion

As discussed and illustrated in Table 15, all political and economic factors, along with one social (labor movement) factor and one technological (innovation) factor have the highest scores in the last 12 plus years, whereas two social (environmental and First Nations) and two technological (initiatives and environmental legislation) factors have the lowest scores. Despite the favorable political and economic environment, the social and technological factors, along with only having economically marginal copper projects hinder current day copper mine development in BC (see Chapter 5). In order to build new mines in BC, all four PEST factors discussed above must be 'somewhat' aligned. Additionally, the province must have a long-term pro-development government in place, which works towards or settles the land question and promotes mining innovation and technology (e.g., no ARD, minimal environmental and visual footprint (e.g., underground) created from mining).

Overall, the metric illustrates 60 years of selected PEST factors that have had an influence on copper mine development in BC. The political and social factors illustrate the change in electorate values over time, whereas the economic and technological factors illustrate market influences on the industry, as well as their response to political and social pressures. Chart 23 and Chart 24 also illustrate the change in and importance of PEST factors influencing mine development in BC, as well as the shift in the power dynamic overtime. As illustrated, during W.A.C. Bennett days there were less internal and external forces acting on the provincial government, as well as on the mining industry; however, overtime these forces became paramount thereby challenging mine development in BC.

Today's industry is challenged by the change in electoral values, whereby a large and sometimes very vocal contingent is opposed to resource development in BC. Therefore, marginal copper projects plagued by cost and land access (First Nation's treaties) issues, anti-development electorate and governments, as well as the fluctuating copper price are not developed. However, if such projects were truly 'world-class,' would today's political and social forces be overridden by economics, employment opportunities and government revenue? In my opinion, I would say no. The current economic and political climate worldwide has hindered even world-class projects from expanding operations or being

Chart 23 The external and internal forces acting on the provincial government, 1900 to 1960 and 1960 to 2014

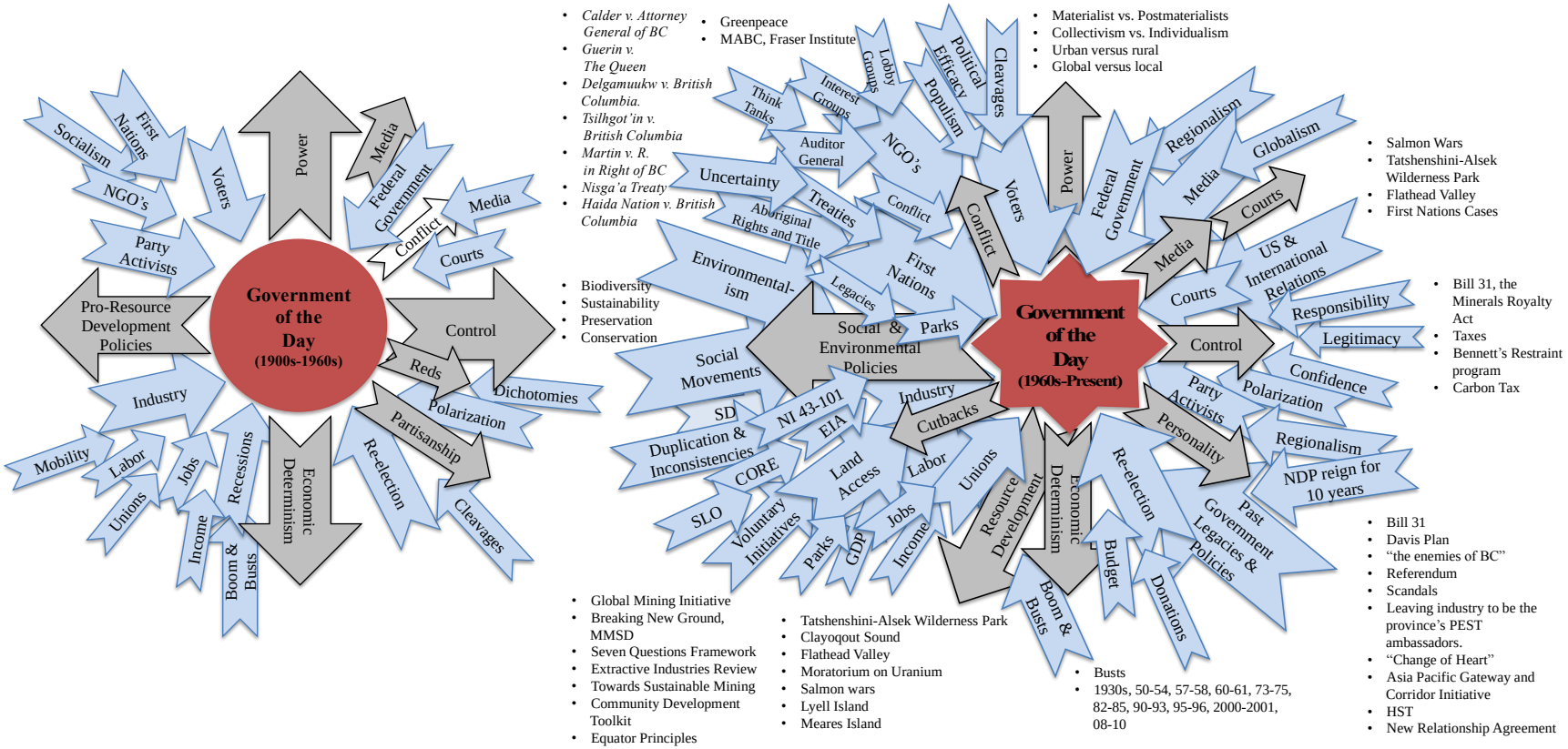
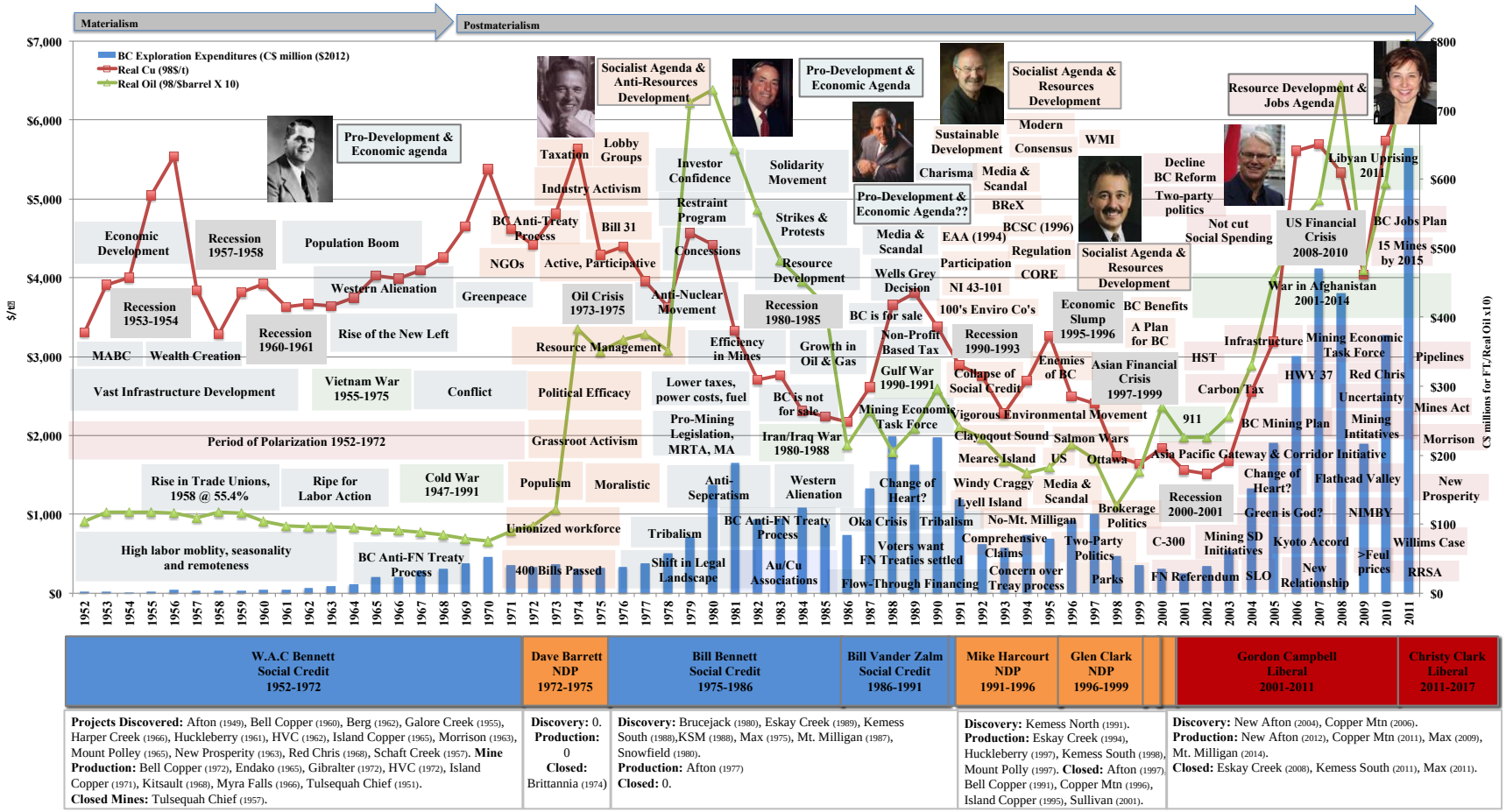


Chart 24 Political party, culture and uncertainty, 1952 to 2011+



Source: Reinkensmeyer 2008; Strang 2007; USGS 2014; EMPR 2013; Wikipedia 2014; Appendix 5

developed. For instance, questions have emerged if Rio Tinto will continue their second underground $6.5B phase at Oyu Tolgoi mine in Mongolia, as it has been plagued by cost overruns, political uncertainty and a dispute over taxes with the Mongolian government.[253]

18.4 SWOT analysis

Table 16 illustrates the province's strengths, weaknesses, opportunities and threats for future copper mine development in BC. For instance,

- Strengths outline the advantages BC has over other jurisdictions;
- Weaknesses highlight on what could be improved or what is lacking;
- Opportunities are a result of looking at strengths and weaknesses; and,
- Threats outline the obstacles threatening mine development in BC.

Using the themes,[254] volume of data collected and overall analysis from the literature review, strengths, weaknesses, opportunities and threats were identified (see Appendix 2). For instance, key factors such as innovation and technology emerged that best represented the scope of the study, as well as highlighted the province's strengths and weaknesses. Table 16 discusses the potential opportunities for applicable SWOT factors, as well as categorizes which PEST variable (political (P), economic (E), social (S) and technological (T)) is applicable. Table 16 also provides a reference as to where each factor was discussed throughout the thesis.

253 For additional information on the Oyu Tolgoi see the following website: http://www.mining.com/mongolia-greatly-responsible-for-rios-oyu-tolgoi-troubles-pm/.

254 For additional information on themes see Section 2.4 titled Literature Review.

Table 16 SWOT analysis.

SWOT Analysis	Results	Future Opportunities	PEST Factor	Thesis Reference
1. Strengths	1.1 BC is endowed with an abundance of copper deposits.	They will eventually become economic. For instance, if cheaper oxide or heap leach deposits are exhausted worldwide; BC copper porphyries may be next in line for development.	E	Sections: 3.2, 4.7 and 6.5. Chapter: 5. Appendices: 3-5.
	1.2 BC has cheap electricity relative to the rest of the world.	Mines utilizing less energy intensive processing technologies will benefit; therefore, innovation and new technology are vital to the BC mining industry's future success.	E	Sections: 4.6, 6.5, 9.6 and 14.4,
	1.3 BC has skilled and experienced labor in all facets of copper mining.	There is skilled and experienced labor in BC knowledgeable in building the more complex northern BC projects.	S	Sections: 6.6,
	1.4 BC's geographical proximity and access to the Asia Pacific.	Relatively easy access to Asian markets allows for the transport and export of BC resources, in particular copper ore, which is shipped to countries such as Japan for processing.	E	Sections: 9.7, 16.2 and 16.3.
	1.5 BC has strong industry and lobby groups.	The province's strong industry and lobby groups work tremendously hard to keep mining a vital component of BC's economy. They were vital in the stopping of Bill 31 under Dave Barrett, as well as getting Bill Bennett elected.	P	Sections: 4.5, 5.5, 9.9, 10.1, 11.4, 11.6, 13.3, 13.4, 14.2, 14.3, 14.5, 15.2, 16.2 and 17.1.
	1.6 BC is politically stable.	There are no political regimes in BC. Despite the up and downs in BC's political process, it is regulated, transparent and not corrupt as found in other countries (e.g., Chile's Augusto Pinochet). Therefore, the BC mining industry operates in a regulated environment with relatively predictable outcomes.	P	Sections: 9.11, Appendix 14.

SWOT Analysis	Results	Future Opportunities	PEST Factor	Thesis Reference
Strengths Cont'd	1.7 BC has mine education and training institutes with a strong focus on technology and innovation.	The growth in mining technology and innovation is fundamental to future mine development in BC.	T	Sections: 4.11, 5.5, 6.6 and 16.2.
	1.8 Geoscience BC has accumulated an abundance of data such as geochemistry that aids mineral exploration in BC.	Geoscience is fundamental in the discovery of new deposits, as well as in the development of new mines in BC. Without the knowledge provided by Geoscience BC, the industry would be leagues behind other jurisdictions.	T	Sections 4.11, 6.6 and 16.2.
2. Weaknesses	2.1 BC mining industry faces high capital and operating costs.	Porphyries have expensive metallurgy relative to other styles of copper deposits. New innovation and technology could limit costs; therefore making unviable projects economic.	E	Sections: 3.2, 3.3, 4.2, 4.5, 4.6, 4.7, Chapter: 6-8.
	2.2 BC lacks downstream processing, as there are no copper smelters in BC.	A copper smelter would promote the development of new mines, as it would lower costs because companies will no longer have to ship ore outside of Canada to be processed.	E	Sections: 4.4, 7.4 and10.1.
	2.3 Current industry reliance on brownfield projects to maintain reserves.	PEST factors need to align for companies, as well as investors to feel confident in sponsoring the development of a greenfield project in BC. For instance, the industry needs a consistent regulation process; lower capital costs and access to lands for exploration and mining. Without these changes, the industry will be facing a future discovery drought, loss of skilled labor and a decline in the industry's contribution to the GDP.	E, S	Sections: 3.3, 3.4, 4.11, 5.2, 6.7, 6.11 and 7.2. Appendix 4
	2.4 Irregular and inconsistent feasibility studies from one project to another.	Streamlined NI 43-101's will negate misinformation and inaccurate interpretation of project economics and social data, thereby increasing their accuracy, as well as reliability. certainty in BC projects.	E	Sections: 6.2, 6.3, 6.12, 7.6, 8.2 and 9.3.

SWOT Analysis	Results	Future Opportunities	PEST Factor	Thesis Reference
Weaknesses Cont'd	2.5 Projects owned by undercapitalized and financially constrained companies.	Having companies that have the financial capital to build mines will increase the odds that a greenfield copper project will be built in BC. Companies need to have the resources, as well as the experience to build marginal projects in a tough social and political environment. Therefore, maybe there needs to be incentives (e.g., tax credits) to entice larger more capable companies to come and build mines in BC.	E	Sections: 7.1, 7.3, 8.1 and 8.2.
	2.6 Disjointed, inconsistent regulatory regime fluctuating between projects.	Despite meeting or exceeding the regulatory requirements, certain BC projects are not obtaining their provincial or federal environmental certificates. In order to increase investor certainty, 'one project, one process' system needs to be in place that is independent of the political system and not reliant on the courts to make the tough decisions	E	Sections: 4.7, 6.3, 6.10, 15.2, 16.3, 17.1, Appendix 7-8
	2.7 Limited infrastructure for many northern projects.	Despite the building of the Highway 37 power line, projects in northern BC are very isolated and require a significant amount of infrastructure to support construction and operation. The costs behind these developments are what hinder their progress; therefore, tax credits may help to incentivize the development of these projects. Also, if companies/projects share infrastructure they will be able to lower costs. The northern deposits are the future of mining in BC, i.e., recent provincial and federal approval of the KSM project, as well as the recent discovery of the Kemess East deposit.[255]	E	Sections: 3.4, 4.4, 4.7, 4.10, 5.3, 6.5, 7.2, 9.7, 9.8 and 16.1.

255 For additional information on the Kemess East deposit see the following website: http://www.theglobeandmail.com/globe-investor/news-sources/?mid=cnw.20150121.C9478.

SWOT Analysis	Results	Future Opportunities	PEST Factor	Thesis Reference
Weaknesses Cont'd	2.8 Aging mining workforce.	The decline in mine development in BC has resulted in a significant decrease in young and skilled labor. Frequent and consistent mine development would maintain a pool of labor that would meet the needs of all stages of mine development.	E	Sections: 16.3.
	2.9 Increasing depth of discoveries.	Deeper and lower grade discoveries are becoming the norm worldwide. Innovation, technology and lower costs are vital to building these deposits into mines. Therefore, it is imperative that the province becomes a leader in mining innovation and technology, as BC is endowed with complex, low grade, and deep copper deposits. However, new discoveries are emerging worldwide of deposits between 3000-7000ft deep at 1.6%+ copper grades. Can this be found in BC?	E, T	Sections 3.3, 5.2 and 7.2.
	2.10 Timing and the cyclical market.	There are many things that need to line up for a project to be built. However, most importantly the province and industry have to be ready for the upswing in the commodities market, in order to optimize mine, company and government revenue. By modernizing environmental regulations, as well as streamlining the environmental process, (whereby it is an independent program and absent from the political system) will significantly decrease the amount of time it takes to go through the certificate process. This will allow projects to be ready and in production when the next upswing in the commodities market occurs or a series of factors align sponsoring a project's development.	E	Sections: 1.2, 4.4, 4.13, 7.6, 9.12, 10.1, 12.5, 15.4, 17.1 and 18.3.

SWOT Analysis	Results	Future Opportunities	PEST Factor	Thesis Reference
Weaknesses Cont'd	2.11 Loss of exploration expenditures when anti-development governments are in power.	Maintaining or increasing exploration expenditures is vital to industry success. Expenditures are a gauge to investor certainty and when an anti-development government takes power, in my opinion it seems exploration expenditures decrease or maintain the status quo. It is fundamental that the industry stays proactive with government over the long-term and not only at election times.	E	Sections: 16.3, 18.2, and 18.3.
	2.12 Mining industry is a cohesive unit.	The electorate sees the industry as a cohesive unit; therefore, what one company does can affect the entire industry. Past legacies or current tailing dam failures can have a significant effect on the industries reputational capital. Also, questionable projects or feasibility studies puts a black mark on the entire industry. It is vital that certain projects not be put into the 'limelight' for public scrutiny until they have met some sort of industry standards. It seems we are at a stage where further industry self-monitoring is needed to qualify projects for the next stage of development. Perhaps an independent panel prior to the environmental assessment process is needed that scrutinizes PEST factors and recommends changes to project studies.	P, S	Sections: 4.4, 6.9, 16.2 and 17.1.

SWOT Analysis	Results	Future Opportunities	PEST Factor	Thesis Reference
Weaknesses Cont'd	2.13 One industry can affect the health of another industry.	One resource industry can affect the health of another resource industry, especially when it involves environmental regulations, mishaps, legacies, loss of reputational capital and labor drain. In other words, the resource industry is seen as a cohesive unit; therefore, what happens in one industry can also challenge others (e.g., Clayoqout, CORE). Therefore, it is important that the mining industry distinguishes itself from other industries, as well as work with other industries to improve 'the resource industry image' in BC. There is a growing contingent of anti-development voters in BC and in order to win back votes the industry needs to be creative and innovative. The 'jobs' sell and 'metal/minerals are in everything' no longer works. Perhaps educate the electorate about mining and how it works in BC?	E, S	Sections: 11.6, 15.2, 15.3, 15.4 and 16.2. Appendix 8.
3. Opportunities	3.1 A relative upswing in commodities market since the 1980s.	Allows for the development of new mines, as marginally economic projects become more viable as the copper price increases. Ultimately, it allows for the 'opportunity' for new mines to be developed and built.	E	Sections: 4.10, -4.12, 16.2, 16.3 and 18.3.
	3.2 R&D, geologists and engineers can grow existing resources, especially at depth.	The growth in R&D promotes new technologies that would sponsor the development of new mines, especially deep deposits or underground, e.g., Red Chris, New Afton, Kemess east deposit. Underground mine designs for copper porphyry deposits are being explored in BC, as their visual footprint is less than open-pit mines.	T, E	Sections: 3.3, 5.2, 7.2, 9.5 and 18.3.

SWOT Analysis	Results	Future Opportunities	PEST Factor	Thesis Reference
Opportunities Cont'd	3.3 Low CPI equates to high exploration expenditures.	Low inflation rate (CPI) equates to lower costs and higher exploration expenditures; therefore, from 2004 to 2014 there was a significant increase in new discoveries as exploration expenditures were high. If low CPI continues, high exploration expenditures are expected to continue as well. This increases the opportunity that new (or even world-class) deposits will be discovered.	E	Section: 9.5 and 18.2.
	3.4 Innovations and Geoscience.	Innovation and geoscience increases the opportunity to find new mineral deposits, especially new, higher-grade deposits at depth. Additionally, finding a less expensive processing alternative to SAG mill, flotation and comminution circuits would support the development of BC's marginal deposits. Therefore, the province is stepping in the right direction by helping to support the funding of Geoscience programs, as well as mining institutes in BC.	T	Section: 3.3, 3.7, 4.6, 4.11, 5.4, 5.5, 6.6, 6.7, 7.4, 9.5, 16.2 and 18.3.
	3.5 Recent *Tsilhgot'in v. British Columbia* case.	One of a series of decisions made by the provincial and federal governments in the last twenty plus years, which is helping all parties involved to work towards the resolution of the land question in BC.	S	Sections: 16.2, 16.3, 16.4 and 17.1,
	3.6 The development of Highway 37 power line.	The development of the Highway 37 line facilitates an increase in investor certainty as the province is showing confidence in northern BC projects, as well as the industry. These projects are the province's future as many of them are next in line for potential development as they are in the latter stages of the assessment process.	T	Sections: 4.7, 6.5, 7.2, 9.7, 10.1 and 16.2. Appendix 8.

SWOT Analysis	Results	Future Opportunities	PEST Factor	Thesis Reference
Opportunities Cont'd	3.7 By-product credits.	Copper deposits with gold credits help to offset BC's lower copper grades and higher processing costs.	E	Sections: 4.7, 4.13, 7.2 and 10.1.
	3.8 Current pro-mining government in BC, e.g., Liberals.	Allows the industry to recuperate and rebuild after a long-standing NDP government rule, e.g., the growth in pro-mining policies and government support.	P	Sections: 4.1, 12.1, 14.5, 16.2, 16.3 and 18.3.
	3.9 The downswing in the commodity market.	By utilizing the downswing in the commodities market, companies would be able to benefit from lower costs, available labor force, and government incentives when building a mine during this period of time.	E	Sections: 4.6, 4.8, 4.9, 4.11, 17.1, 18.2 and 18.3.
	3.10 Voters demographics.	Understanding voter demographics throughout BC, especially near or around a proposed project will provide great insight into who supports or does not support a project.	S	Sections: 12.5, 13.3, 14.4, 15.1, 15.2, 16.2 and 17.1.
	3.11 The mining industry is the largest employer of First Nations in BC.	Being the largest employer of First Nations people in BC is vital for industry, as well as community well being.	S	Sections: 1.1.
	3.12 Well-understood metallurgy and processing.	Well-understood metallurgy and processing allows for resources to be processed with less expensive and predictable methods.	T	Sections 3.1, 3.2 and 4.13.
	3.13 Voluntary Initiatives.	The industry has had to initiate self-monitoring, as well as initiate sustainable development initiatives as governments were facing cutbacks. Despite the increase in costs, the industry was proactive whereby new schools of thought emerged (e.g., social license to operate) that changed the face and image of the industry in BC.	T	Sections: 16.2 and 18.3.
4. Threats	4.1 BC has relatively low grade, modest size copper deposits.	They will eventually become economic.	E	Sections: 4.13, 5.3, 6.12 and 10.1.

SWOT Analysis	Results	Future Opportunities	PEST Factor	Thesis Reference
Threats Cont'd	4.2 Economic recessions coinciding with anti-development governments.	When recessions coincide with anti-development governments, the resource industry is greatly affected. It takes years for the industry to recover, whereby the industry cannot take advantage of pro-mining policies when pro-development governments are in power. Therefore, it is vital to have a pro-development government in power while BC faces economic recessions or significant upswings in the commodities market.	P	Sections: 15.1, 15.2, 15.3 and 17.1.
	4.3 Long-standing unsettled First Nation land claims.	The long-standing unsettled First Nation land claims in BC have created a significant level of uncertainty (in regards to land access) in BC. Investors do not want to invest in a project when it could be stalled for years while land access issues are being sorted out. Therefore, it is important that land access issues are settled in BC in an efficient matter, in order to increase investor certainty and mine development.	S	Sections: 13.3.2, 14.3.2, 14.4.1, 15.2, 15.3.2, 16.1.4, 16.2.2 and 17.1.1.
	4.4 Impact of media image, legacy issues and culture on industry.	Educating the populace about mining will help to decrease the industry's negative reputation acquired from mining accidents and legacies, as well as from TV shows such as Yukon Gold. These incidents affect the electorate's views on mining, whereby they question what actually happens at mine sites, as well as what happens to the environment as a result of mining. Also, 'mining culture' has an affect on the industry's image and reputation. For instance, the 'all or nothing approach' blinds a promoter's 'realistic' understanding of the challenges faced when pushing a sub-economic and/or politically active project on to the BC electorate who are opposed	S	Sections: 11.1, 11.6, 11.7, 12.1, 13.2, 13.3, 15.2, 15.3, 15.4 and 17.1. Appendix 12.

SWOT Analysis	Results	Future Opportunities	PEST Factor	Thesis Reference
Threats Cont'd	4.4 Impact of media image, legacy issues and culture on industry cont'd.	…to the project. As a result, the electorate sees this approach as an 'industry thing' and not as a 'project or company thing;' therefore, judge the entire industry as having issues and not just the one project.	S	Sections: 11.1, 11.6, 11.7, 12.1, 13.2, 13.3, 15.2, 15.3, 15.4 and 17.1. Appendix 12.
	4.5 The majority of the copper deposits studied are not currently economically robust.	The most advanced copper projects in BC are not economically robust; therefore, it is vital that new innovation and technology are implemented in order to decrease project capital costs. Also, experienced and adequately capitalized proponents are needed to build these projects.	E, S	Sections: 4.13, 5.3, 6.12 and 10.1.
	4.6 Disjointed, inconsistent regulatory regime that fluctuates with political parties in power, as well as between projects.	The current regulatory regime creates a significant amount of uncertainty for investors and companies, as regularity consistency seems to be lacking in policies or decisions made by the provincial and federal environmental assessment offices. Some companies have had to turn to the SCC to determine if their projects can obtain the necessary certificates to proceed to development. Therefore, a consistent environmental process is vital in increasing investor certainty in BC.	T	Sections: 4.7, 6.2, 6.3, 6.10, 6.12, 7.6, 8.2, 9.3, 15.2, 16.3, 17.1, Appendix 7-8
	4.7 The growth in BC electorate anti-development philosophy, as well as in new left voters.	The growth in anti-development philosophy and new left voters has added a significant amount of uncertainty to future copper mine development in BC. There is an ever-increasing opposition to development projects in BC; therefore, it is getting increasingly more difficult to get greenfield projects built in BC. Therefore, working with voter demographics, as well as……	S	Sections: 12.2, 12.5, 13.3, 14.2, 18.3

SWOT Analysis	Results	Future Opportunities	PEST Factor	Thesis Reference
Threats Cont'd	4.7 The growth in BC electorate anti-development philosophy, as well as in new left voters cont'd.	…utilizing innovative political and social policies will sponsor the development of new mines in BC.	S	Sections: 12.2, 12.5, 13.3, 14.2, 18.3
	4.8 Growth in worldwide copper resources with superior economics.	Projects with superior economics out rank BC's marginal copper projects. Companies who have experience and capital to build copper porphyry projects will seek deposits that will give the greatest amount of economic return, as well as projects that will not interfere with their reputational capital. Therefore, marginal BC projects inflicted with political and social conflict are of no interest to them. High exploration expenditures ensure that there would be a greater probability in finding a world-class project in BC.	E	Sections: 3.2, 3.3, 5.3 and 5.5. Appendix 9 and 10.
	4.9 Growing contingent of interest and lobby groups in BC.	The growth in interest and lobby groups has increased uncertainty in regards to project development in BC. With their ever-increasing voice through all forms of media, as well as in politics, projects now face public scrutiny and judgment. Politicians must secure the votes of the electorate in order to be elected; therefore, if the electorate do not want a project, they certainty have the power and the voice to get their values and beliefs known and acted on by government.	S	Sections: 6.8, 7.5, 10.1, 11.6, 14.3, 15.1, 15.3, 16.2 and 17.1. Appendix 8.
	4.10 Conflicting federal and provincial governments in regards to resource development in BC.	Conflicting federal and provincial governments is a threat as it discourages business and increases uncertainty.	E	Sections: 6.10, 9.12, 11.2, 11.4, 13.2, 13.3, 13.4, 14.3, 15.1, 15.2 and 16.4. Appendix 8

SWOT Analysis	Results	Future Opportunities	PEST Factor	Thesis Reference
Threats Cont'd	4.11 Uncertainty in regards to investor confidence in BC.	Overall, uncertainty is a threat to greenfield development in BC. Companies and investors seek certainty; therefore, gravitate to more certain brownfield projects despite the long-term consequences.	E	Thesis.
	4.12 Unpredictable cyclical nature of the commodities market.	The inability to predict the commodities market increases uncertainty in regards to greenfield project development in BC. These projects are initially capital intensive and unpredictable commodity prices increase company risk; therefore, companies are turning to brownfield developments first to maintain their reserves. Decreasing costs will facilitate the development of new mines in BC.	E	Sections: 1.2, 4.4, 4.13, 7.6, 9.12, 10.1, 12.5, 15.4, 17.1 and 18.3.
	4.13 The lack of or limited mine development causes skilled labor to leave the province or industry in search of work.	Loss of skilled labor from no new mine development is driving up the cost of labor.	S	Section: 6.6.
	4.14 No mine waste in BC lakes, rivers or ocean. Period!	It may be more economical and environmentally safer (from a long-term perspective) to dispose of mine tailings in lakes, rivers or the ocean in BC; however, this method is not socially acceptable despite the method (not the impact) meeting regulatory requirements. Therefore, it's imperative that new mine designs do not include tailings disposal into a body of water in BC.	S	Section 6.10.

SWOT Analysis	Results	Future Opportunities	PEST Factor	Thesis Reference
Threats Cont'd	4.15 The length of time it takes to get a project into production.	The length of time it takes to get a project into production has increased significantly. As a result, companies have had to face increased costs and investor uncertainty, as well as a loss in potential revenue when a project sits for years waiting for approval.	E	Section 6.3.
	4.16 A change in BC's legal landscape, e.g., First Nation and EIA processes.	There is a recent reliance on the legal system to settle the First Nation treaty process and environmental disputes, rather than on regulated processes. This shift is perhaps a result of changes in power dynamics, whereby decisions must be made outside of the political system in order to be accomplished. This has added a significant amount of time and costs to the settling disputes, as well as raised questions on the government's capacity to deal with such complex issues. This further supports an independent environmental review process in BC.	S, E	Sections: 4.7, 6.2, 6.3, 6.10, 6.12, 7.6, 8.2, 9.3, 13.3.2, 14.3.2, 14.4.1, 15.2, 15.3.2, 16.1.4, 16.2.2 16.3 and 17.1. Charts 23 & 24 Appendix 7-8
	4.17 Four-year political terms, or long-term anti-mining development philosophy, e.g., NDP.	This is a weakness as well as a threat to the development of greenfield copper projects in BC. If an anti-development government is in power, exploration expenditures decline and investor uncertainty rises. Therefore, industry success relies on a pro-development party being in power.	P	Section: 17.1. Chapter 15,
	4.18 BC currently has a very polarized political system, with no real middle ground.	A polarized political system can result in relatively extreme swings in mandates and political positions, whereby the industry is unable to keep up to changing mining related legislation and policies. They also face a very politicized electorate who are either for or against mining in BC.	P	Section 16.2 and 16.3.

SWOT Analysis	Results	Future Opportunities	PEST Factor	Thesis Reference
Threats Cont'd	2.19 Provincial elections can stall political processes such as treaty negotiations and project decisions.	It seems there is a period around political elections where political processes such as treaty negotiations are delayed or stalled. Also, elections seem to draw the electorate away from prominent issues to one's that are less contentious. Also, if a new party is elected issues such as treaty negotiation or resource projects and infrastructure may be deferred. Short election periods interfere with mine development in BC.	P	Section: 9.12.

Table 17 summarizes the results from Table 16. Table 17 illustrates that the threats category has the largest number (19) of PEST factors, which are evenly divided between economic (7) and social (7), whereas the strengths category has the least amount of factors (8), which are evenly divided amongst all the factors. There are 13 PEST factors discussed under each of the weakness and opportunity categories, of which 12 of the weaknesses are economic factors and there are no social factors for either category. The majority of the social factors are found under the threats category.

Table 17 Summary of table 16 SWOT analysis

SWOT Analysis	PEST Factors Total	Political	Economic	Social	Techno-logical
1. Strengths	8	2	3	1	2
2. Weaknesses	13	1	12	0	0
3. Opportunities	13	4	4	0	5
4. Threats	19	4	7	7	1

Lessons can be learned from Table 16 in regards to copper mine development in BC. For instance, the four main factors that will have the greatest affect on copper mine development in BC are: (1) innovation and technology (e.g., discovery of world-class deposits, lower costs, minimize visual and environmental footprint); (2) settling land access issues (e.g., First Nations treaties, infrastructure); (3) having an independent "one project, one process" regulatory procedure (e.g., clear, consistent and timely process that is not reliant on SCC to settle disputes); and, (4) a long-term pro-development government in power (e.g., pro-mining policies). Obviously, the price of copper plays a significant role in mine development in BC; however, it is a factor that the industry and government have minimal control over. Therefore, in order to increase mine development opportunities in BC, the industry and government must remain proactive in regards to streamlining the four aforementioned factors.

18.5 Limitations of the study

The limitations of this study are primarily related to bias and subjectivity and the 'quality' of quantitative data obtained for part one from external sources. Biases in relation to the

subjective nature of the topic (the selection of information from literature), the subjective nature of the PEST analysis and the metrics selected and researcher biases. The quality of the quantitative data is dependent on the limited number of assumptions made in order to reach a conclusion (e.g., NI 43-101s). For instance, feasibility studies are known to have accuracy limitations and become dated very quickly. Additionally, companies are motivated or biased to present their projects in the most favorable light, both socially and economically in order to attract investment. Recalculating complex financial metrics such as NPV's was beyond the scope of this study; therefore, the researcher is reliant on publicly disclosed data found in feasibility studies.

As noted, the qualitative nature of the study is primarily based on historical data, which according to Denzin and Lincoln (2005) is a "social construction"(p.13). Therefore, the researcher is reliant on these social constructions to draw conclusions. In order to validate findings, the accumulation of greater than 10 sources was needed to determine the themes' accuracy and validity. The discourse (e.g., regionalism, copper, etc.) used to research each premier was from data obtained from surveys conducted by The Fraser Institute (1997-2013).[256] Therefore, the researcher was reliant on The Fraser Institute to represent their data with the least amount of bias possible, as well as highlight data that had the greatest amount of relevancy and validity. This also pertains to studies discussed in chapter 12 by Inglehart (1977), and Blake, Elkins and Johnston (1979).

Thesis requirements limited the scope of this study, as well as the relevancy of issues to be discussed. Therefore, the researcher selected issues on each premier that best represented each time period (e.g., W.A.C. Bennett). For instance, unique aspects (in particular the factors and actors) that had an influence on BC's mining industry were highlighted. This limited repetition, as well as presented a broader picture on how actors (e.g., politicians) and factors (e.g., years in office) had an affect on the viability of the industry.

PEST analysis and metrics used to assess and evaluate the impact of each category on mine

256 The discourse was selected from data obtained from the Fraser Institute surveys (1997-2013) (Fredrickson 2003; 2004; Jones and Fredrickson 2002; McMahon and Cervantes 2005; 2009; 2010; 2011; 2012; McMahon and Cust 2006; McMahon and Melham 2007; McMahon and Vidler 2008).

development in BC. The number of factors measured (3) per PEST category was based on the broad scope of study, as well as the limitations in thesis architecture (e.g., space). The five-point metrics were designed from the Likert scale (e.g., extreme, moderate, somewhat, slightly and none) and each factor was assigned a ranking by the researcher based on the volume of data and overall analysis from the literature review.

SWOT analysis results were selected by the researcher, in regards to the volume of data collected, as well as the overall analysis made from the literature review. Therefore, much of what was discussed above is influenced by researcher bias. Johnson (1997) states,

> Researcher bias tends to result from selective observation and selective recording of information and also from allowing one's personal views and perspectives to affect how data are interpreted and how the research is conducted. Reflexivity is a key strategy to understand and avoid researcher bias in which the researcher actively engages in critical self-reflection about his/her potential biases and predispositions (p.284).

The researcher's aim for an unbiased study is the closest their work will be to being objective. Therefore, recognizing how personal experiences, scope of study, social constructions and assumptions in data affect the objectivity of a study is important to understanding researcher and study limitations.

18.6 Conclusion

Today's industry is challenged by an ever-increasing growth in anti-mining philosophies, whereby a large and vocal contingent of the electorate is opposed to resource development in BC. Sixty years of history reveals that most of BC's current copper projects are marginal at best and are plagued by cost and land access issues, as well as investor and regulatory uncertainties. In fact, these projects require a high copper price to be economically feasible - a factor that is beyond the control of the BC mining industry or government.

A great number of factors, actors and sectors need to positively converge in order for a moderate to large, low-grade copper porphyry deposit to be economically viable. For instance, geology, commodity price, byproduct credits, infrastructure, economies of scale, experienced miners, political support (e.g., pro-mining government, supportive regulations, exploration, taxation, support from voters), land access (e.g., parks, First Nations), low

processing costs (e.g., energy, HPGR, SX/EW), innovation, foreign investment, skilled labor and social license to operate. All need to line up and converge before a positive investment can be made.

All three analyses (PEST, FAS and SWOT) illustrated that the four main 'controllable' factors with the greatest effect on the growth of copper mine development in BC are: (1) innovation and technology; (2) settling land access issues; (3) having an independent "one project, one process" regulatory procedure; and, (4) a long-term pro-development government in power. BC faces numerous obstacles, many of which are in relation to the commodities market and geology; however, with some forethought many of the non-market weaknesses and threats can be turned into opportunities. For instance;

- Innovation and Technology:
    - Designing more cost efficient processing technologies amenable to treating sulphide mineralization taking into account BC's climate and lower grades;
    - Mitigate ARD through best practices and new technologies; and,
    - Design and utilize cost efficient underground mining methods for copper porphyry deposits, in order to minimize environmental impacts, as well as visual and ecological footprints. This may involve the creation of new technologies to identify deeper, high-grade copper deposits with the potential for improved economics.

- Settling Land Access Issues:
    - Developing a long-term provincial resource management plan, which designates park allocation, areas for exploration and natural resource extraction, etc. that does not vary with each provincial election and party. A plan that is overseen and managed outside of the political process;
    - Settling of First Nation treaty issues; and,
    - The development of additional infrastructure in northern BC.

- One Project, One Process Regulatory Procedure:
    - A process that is designed and managed outside of the political process, suitable for all copper projects, rather than a process relying on legal avenues and the courts to make tough decisions in regards projects; and,
    - An increase in regulatory funding for inspectors, as well as for projects' permitting and monitoring in order to assist in the promotion of a safe and sustainable industry.

- Long-Term Pro-Development Government in Power:
    - Educate the electorate on mining in BC (e.g., Mining 101) and its importance to the BC economy. Link the importance of pro-development governments in

power and the viability of the industry; and,

- The industry is more like to prosper if a pro-development party is in power, minimizing anti-mining policies that at times can set the industry back decades, much like the many years during and after the NDP were in power.

CHAPTER 19 Thesis conclusion

19.1 Conclusion

Mining is an important economic driver for the province; especially copper mining. Although BC is widely regarded as being endowed with world-class mining deposits, there appears to be a great deal of difficulty actually building a mine and putting one into production. In the last 15 years, only one copper porphyry mine was built and it was actually a gold-porphyry deposit benefiting from higher than average gold grades.

Does BC have world-class deposits? The research has shown that BC does not actually have world-class copper deposits, rather it has numerous and relatively abundant, albeit modest copper porphyry deposits which all seem to have at least one "world-class attribute". In most instances, the deposits are marginally economic and are owned by financially weak or financially constrained companies who are seemingly unable to finance their projects. Given the significant risks associated with mine construction, reliability of feasibility studies and optimism bias the companies who own such deposits are relatively 'un-financeable'.

The first step in the project evaluation process is the economics. If a development project fails to meet even the most rudimentary financial hurdles or metrics, or is owned by a financially weak or incapable sponsor, it will never progress beyond an economic or feasibility study. In other words, it is only once the economics have been proven sufficiently robust, and there is sufficient confidence to proceed with a development decision that a project enters the construction and permitting phase. At this point in time politics, government issues, become increasing important. If the economics cannot withstand the requisite stress testing of financing, the project will not proceed regardless of government issues, First Nations or permitting.

Why haven't much larger firms acquired any of the projects studied and what does this say about the copper mining industry in BC? Over 40 years ago, major mining firms discovered the majority of the projects studied; however, (due to the projects' modest size, low grade, high capital and operating costs) the companies choose to invest their time and money elsewhere. Therefore, the projects studied end up being owned by financially constrained and

typically inexperienced companies who are seemingly unable to build the projects. This leaves the BC mining industry in a state of peril, as copper reserves must be maintained by current operations near depletion and/or possible mine expansions, rather than on new greenfield deposits. Therefore, the long-term health of the industry is in question as there will be direct and indirect impacts such as the loss of skilled labor, the decline in GDP and an increase in investor uncertainty if new mines are not built in BC.

Are development companies conflicted with a bias to presenting their projects in the most favorable light, enhancing their NPV's and IRR's, to assist in securing their next round of much needed financing? The fact that the majority of the projects studied were discovered over 40 years ago and have yet to be developed, that the NI 43-101's are relatively subjective in nature especially when determining NPV and IRR, and that the general market questions the economical viability of projects leads to the conclusion that there is a bias in the data, otherwise the projects would have been built by now.

BC has a competitive advantage over other significant copper mining jurisdictions with readily available and inexpensive electricity. However, the metallurgy and low-grade deposits in BC require more intensive energy processes; therefore, cheap electricity is offset by expensive processing methodology. These energy intensive processes are exponentially more costly when head grades drop below 0.30%, which is a common grade in BC. Can new technologies be developed to materially change the cost curve of processing BC's sulphide ores? Possibly, however jurisdictions and companies need to make it a priority, therefore financing research and development for the discovery of new innovation and technologies.

BC has acquired a reputation of being 'not open for business'. With essentially a two party political system swinging from pro-development to anti-development and no middle ground, political and policy risk within BC is heightened (see Section 9.12).[257] Political and economic uncertainties when combined with modest to marginal copper deposits have driven

257 In accordance to the 2012-2013 Fraser Institute survey, BC is ranked 50th out of 96 jurisdictions in regards to political stability. Investors see our political climate (e.g., pro or anti-mining legislation, conflict between federal and provincial governments, corrupt governments, etc.) as being a mild to moderate deterrent to investment in BC (Wilson et al 2013). The top jurisdictions were New Brunswick, Saskatchewan and Finland and the 96th jurisdiction where investors would not pursue investment due to political instability was Egypt.

investors away. Also, with a current 20 plus year mine development lifecycle, projects could potentially face obstacles from six different governments with polarizing views on mine development in BC (see Chart 14). Therefore, building projects in a time efficient manner has become paramount in lessening uncertainty, as well as provide companies and industry an opportunity to benefit from an upswing in the commodities market.

Regrettably, the seemingly most robust project with the strongest proponent, Taseko's New Prosperity project is mired in environmental, First Nation and other stakeholder opposition. An investment in a project following and obeying all the requisite laws and procedures dictated by the government should provide investors with a level of certainty that the investment can lead to a favorable outcome and some future economic benefit. Failure by the government, stakeholders and unknown policies, tarnishes the image of the province as a favorable jurisdiction to invest, to explore and to build mines. Therefore, it is important that a forward thinking, long-term, pro-development government is in power, in order to ensure greenfield development, as well as industry best practices.

The uncertainty of wild commodity price fluctuations associated with the boom and bust cycles it generates creates some of the greatest challenges for industry. Given the relatively low grade of BC copper porphyry projects, they are very price sensitive, both to copper price and operating costs. Further research and development to either find higher grade deeper deposits with the potential for better economics, or improved metallurgical processes to reduce operating costs would greatly facilitate an improvement in the economic viability of copper porphyry development in BC. The discovery of deep and high-grade deposits (i.e., New Afton) utilizing bulk underground mining methods such as block caving may be the future of BC's mining industry. A movement by a non-government organizations, as well as demands for no ARD provides companies with additional incentives to utilize underground mining methods, and storage (as it has the potential to have a limited visual and ecological footprint), in order to advance copper projects in BC. Therefore, it is vital that the industry and government promote the discovery and development of new technology in order to decrease capital and operating costs, while being environmental conscious.

How will opposing views on mining impact the BC industry? Today's industry is challenged by an ever-increasing growth of anti-mining philosophies, whereby a large contingent of the electorate is opposed to resource development in BC. As a result, the industry is becoming increasingly taxed by underfunded government agencies, inconsistent mining policies, voluntary initiatives and the acquisition of an 'intangible' social license to operate. Additionally the industry is closely watched and monitored by a variety of stakeholders (e.g., MiningWatch Canada) including our neighbors (both governmental and NGO's) in the US. Projects such as Windy Craggy and Red Chris have faced scrutiny by such groups, whereby the Windy Craggy project was shut down and the Red Chris project faced a lengthy and costly legal battle. All these factors also challenge other jurisdictions worldwide. As a result, the mining industry is becoming increasingly reliant on the legal system to clarify inconsistent policies and regulations, as well as obtain construction approvals. First Nations in BC have also become reliant on the legal system to settle long-standing land claims.

As it stands, the current political and regulatory system has left the industry to be our social, political and economic ambassadors, while they negotiate financial and political cyclical markets. This seems to be a prodigious task considering the political support and expertise needed, as well as the costs to be incurred. Overall, the BC mining industry requires the discovery of quality projects, which attract the much needed financing for their development; as well as a thoughtful and focused government with a long term vision in order to support the building of new mines in BC.

Should BC remain an unfavorable[258] jurisdiction for investment, investors ultimately spend their exploration dollars in more favorable jurisdictions offering superior or more certain

258 Unfavorable is known to be discretionary because it is the investor who chooses to invest or not invest in a jurisdiction, locale or project. Therefore, availability of financing determines if the jurisdiction is favorable by investors. In accordance to the Fraser Institute 2012-2013 policy potential index, Finland, Sweden, Alberta and New Brunswick are favorable jurisdictions that investors would invest their money into the mining industry. "The survey was designed to capture the opinions of managers and executives about the level of investment barriers in jurisdictions with which their companies were familiar. Respondents were asked to indicate how each of the 15 policy factors below influenced company decisions to invest in various jurisdictions" (Wilson et al 2013). The 15 policy factors are: 1 Uncertainty concerning the administration, interpretation, or enforcement of existing regulations; 2 Uncertainty concerning environmental regulations (stability of regulations, consistency and timeliness of regulatory process); 3 Regulatory duplication and inconsistencies (includes federal/provincial, federal/state, inter-departmental overlap, etc.); 4 Legal system (legal processes that are fair, transparent, non-corrupt, timely, efficiently administered, etc.) 5 Taxation regime (includes personal, corporate, payroll, capital, and other taxes, and complexity of

economic returns. This could ultimately result in the vicious cycle of discovery drought. No new discoveries results in a dwindling reserve base, leads to no new mine development and ultimate erosion in expertise, infrastructure and knowledge to further develop the industry. New discoveries are needed to keep an industry viable and attractive.

19.2 Future work

As a result of this thesis, several promising future research topics are worth further exploration. For instance, a detailed study on BC voters, in particular on electorate demographics and voting behavior in relation to mine project location and development. This study could include an elaboration on cleavages and how value change over time by the electorate has had an influence on the mining industry in BC. Another would be a detailed study on the efficacy and accuracy of economic studies filed under NI 43-101, with respect to consistency and accuracy. This would help alleviate some investor uncertainty in regards to the BC mining industry. The design and implementation of a framework for industry, as well as government on how to educate the populace on what mining is, what it does and what it means to the province. This would decrease uncertainty for investors, electorate and the general populace in regards to BC's mining industry. A detailed study on how to work towards making the environmental assessment process independent or somewhat independent from federal and provincial politics. See YESAA in the Yukon, Canada. The design of a PEST metric framework that is more quantifiable in nature that could be utilized by industry, government and academic instituitions. Finally, this study generated a number of questions, in particular with respect to how much do BC's political parties actually influence mine development in BC? With numerous other factors and actors influencing mine development, it was not readily discernable that they do, and this study was unable to definitively answer that question. Therefore, further research in this area would complement this study, as well as aid the BC mining industry.

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tax compliance); 6 Uncertainty concerning disputed land claims; 7 Uncertainty concerning what areas will be protected as wilderness, parks, or archeological sites, etc.; 8 Infrastructure (includes access to roads, power availability, etc.); 9 Socioeconomic agreements/community development conditions (includes local purchasing or processing requirements, or supplying social infrastructure such as schools or hospitals, etc.); 10 Trade barriers (tariff and non-tariff barriers, restrictions on profit repatriation, currency restrictions, etc.); 11 Political stability; 12 Labor regulations/employment agreements and labor militancy/work disruptions; 13 Quality of the geological database (includes quality and scale of maps, ease of access to information, etc.); 14 Level of security (includes physical security due to the threat of attack by terrorists, criminals, guerrilla groups, etc.); 15 Availability of labor/skills (Wilson et al 2013).

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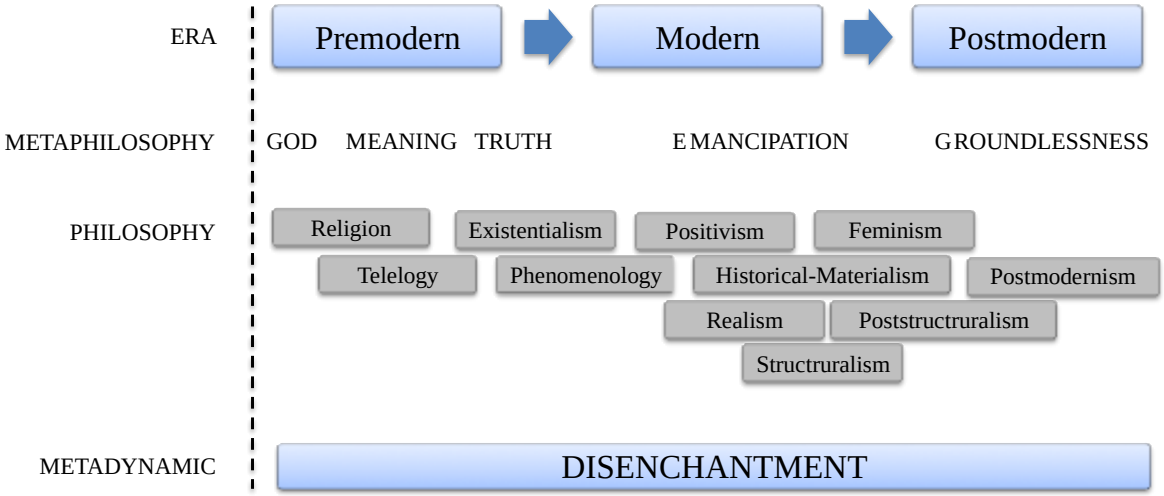
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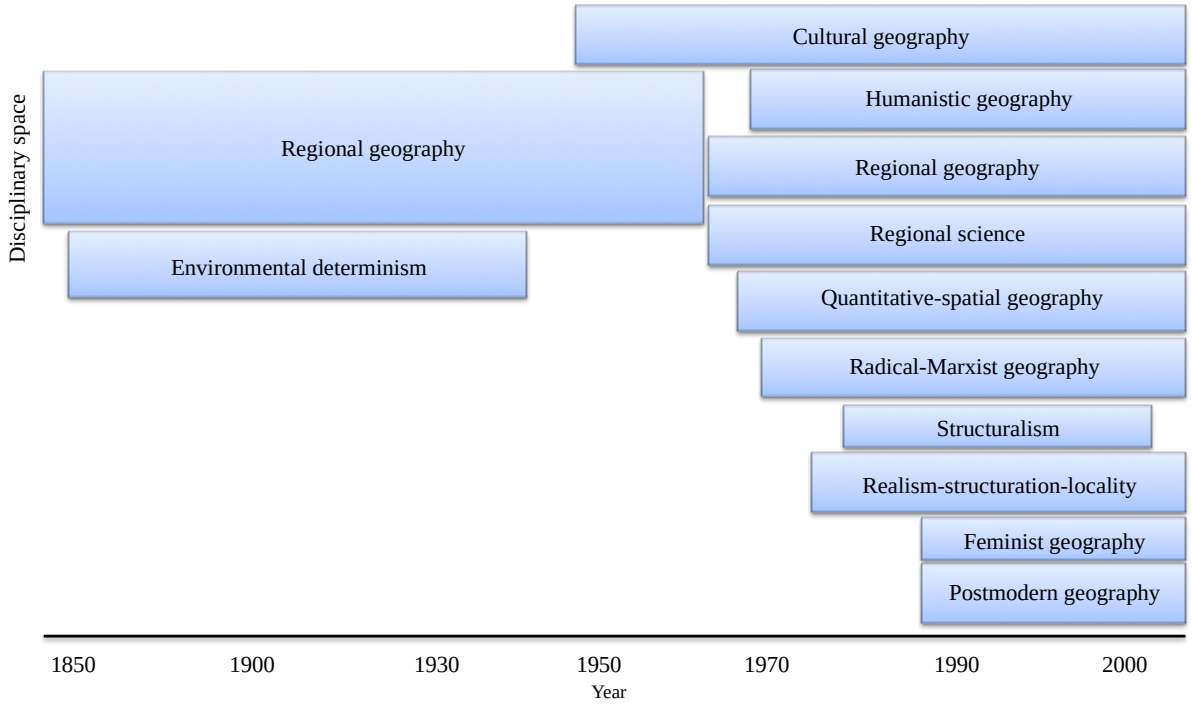
APPENDIX 1 Modern geographical thought

Metaphilosophy, Metadynamics, and Schools of Philosophy.



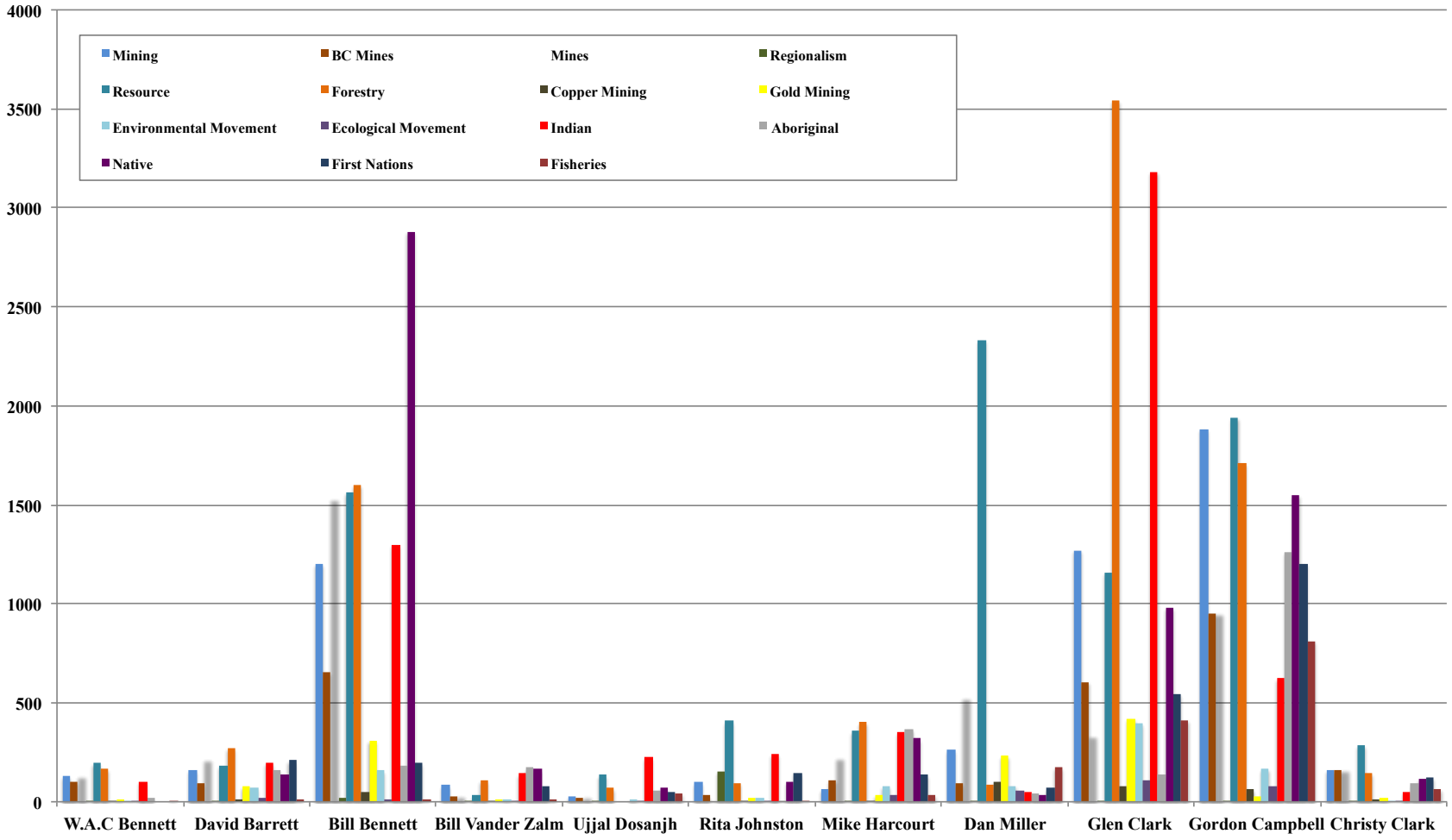
Modified from Peet 1998, 4.

Schools Of Modern and Postmodern Human Geographical Thought.



Modified from Peet 1998, 10

APPENDIX 2 Literature review newspaper discourse results



APPENDIX 3 Overview on BC's cordillera porphyry two distinctive suites (petrology)

Calc-alkalic	Alkalic
Late Mesozoic-Cenozoic time period. Younger	Early Mesozoic time period. Older
Wrangellia, Stikinia, Quesnellia Arc Terranes, Concentrated along the Skeena, intra-continental Arc. Older country rock. Pre-accretion.	Occur in three different arc terranes: Wrangellia, Stikinia, and Quesnellia, as well as one deposit in Cache Creek terrane. Pre-accretion.
Metal Assemblages: Mo-Cu, Cu-Mo, Cu-Mo-Au-Ag.	Metal assemblages: Cu-Au
E.g., Brenda (Mo-Cu), Highland Valley, Gibralter (Cu-Mo), Island Copper, Schaft Creek (Cu-Mo-Au-Ag), Kemess (Cu-Ag), Kerr (Cu-Au), Huckleberry, Berg (Cu-Mo, Bell, Granisle, Fish Lake, Casino (Cu-Au-(-Mo)), Endako, Boss Mountain, Kit-sault, Quartz Hill (Mo), Logtung (Mo-W), Dublin Gulch (Au-W), and Fort Knox (Au).	E.g., Copper Mountain, Afton-Ajax, Mt. Milligan, Mount Polly, and Galore Creek. Most deposits have been tilted and have a narrow footprint, as well as magnetite-rich and relatively pyrite poor.
Schaft Creek – Pre-Accretion, Silica poor calc-alkalic porphyry, Age ~222 +/- 0.8 Ma, Stikine Terrane, Late Triassic	Mt. Milligan – Pre-Accretion, Silica saturated alkalic porphyry, Age ~185 Ma, 590 Mt at 0.193% Cu and 0.35 g/t Au.
Kemess North – Pre-Accretion, Age ~ 202 Ma, 442 Mt at 0.23 Cu, 0.4 g/t Au, 185 Mt at 0.275% Cu, 0.511 g/t Au, Stikine Terrane.	Galore Creek – Pre-Accretion, Silica unsaturated alkalic porphyry, Age ~ 210-203 Ma, 785.2 Mt at 0.52% Cu, O.29 g/t Au and 4.87 g/t Ag.

Source: Bissig 2010, McMillian et al 1996

APPENDIX 4 Current BC greenfield and brownfield projects, December 2013

Brownfield Projects		
Mine Expansions:	**Metal**	**Comments**
Highland Valley Copper	Cu-Mo Porphyry	Mill and Pit Expansion, 2 year stripping program, Valley pit buttress installed, $475M mill upgrade, 624 Mt at 0.31% Cu, 0.009% Mo (Reserves), LOM to 2025
Gibraltar	Cu-Mo Porphyry	Mill and Pit Expansion, 2nd 55,000 t/d concentrator, new Mo circuit. Reserves increased 80% - 727 Mt of 0.30% Cu, 0.008% Mo.
Endako	Mo	New 50,000 tpd mill ($498 million), increased mill capacity by 44%, LOM to 2028.
Mount Polley	Cu-Au	20,000 t/d expansion, reserves 45.8 Mt at 0.31% copper, 0.26 g/t gold, 0.47 g/t silver, LOM to 2016.
Huckleberry	Cu-Au-Ag-Mo	20,000 tpd, pushback providing ore until 2014, mine life to 2021, Access to 39.7 Mt of 0.343% Cu below pit.
Possible Expansions:	**Metal**	**Comments**
Myra Falls	Zn-Cu-Pb-Au	Open since 1966, 20-year mine plan under consideration.
Mine Restarts:	**Metal**	**Comments**
Copper Mountain	Cu	35,000 tpd, 17-year life, 211 Mt at 0.36% Cu. Fourth phase since 1888.
New Afton	Au-Cu	11,000 tpd, underground, 47.4 Mt at 0.95% Cu, 0.69 g/t Au.
Kitsault	Mo	$837 Million capital cost, 40,000 tpd.
Tulsequah Chief	Cu-Au-Ag	Underground, 2000 tpd, LOM 9 years.

Possible Restarts:	Metal	Comments
Kemess South		Closed underground.

Greenfield Projects

Greenfield Projects:	Metal	Comments
Galore Creek	Cu-Au-Mo	Open-pit, $5.2 Billion, 95,000 tpd, 18-year mine life, 528 Mt 0.6% Cu, 0.32 g/t Au, 6.02 g/t Ag (P&P). EIA: Amendments.
Harper Creek	Cu-Au-Ag	Open-pit, $838 Million, 70,000 tpd, 28 year mine life. 704.4 Mt 0.26%Cu, 0.029g/t Au, 1.14g/t Ag. EIA: Pre-Application.
Mt. Milligan	Cu-Au-	Open pit, $1.5 Billion, 60,000 tpd, 22-year mine life. 531.8 Mt at 0.20% Cu, 0.34 g/t Au (P&P). EIA: Production.
Morrison	Cu-Au-Mo	Open-pit, $516 Million, 30,000 tpd, 21 year mine life. 206 Mt (M&I) at 0.39%Cu, 0.005%Mo, 0.20g/t Au. EIA: Under Review.
New Prosperity	Cu-Au	Open pit, $815 M +$300 Million increase in capital cost, 70,000 tpd 831 Mt at 0.23% Cu, 0.41 g/t Au. EIA: Prov. Certified/Fed. Failed.
Red Chris	Cu-Au	Open pit, $500 Million, 30,000 t/d, 28-year mine life. 300 Mt 0.36% Cu, 0.27g/t Au (P&P). 619 Mt at 0.38% Cu, 0.36 g/t Au (total). EIA: Prov. Certified/Fed. Certified.
Schaft Creek	Cu-Au-Mo	Open pit, $3.3 Billion, 150,000 tpd, 15-year mine life. 1011.5 Mt of 0.27% Cu, 0.18 g/t Au, 0.017% Mo (M&I). 528 Mt 0.6% Cu, 0.32 g/t Au, 6.02 g/t Ag (P&P) EIA: Pre-Application.
Brucejack	Au-Cu-Mo	Underground, 2700 tpd, LOM 24 years, 0.86 g/t Au, 12.17 g/t Ag

‘New’ Kemess North	Cu-Au Porphyry	Underground, 52,000tpd, LOM 16 years.
KSM	Au-Cu-Mo Porphyry	Open-pit/Underground, 130,000/90,000 tpd, 25-30 year mine life. 2,164 Mt 0.21%Cu, 0.00447% Mo, 0.32g/t Au.
Snowfield	Ag-Au-Mo Porphyry	Open-pit, 120,000 tpd, 27 year mine life, 1370.1 MT (M&I) 0.10% Cu, 0.00855% Mo, 0.59g/t Au, 1.72g/t Ag.

Source: AMEC July 27, 2011; Merit January 25, 2013; WARDROP October 23, 2009b; WARDROP February 26, 2009c; Taseko November 2, 2009; Imperial February 14, 2012; Tetra Tech January 23, 2013

APPENDIX 5 'Recognizable'[259] metal mines and projects in BC

Mine/Project	Deposit	Commodity	Discovery	Production	Closed
Afton & Smelter	Porphyry	Au-Cu	1949	1977	1997
New Afton (u)	Porphyry	Au-Cu	2004	2012	-
Ajax	Porphyry	Au-Cu	1914	-	-
Bell Copper	Porphyry	Cu	1960	1972	1991
Berg	Porphyry	Cu-Mo	1962	-	-
Britannia	VMS	Cu-Au	1888	1904	1974
Brucejack	Porphyry	Au-Cu-Mo	1980	-	-
Copper Mountain	Porphyry	Cu	1925	1927	1996
Copper Mountain (e)	Porphyry	Cu	2006	2011	-
Eskay Creek (u)	VMS	Au-Ag	1989	1994	2008
Endako	Porphyry	Mo	1927	1965	-
Galore Creek	Porphyry	Cu-Au-Ag	1955	-	-
Gibraltar	Porphyry	Cu-Mo	1917	1972	
Harper Creek	VMS	Cu-Au-Ag	1966	-	-
Huckleberry	Porphyry	Cu-Mo	1961	1997	-
HVC*	Porphyry	Cu-Mo	1962	1972	-
Island Copper	Porphyry	Cu	1965	1971	1995
Kemess North (u)	Porphyry	Cu-Au	1991	-	-
Kemess South (u)	Porphyry	Cu-Au	1988	1998	2011
Kitsault	Porphyry	Mo	1911	1968	1982
KSM (o/u)	Porphyry	Au-Cu-Mo	1988	-	-
MAX (u)	Porphyry	Mo	1975	2009	2011
Morrison	Porphyry	Cu-Au-Mo	1963	-	-
Mt. Milligan	Porphyry	Cu-Au	1987	2014	
Mount Polley	Porphyry	Cu-Au	1965	1997	-
Myra Falls	VMS (u)	Zn-Cu-Pb-Au	1890	1966	-
'New' Prosperity	Porphyry	Cu-Au	1963	-	-
Red Chris	Porphyry	Cu-Au	1968	-	-
Schaft Creek	Porphyry	Cu-Au-Mo	1957	-	-
Snowfield	Porphyry	Au-Cu-Mo	1980	-	-
Sullivan (u)	SEDEX	Pb-Zn-Ag	1892	1916	2001
Tulsequah Chief (u)	VMS	Cu-Au-Ag	1925	1951	1957

Source: Britton et al 2011; MEMPR 2009; 43-101's

*Multiple deposits – Discovery dates, production, etc.

* e = expansion; u = underground; o = open-pit

[259] As per Britton et al (2011).

APPENDIX 6 Mines built in BC, 1984-2013

Metal	Deposit	Company	Mine	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Au-Ag-Cu	Alkaline	Abacus	New Afton	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Mo		Adanac Molybdenum Corporation	Ruby Creek Molybdenum																														
Au-Ag	VMS	Barrick	Eskay Creek (U)											O12	X	X	X	X	X	X	X	X	X	X	X	X	X	C03					
Cu-Zn	VMS	Bethlehem	Goldstream	S							R06	X	X	X	X	S01																	
Cu-Mo-Au	Calc-Alkine	BHP billiton	Island Copper	X	X	X	X	X	X	X	X	X	X	X	C12																		
Au-Ag		Boliden	Premier Gold Project						O05	X	X	X	X	X	X	S04																	
Au		Bralorne Gold Mines Ltd. (U)	Bralorne																					i	i						O05	X	X
Zn, Cu, Pb, Au, Ag	VMS	Breakwater	Myra Falls (U)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	S12	R03	X	X	X	X	X	X	X	X	X	X	X
Au		Century	Carolin (U)	C																													
Au-Ag	Vein	Cheni	Lawyers						O03	X	X	S08																					
Au		China Minerals Mining Corporation	Main Gold	X	X	X	X	C10																									
Zn, Pb, Fe		Cominco	Sullivan (U)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	C12												
Cu-Mo	Calc-Alkine	Teck Resources Limited	Valley Copper	X	X	X*06																											
Cu-Au	Alkaline	Copper Mountain Mining Corporation	Copper Mountain (U/O)	X	X	X	X	X	X	X	X	X	X	X	X	S06															R06	X	X
Au		Cusac	Table Mountain (U)											O04	X	X	X	X	S06							R12	S10						
Au		Cusac	Taurus (U)	X	X	X	X	C04																									
Ag		Dankoe	Horn Silver (U)	C																													
Au		DMR	Dome Mountain U)									O01	S04																		O12	S12	
Ag		Equity Silver Mines Ltd.	Equity Silver	X	X	X	X	X	X	X	X	X	C01																				
Cu	VMS	Esso	Granduc (U)	C																													
Cu-Mo	Calc-Alkine	Highmont Mining Corp/Teck	Highmont	C																													
Pb, Ag, Zn		Huldra Silver Inc.	Treasure Mountain (U)																													S12	X
Cu-Mo	Alkaline	Imperial Metals Corporation	Huckleberry														O10	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cu-Au	Alkaline	Imperial Metals Corporation	Mount Polley														O09	X	X	X	S11				R03	X	X	X	X	X	X	X	X
Cu, Au, Pb, Ag, Zn		Inmet	Samatosum (O/U)						O06	X	X	C09																					
Au-Ag		J-Pacific/Sona	Blackdome			O05	X	X	X	X	C01							R06	S05														
Au		Kinross	Quesnel River (U)												O04	X	X	S04									O09	X	S01	R09	X	S09	
Cu-Mo	Calc-Alkine	Teck Resources Limited	Lornex	X	X	X*06																											
Ni		Mascot	Nickel Plate				O	X	X	X	X	X	X	X	X	C07																	
Au-Cu		Merit Mining Corp.	Lexington-Grenoble																									O06	S12				
Au-Ag		Molycor	Beaverdell	X	X	X	X	X	X	X	C02																						
Au		Mosquito	Mosquito Creek (U)	X	X	X	C																										
Cu-Au (Mo)	Alkaline	Noranda	Bell		O	X	X	X	X	X	X	C06																					
Au	Heap leach	North American Metals Corp./Pelly Constru	Golden Bear						O	X	X	X	X	S09			R09	X	X	X	C11												
Cu-Au (Mo)	Calc-Alkine	Teck Resources Limited	Kemess South															O06	X	X	X	X	X	X	X	X	X	X	X	X	S03		
Au		Prime Resources	Snip (U)								O01	X	X	X	X	X	X	X	C05														
Au		Prize Mining Corp. / Eagle Plains Resource	Yellow Jacket																											O10	S04		
Mo		Roca Mines Inc.	Max Molybdenum (U)																								O10	X	X	S09	O07	S10	
Au-Ag		Sable Resources Ltd.	Shasta-Baker (U)						O	X	C11				i	i				i			i	i	i	i	i	i	i	i	i	i?	
Au		Scottie Gold Mines Ltd.	Scottie	C																													
Ag		Silvana Mines	Silvana (U)	X	X	X	X	X	X	X	X	X	S04																				
Cu-Au	Alkaline	Similco Mines Ltd.	Similkameen (U/O)	X	X	X	X	X	X	X	X	X	S11	R08	X	S12																	
Au		Skylark Resources	Skylark					O	C																								
Au		Skyline	Johnny Mountain (U)					O08	X	S09			R/S																				
Cu-Mo	Calc-Alkine	Taseko Mines Limited	Gibraltar	X	X	X	X	X	X	X	X	X	S12	R10	X	X	X	S12							R10	X	X	X	X	X	X	X	X
Cu-Mo	Calc-Alkine	Teck Resources Limited	Highland Valley Copper			X*07	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Mo		Thompson Creek Metals Company Inc.	Endako	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cu-Mo	Calc-Alkine	Xstrata Coal British Columbia	Brenda	X	X	X	X	X	X	C06																							

Legend
X = operating
O = new mine opened
C = mine closed
S = mine shut down
R = mine reopened
i = intermittent
01-12 = month

NOTES:
1. X* Lornex and Valley Copper merged to f
2. ** Operations at Dillon mine ceased in mi
2. Goldstream closed in 1984, reopened in
3. Small mines, custom milling and heap lea

Source: British Columbia Ministry of Energy,

Last updated February 15, 2013

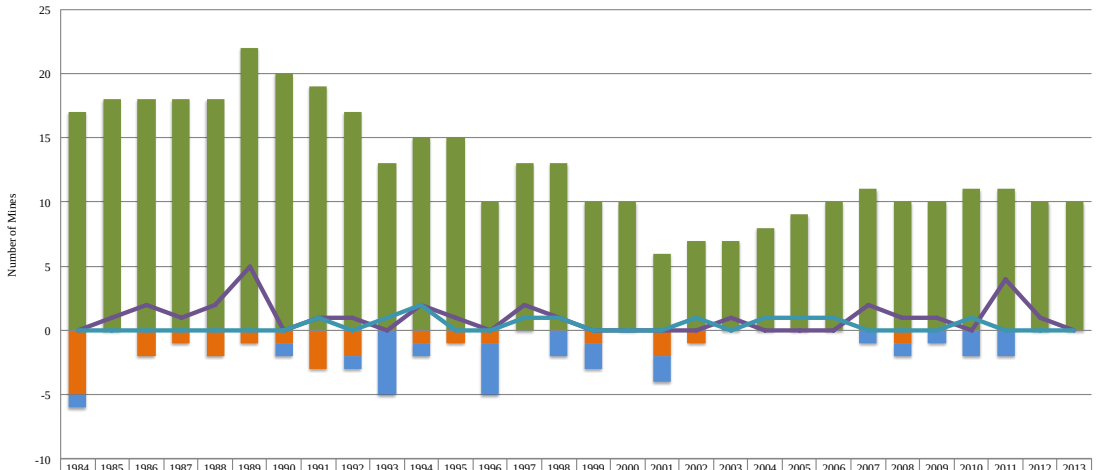
Operating Mines	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Beginning of Year	23	17	19	18	18	18	22	20	19	17	13	15	15	10	13	13	10	10	6	7	7	8	9	10	11	10	10	11	11	10
# End of Year	17	18	18	18	18	22	20	19	17	13	15	15	10	13	13	10	10	6	7	7	8	9	10	11	10	10	11	11	10	10
New Mines Opening	0	1	2	1	2	5	0	1	1	0	2	1	0	2	1	0	0	0	0	1	0	0	0	2	1	1	0	4	1	0
Mines Re-Opening	0	0	0	0	0	0	0	1	0	1	2	0	0	1	1	0	0	0	1	0	1	1	1	0	0	0	1	0	0	0
Mines Closed	-5	0	-2	-1	-2	-1	-1	-3	-2	0	-1	-1	-1	0	0	-1	0	-2	-1	0	0	0	0	0	-1	0	0	0	0	0
Mines Shutdown	-1	0	0	0	0	0	-1	0	-1	-5	-1	0	-4	0	-2	-2	0	-2	0	0	0	0	0	-1	-1	-1	-2	-2	0	0

Cu Porphyry Operating Mines	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Beginning of Year	8	7	8	7	7	7	7	6	6	5	3	5	4	2	4	4	4	4	3	3	3	4	5	5	5	5	5	5	5	5
# End of Year	7	8	7	7	7	7	6	6	5	3	5	4	2	4	4	4	4	3	3	3	4	5	5	5	5	5	5	5	5	5
New Mines Opening	0	1	1	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mines Re-Opening	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0
Mines Closed	0	0	-2	0	0	0	-1	0	-1	0	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mines Shutdown	-1	0	0	0	0	0	0	0	0	-2	0	0	-2	0	-1	0	0	-1	0	0	0	0	0	0	0	0	0	1	0	0

Source: Modified from MEMPR 2013

APPENDIX 6 Mines built in BC, 1984-2013 cont'd

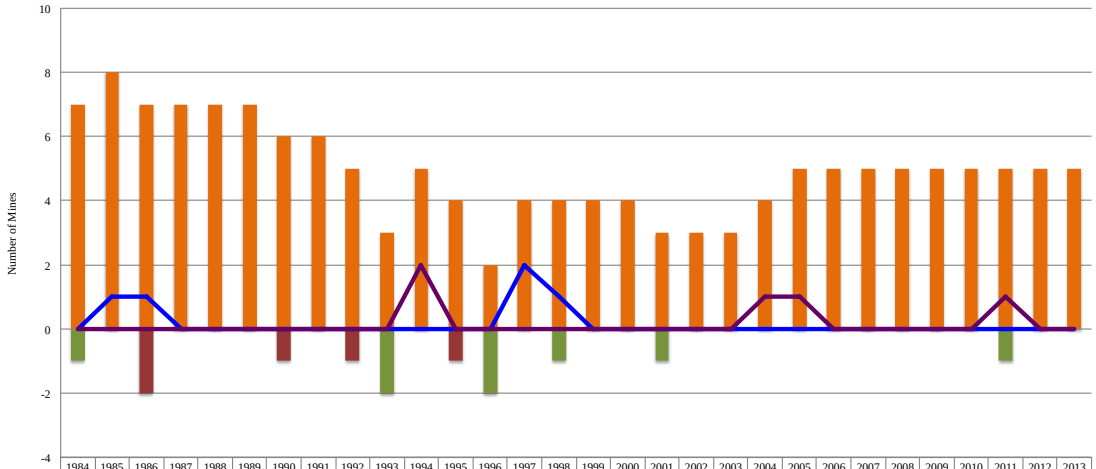
BC Open and Closed Metal Mines, 1984-2013



	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Mines Shutdown	-1	0	0	0	0	0	-1	0	-1	-5	-1	0	-4	0	-2	-2	0	-2	0	0	0	0	0	-1	-1	-1	-2	-2	0	0
Mines Closed	-5	0	-2	-1	-2	-1	-1	-3	-2	0	-1	-1	-1	0	0	-1	0	-2	-1	0	0	0	0	0	-1	0	0	0	0	0
# End of Year	17	18	18	18	18	22	20	19	17	13	15	15	10	13	13	10	10	6	7	7	8	9	10	11	10	10	11	11	10	10
New Mines Opening	0	1	2	1	2	5	0	1	1	0	2	1	0	2	1	0	0	0	0	1	0	0	0	2	1	1	0	4	1	0
Mines Re-Opening	0	0	0	0	0	0	0	1	0	1	2	0	0	1	1	0	0	0	1	0	1	1	1	0	0	0	1	0	0	0

Source: Generated from MEMPR 2013.

BC Copper Porphyry Open and Closed Mines, 1984-2013



	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Mines Shutdown	-1	0	0	0	0	0	0	0	0	-2	0	0	-2	0	-1	0	0	-1	0	0	0	0	0	0	0	0	0	-1	0	0
Mines Closed	0	0	-2	0	0	0	-1	0	-1	0	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
# End of Year	7	8	7	7	7	7	6	6	5	3	5	4	2	4	4	4	4	3	3	3	4	5	5	5	5	5	5	5	5	5
New Mines Opening	0	1	1	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mines Re-Opening	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0

Source: Generated from MEMPR 2013.

APPENDIX 7 Environmental assessment in BC

The federal and provincial laws and regulations that exploration and mining in BC are as follows: *Canadian Environmental Assessment Act*; *Canadian Environmental Protection Act*; *Fisheries Act*; *Navigable Waters Protection Act*; *Migratory Birds Act*; *Mines Act*; *Environmental Assessment Act*; *Environment & Land Use Act*; *Environment Management Act*; *Forest Act*; *Health Act*; *Waste Management Act*; *Water Act*; *Water Protection Act*; *Wildlife Act*; *Fisheries Act*; and, *Fish Protection Act* (Kamloops 2011). Of all the jurisdictions in Canada, BC is the most regulated province with 38 Acts and Regulations which all fall under the Ministry of Energy and Mines authority (Kamloops 2011). The focus of the following section will be on the provincial Environmental Assessment Act (EAA) and the federal Canadian Environmental Assessment Act (CEAA). Environmental assessment is defined as:

> A planning tool that requires early identification and evaluation of all potential environmental consequences of a proposed project and its alternatives, combined with a decision-making process that attempts to reconcile any approval of the proposal with environmental protection and preservation (Castrilli 2002, 12).

In 1994, BC's first *Environmental Assessment Act* was developed. The Act replaced an environmental assessment (EA) system that was deemed by respondents of the Fraser Institute surveys (1997-2002) as "disjointed and unorganized". The EA system incorporated four processes: the *Environment Management Act* (1981); the *Utilities Commission Act* (1980); the *Mine Development Assessment Act* (1990); and, the Major Projects Review Process (1990) (Haddock 2010). In 1995, the NDP consolidated the above processes by passing the first *Environmental Assessment Act* and four Regulations,[260] as well as established the Environmental Assessment Office (EAO) in the Ministry of Environment to oversee the administration of the Act (Haddock 2010). Haddock (2010) states, "…the BC process is considered to be proponent-driven, project-specific regime…" whereby the proponent provides all the information and analysis for the EA process, whereas the EAO coordinates and liaises between the proponent and regulatory agencies (p.15). The 1995 Act "…provided greater certainty for miners with regards to timeframes and requirements for report contents, making British Columbia's legislation the most detailed and comprehensive

260 (1) Concurrent Approval Regulation, (2) Prescribed Time Limits Regulation, (3) Public Consultation Policy Regulation, (4) Reviewable Projects Regulation.

environmental assessment legislation in the country at the time"(PWC 1995, as noted in Wilson et al 2013). However, as a result miners faced higher environmental expenditures (e.g., permitting and environmental monitoring, etc.), as well as suffered through regulatory duplication and overlap between the provincial and federal governments (Wilson et al 2013). The purpose of the Environmental Assessment Act (S.B.C. 1994, c.35, s.2) is defined as follows:

1. Promote sustainability by protecting the environment and fostering a sound economy and social well-being;
2. Provide for the thorough, timely and integrated assessment of the environmental, economic, social, cultural, heritage and health effects of reviewable projects;
3. Prevent or mitigate adverse effects of reviewable projects;
4. Provide an open, accountable and neutrally administered process for the assessment of reviewable projects, and of activities that pertain to the environment or to land use and that are referred to the board in accordance with the terms of reference mentioned in section 51 (1) (c); and,
5. Provide for participation, in an assessment under this Act, by the public, proponents, first nations, municipalities and regional districts, the government and its agencies, the government of Canada and its agencies and British Columbia's neighboring jurisdictions.

The *Reviewable Projects Regulation* (B.C. Reg. 276/95) was designed to set thresholds such as size and production capacity for particular projects (e.g., mine, energy, industrial) that trigger EA assessments (Haddock 2010). Projects that meet the threshold as defined by the Ministry of Environment are noted as being 'reviewable' projects, thereby requiring an approval certificate prior to construction or operation (Haddock 2010). This includes new mine projects, as well as the modification of existing mine projects, whereby mineral exploration projects do not need to complete an assessment (Baldwin and Fipke 2010; Haddock 2010).[261]

In 2011, approximately 66 percent of all 'reviewable' projects in BC required both a provincial and federal environmental assessments (EAO 2010). An agreement was made between governments that projects undergo a "single cooperative assessment process" while meeting each government's legal obligations (EAO 2011). "Under section 27 of the EA Act,

261 Reviewable Projects under the 1994 and 2002 Acts: New Mineral Mine – "Production capacity is over 25,000 tonnes/yr if assessed under the 1994 Act", and 75,000 tonnes/yr if assessed under the 2002 Act (Haddock 2010, 18). Expansion of Mineral Mine – "Expansion of surface area that can be disturbed by 250 hectares or over 35% of the original mine site" if assessed under the 1994 Act, and "[e]xpansion of surface area that can be disturbed by 750 hectares or over 50% of original mine site" if assessed under the 2002 Act (Haddock 2010, 18).

BC may accept an EA undertaken by another jurisdiction as "equivalent" to BC's, thereby avoiding completely the need to conduct duplicate EAs"(EAO 2011). If there are no delays, the provincial environmental assessment process could be completed in a minimum of 255 days (EAO 2011). However, if necessary the Minister of Environment and the EAO can increase the time limit set under BC EAA (Wilson et al 2013).

Taseko Mines Ltd. has been working towards obtaining provincial approval/certificate for the New Prosperity project since 1993 and under the new Act since 1995 (CEAA 2010). In the case of mining, the company/project cannot get a Mines Act permit until they receive their environmental assessment certificate from the provincial government. The company received their provincial certificate in January 2010, along with 103 compliance items in accordance with the EAA[262]. The company has up to five years to start their project under their current EA certificate. As a result of Taseko's plan to use submarine tailings in a nearby fish bearing lake, Fisheries and Oceans, Transport Canada and Natural Resources Canada were also involved in the federal review panel as per subsection 21(2)(b) of the Canadian Environmental Assessment Act (CEAA). After two review panels, as well as two reviews by the federal government, the project was not approved under the CEAA process (For further details see Section 6.10).

In 2002, the Liberal government updated the Environmental Assessment Act (EAA) with a broader more deregulated and less restrictive process that is 'timely' and 'cost efficient' (Hagen 2002, as noted by Haddock 2010). For instance, the 1994 Act was reduced down from 93 sections to only 51 (Haddock 2010). To reduce it down provisions were removed that facilitated the engagement of local government, First Nations and other stakeholders on project and advisory committees (Haddock 2010). There is a duty to consult First Nations in BC (*Haida Nation v. British Columbia*) and ultimately the government can assign the 'procedural aspects' to the proponent (EAO 2010). Another change is that the minister (appointed by Premier) and executive director (appointed by the Lieutenant Governor in Council) of the EAO have more "flexibility" in decision-making in regards to environmental

262 See the Prosperity project's EA certificate and executive director's recommendations at the following link: http://a100.gov.bc.ca/appsdata/epic/documents/p6/1263503747832_111bf55585d2ae6168f90be26d049256ece101a1db1b1077333129c863464809.pdf

assessments (Haddock 2010) This left some proponents, stakeholders and members of the electorate to wonder what influence politics has on decisions being made, or the fact that the new Act has allowed for the "politicizing of the EA process" (WCEL 2004, 2; Haddock 2010).[263]

In 2012, the BC EAO had 78 projects participating in the EA process. Of these projects, 29 are related to mining, of which one project is under review and the remaining are in the pre-application stage (EAO 2013). The application dates for these projects range from 2003 to 2013 (EAO 2013). Langelaar et al (2007) write,

> Exploration success in B.C. has generated a string of new mining projects that now await environmental assessment and permitting. The efficiency and effectiveness of the B.C. environmental assessment process will determine the speed with which new mines can be activated in response to market opportunities (pp. 59).

The federal *Canadian Environmental Assessment Act* (CEAA) was established in December 1999. The Act was designed to assess projects for 'triggers' such as requiring a federal permit under the *Navigable Waters Protection Act* or if a project requires federal funding for its construction.[264] All the primary projects studied throughout this thesis require a federal environmental assessment as they are all metal mines exceeding 3,000 t/d. Figure 14 illustrates the different types of environmental assessments under the Act. The four types of assessment are: screening, comprehensive study, review panel and mediation.

The screening process is where most of the projects fall under when needing to be assessed by the Canadian Environmental Assessment Agency CEAA.[265] The purpose of this process is to identify and document the environmental effects of a project, as well as decide on the need "…to eliminate or minimize adverse effects, to modify the project plan or to recommend further assessment through mediation or an assessment by a review panel"(CEAA 2013). For instance, projects that require a comprehensive study usually have the potential to have a significant adverse effect on the environment (CEAA 2013). If there is public concern in regards to a proposed project the Minister of Environment then orders an assessment by a

263 For additional information see the following link: http://wcel.org.

264 A detailed list of triggers are found in the Comprehensive Study List Regulations (SOR/94-638) at http://laws-lois.justice.gc.ca/eng/regulations/SOR-94-638/page-3.html#h-4.

265 For additional information on the CEAA see the following link: http://www.ceaa-acee.gc.ca.

review panel (CEAA 2013). The panel of experts "…are appointed to review and assess, in an impartial and objective manner"(CEAA 2013). If necessary, joint panel reviews (under a harmonization agreement) can involve both the provincial and the federal governments. A current BC example of a mining project being assessed using the review panel process is the New Prosperity project (see Section 6.10). The final assessment involves a mediator (appointed by the Minister of Environment) who helps parties to resolve issues or conflicts (CEAA 2013).

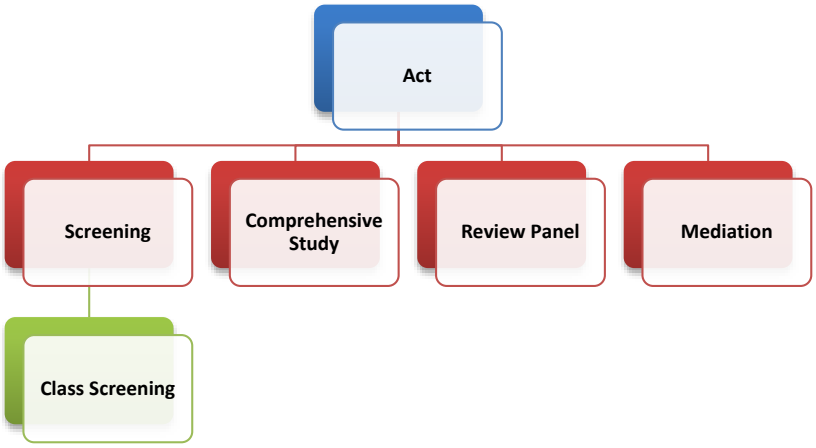


Figure 14 The different types of environmental assessment under CEAA (Modified from CEAA 2013)

As of 2012, the CEAA have three BC projects (one involves mining, New Prosperity) participating in the review panel process. Nine out of 11 projects participating in the comprehensive study process are mining projects (e.g., Ajax, Burnco, Harper, KSM, Kitsault, Morrison, Raven, Schaft Creek and Spanish Mountain) and one of the three projects participating in the screening process is a mining project (e.g., Kutcho) (CEAA 2012). The application dates for these projects range from 2007 to 2011. In total, the CEAA is currently managing a total of eight projects under panel review, 34 projects in a comprehensive study, and 17 screenings (CEAA 2012).

APPENDIX 8 Case studies

A8.1 Case study: Tatshenshini-Alsek Wilderness Park

In 1958, J.J McDougall of Frobisher Exploration (aka Falconbridge Ltd.) discovered the Windy Craggy copper deposit, which is a volcanic massive sulphide, located in Craggy Mountain (Geddes 1993). The deposit is located in the Tatshenshini-Alesk region of northwestern BC, bordering Alaska and Yukon Territory (also known as the Haines Triangle). This extremely remote area is surrounded by three park and wilderness areas: the Kluane National Park (Yukon); the Wrangell-St. Elais and Glacier Bay National Parks (BC); and, the Tongass National Forest (Alaska, US). The proposed mine site is in an area where there are no other resource developments, or even infrastructure such as roads or settlements. The area is known for its rivers, especially by rafters who have rated this area as "…one of top fourteen wilderness rafting experiences in the world"(CORE 1983, 34, as noted in Harrison 1996, 370). The Champagne-Aishihik First Nation had made a Comprehensive Claim for Aboriginal Rights and Title to this area (Harrison 1996).

In 1981, Geddes Resources obtained an interest in the Windy Craggy property. Geddes estimated that they could extract 130,000/t Cu per year from an estimated 297 million tonnes of ore at 1.4 percent copper for 20 years (Geddes 1993). Today, at US$3.25/lb Cu this world-class deposit contains approximately US$30 Billion dollars of contained copper[266]. The proposed project was both an open-pit and underground design and was estimated to provide 500 direct jobs (Geddes 1993).

In 1988, Geddes submitted a prospectus to the BC government, which the general public could access, view and submit comments (Geddes 1993). Resistance over the project arose due to the potential environmental effects the mine would have, especially on the rivers located in the area. Over 50 different groups (lead by the Tatshenshini Wild (Canadian) and the American Rivers) formed a coalition to fight the project (Harrison 1996). The concerns by environmentalists, conservationists and preservationists were:

- The ARD from sulphide bearing rocks and its potential leaching into the river systems

266 The calculated value of contained copper on January 30th, 2014 dollars is US$30Bln. Calculated (=$297E6 x 1.4% x 2204lbs/tonnes x $3.25/lb).

from the containment, as well as the life span of said toxins (Harrison 1996, 299);
- The proposed 300 million tons of waste rock (Harrison 1996, 299);
- The effects on surrounding wildlife and environment from construction project, as well as maintenance and subsequent closure of the mine (Harrison 1996, 299);
- The mine being located in one of the most seismically active areas in Canada (Harrison 1996, 299);
- The impact the mine will have on the diverse river system (e.g., Tats Creek, Tatshenshini River and Alsek River) located around and at the base of Craggy Mountain (Harrison 1996, 299);
- The high concentration of sulphur, which forms sulphuric acid when exposed to air and water (Harrison 1996, 299); and,
- The potential breach in the proposed tailing ponds (Harrison 1996, 299).

Because the project area borders Alaska, international impacts were also considered. For instance:

- Alsek River supports one of the most productive salmon runs in Alaska, as well as crosses Glacier Bay National Park (Harrison 1996, 300); and,
- As per signatory to the World Heritage Convention, Canada directly or indirectly cannot damage Klaune, Wrangell-St. Elias or Glacier Bay National parks. All designated as world heritage sites[267] (Harrison 1996, 300).

In 1992, CORE assessed the Windy Craggy proposal. In 1993, the CORE identified three land and water use options in regards to the Windy Craggy project:

1. A *wilderness option* – "designate the entire regions as a protected area"(Walters et al 2007, 10);
2. A *mining option* – "continued mineral exploration and development"(Walters et al 2007, 10); and,
3. A *delay option* – "defer the land and water use decisions until better information was available regarding mineral, economic, environmental, and wilderness values, and pending settlement of Aboriginal land claims"(Walters et al 2007, 10).

In 1993, Royal Oak mines bought 39 percent of Geddes Resources (Walters et al 2007). Later that same year, Mike Harcourt announced that the Tatshenshini-Alsek Wilderness area would become a park, thereby killing the Windy Craggy mine proposal, as well as any others that may be proposed from the many mineral claims in the area (Walters et al 2007). Both US and Canada applied to the United Nations (UN) for the proposed 8.5 million hectares to be designated international wilderness area, as well as a world heritage site (Harrison 1996). The UN approved the site in 1994. After receiving a commitment from the NDP government

267 For further details on stakeholder concerns see the following website: http://www.spacesfornature.org/docs/Tatshenshini-Briefing.pdf.

"…to engage in separate land claims negotiation…" the Champagne-Aishihik First Nation supported the Tatshenshini-Alesk area being designated a world heritage site (Harrison 1996, 300).

In 1995, the NDP government settled with Royal Oak Mines (the controlling shareholder of Geddes Resources) and paid $26 million in compensation, as well as $138 million to support the company's development of two proposed mines (e.g., Kemess South and Red Mountain)[268] in BC (Harrison 1996; Walters et al 2007). It was estimated that the two mines would generate as much income, as well employ as many people when compared to the Windy Craggy project (Harrison 1996). Did the government negotiate and compensate the company because of the upcoming provincial election? Or was it from the mining industry threatening an exodus to South America (Harrison 1996)? Or perhaps it was from CORE recommending that compensation would be deemed reasonable if option one was employed (Harrison 1996)? Perhaps it was from the Mining Association of BC's (MABC) $500,000 mining awareness campaign that included publicizing the upcoming provincial political candidates positions on mining that promoted settlement (Harrison 1996)? Whatever the case, the NDP government recognized at the time that the mining industry contributes five percent to the GDP and provides 12,500 direct jobs, thereby needing to assure investors that BC was open for business (Harrison 1996). Their action left the government and future governments with potential settlements for 171 mineral claims that existed in the park area (Walters et al 2007). In the end, the compensation provided by government for the project didn't sit well with labor as the CEO Margaret Witte (former president of Royal Oak mines) in 1992 hired replacement workers at the company's Giant gold mine in Yellowknife during an organized labor movement (Harrison 1996). The Giant mine is also associated with a long-term environmental legacy in regards to the questionable storage of arsenic trioxide.[269]

This case study illustrates the potential for inconsistencies in the environmental process in BC, the power of an upcoming provincial election, as well as the nature and 'scope' of the

268 Red Mountain gold project is located in Northwestern BC near Stewart. It is currently owned by Seabridge Gold Inc. Additional information can be found on Red Mountain at http://www.srk.com/en/newsletter/mining-project-evaluation/red-mountain-gold-project-located-british-columbia-canada.

269 For additional information on the Giant Gold mine see the following website: https://www.aadnc-aandc.gc.ca/eng/1100100027388/1100100027390.

project. Despite being a 'fair' distance from the US border, the Windy Craggy project was susceptible to significant political and financial resources of US environmentalists, who had the power of the US Congress behind them. In my opinion, the mining industry was pitted against the environmentalists, as well as the rafters, and the NDP government succumbed to the US, despite the many pleas and arguments by the industry that the mine and the wilderness could coexist. The US based environmental group American Rivers gave premier Harcourt an award "…for blocking a copper mine near the Tatshenshini River"(Toronto Star 1994). Overall, this project amongst others demonstrates the power and growth in North American social movements, as well as the complex nature of environmental politics. It seems with each subsequent case the mining industry stands alone against the government, environmentalists, as well as First Nations.

A8.2 Case study: The Galore Creek project, NovaGold Resources and Teck Resources

The Galore Creek copper-gold porphyry project is located 150 kilometers northwest of Stewart in northwestern British Columbia, which is within the Tahltan Nation Traditional Territory (NovaGold 2011). The project is not accessible by road and the closest provincial road to the project is Highway 37. The project is located in a watershed basin with the average precipitation of 3,000 mm a year (NovaGold 2011) (see Figure 3) (Chart 22). The project has an 18.5 year projected mine life with a proven and probable mineral reserves of 528 Mt grading 0.58 percent Cu, 0.32 g/t Au and 6.02 g/t Ag (NovaGold 2011, 1-2).

In 2003, NovaGold acquired the Galore Creek project and by 2007 the project had received both its provincial and federal environmental assessment certificates. On May 23, 2007, NovaGold and Teck Resources "…announced a 50:50 partnership to develop the Galore Creek property"(NovaGold 2007).[270] By August 2007, a jointly controlled operating company titled GCMC was created. By November 2007, NovaGold and Teck Resources had suspended construction of the project. A press release issued by NovaGold (November 26, 2007) stated,

> A recent review and completion of the first season of construction indicate substantially higher capital costs and a longer construction schedule for the project.

270 Additional information on NovaGold and Teck Cominco Galore Creek Partnership is found at: http://www.novagold.com/section.asp?pageid=4444.

> This, combined with reduced operating margins as a result of the stronger Canadian dollar, would make the project, as now conceived and permitted, uneconomic at current consensus long-term metal prices…Although there have been changes in scope from the original feasibility study, the largest portion of the capital cost increase is related to the complex sequencing of activities necessary to build the tailings dam and water management structures, and the resulting extension of the construction schedule by 18 to 24 months. The project has also been affected by the rapidly escalating capital costs affecting major construction projects world-wide (NovaGold 2007).[271]

In 2010-2011, a new pre-feasibility study was completed. It notes that the project's success is contingent on a variety of things; however, at a minimum the project will require the construction of the Northwest Transmission Line and the Forrest Kerr hydroelectric project, as well as concentrate transport from Yukon Zinc's Wolverine mine and the Red Chris project (NovaGold 2011). All infrastructure projects (except the concentrate transport from the Yukon's Zinc's Wolverine mine) were completed in 2014. The new Galore Creek feasibility study will require provincial and federal environmental assessment approvals.

How relevant is market capitalization to project success? Chart 18 illustrates the combined market capitalization of the 50/50 owners of the Galore Creek project NovaGold Resources Inc. and Teck Resources Inc. as C$14,680M or individually, NovaGold's market cap is C$728M and Teck's is C$13,952. Each is responsible for a 50 percent share of the companies' projected C$5,160M capital costs (based on July 27, 2011 feasibility study). Can these two companies afford to build such a capital-intensive project? In accordance with their share of the capital costs and their market cap, it seems that NovaGold may have difficulty providing their share of the capital costs equaling to C$2,550M dollars, a figure almost four times their current size. According to NovaGold's website (www. Novagold.com), the company is evaluating strategic alternatives with respect to the development of the Galore Creek project. If they could finance their share of the project, any cost overruns would put a significant strain or bankrupt the company that has only one other project/mine.

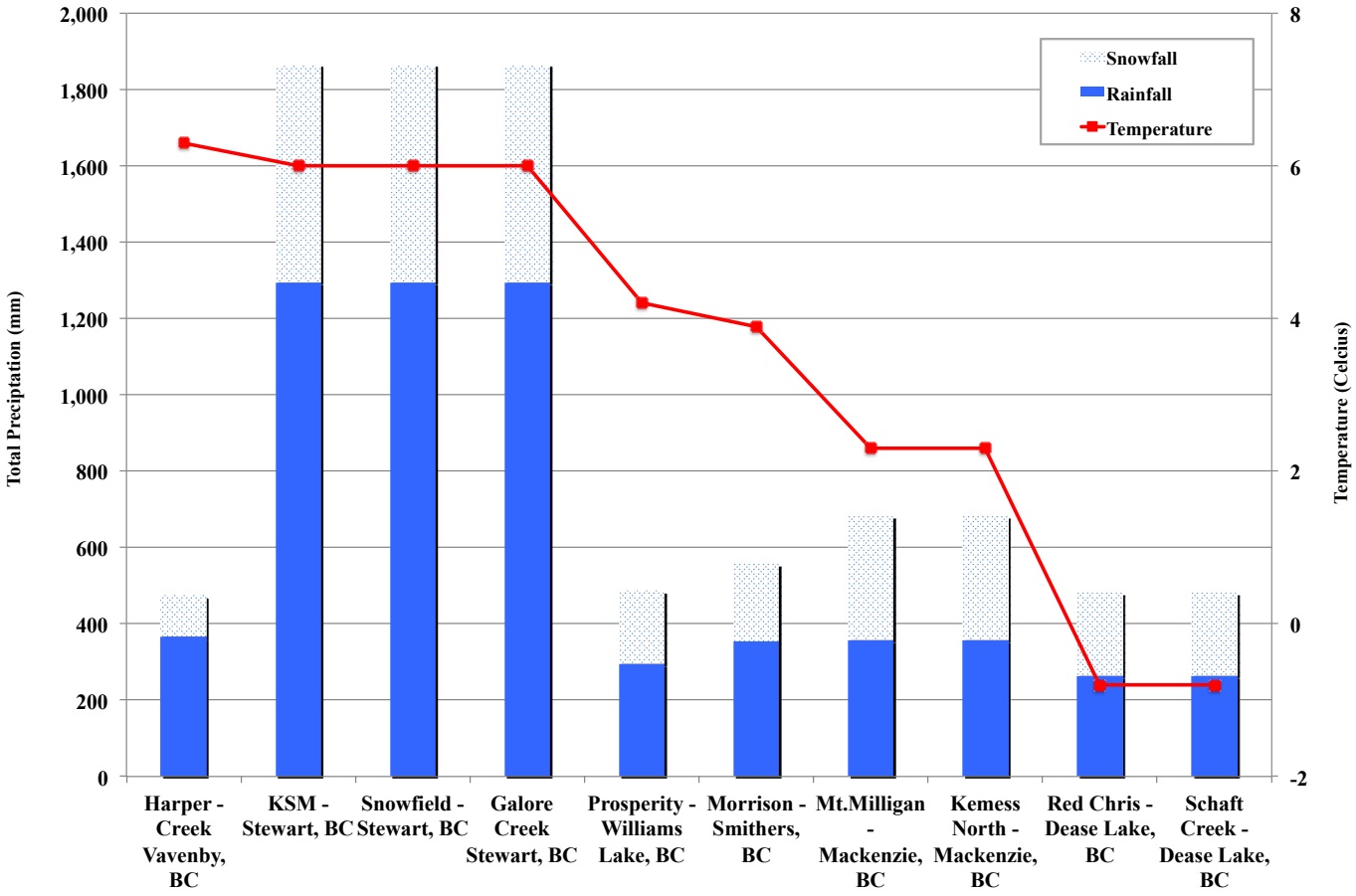
Teck Resources will have their own challenges in regards to the development of the Galore Creek project. They have a very diversified portfolio (e.g., coal, copper, zinc, oil sands), and are known as being "…Canada's largest diversified miner…"; however, they also have C$7B

271 A copy of the press release can be found at: http://www.novagold.com/section.asp?pageid=5414.

in debt (Charles et al 2012, 65). Withstanding that they do generate significant free cash flow and have "…a large capital investment plan…", they are likely to face costs overruns with the Galore Creek project at their current cost estimate (Charles et al 2012, 65). Once committed to developing the project, cost overruns combined with a low commodity price could strain the company's financial situation.

When looking at Chart 25, the KSM and the Snowfield projects have similar levels of yearly precipitation. Galore Creek project's trouble was partly a result of underestimating the costs of water handling on site, as per yearly precipitation levels (NovaGold 2011). Labor shortages are another variable. How will KSM and Snowfield projects fair with estimating water handling costs in their feasibility studies? As per Chart 18, KSM may have conservatively estimated their capital costs (using a capex intensity of $15,000/t); however, Snowfield could well have under-estimated their capital costs. However, using a capex intensity of $25,000/t as per discussion in Section 7.2, both projects have seemingly underestimated their capital costs.

Chart 25 Average temperatures and precipitation of porphyry projects studied, 2000



Source: Generated from Climate 2000

A8.3 Case study: Detour Gold Corporation, Northeastern Ontario, Canada

Detour Lake Gold mine is located 185 km by road northeast of Cochrane, Ontario. Formerly an underground Placer Dome Inc. mine, Detour was redeveloped as a large open-pit operation with a 21.5-year mine life (Detour 2010). The first gold pour occurred on February 18, 2013 and the expected average gold production is +650,000 ounces a year (Detour 2013). The Detour mine exemplifies how a small cap, single asset company persevered to build a billion dollar project, despite incurring great difficulty in its last year trying to arrange financing for working capital and construction. Table 18 highlights the financial events from January 2012 to August 09, 2013.[272]

Table 18 Highlights Detour Gold's financings from January 2012 to August 2013

Date	Event
02/06/2012	Detour Gold Closes Caterpillar Financing
02/14/2012	Detour Gold Completes C$277 Million Bought Deal Financing
07/16/2012	Detour Gold Successfully Completes Consent Solicitation
12/11/2012	Detour Gold Completes C$106 Million Bought Deal Offering
01/14/2013	Detour Gold Closes Secured Letter of Credit Facility
03/12/2013	Detour Gold Closes $135 Million Senior Secured Credit Facility
06/11/2013	Detour Gold Completes C$176 Million Bought Deal Offering

Source: Generated from Detour Gold's Press Releases 2012-2013[273]

The total capital cost to build the Detour mine was projected to be C$1.45B. By April 2012, the company had spent C$821M on construction and still needed C$629M to complete the project.[274] In order to finance the project, the company completed three additional share offerings, issuing a total of 30 million additional common shares at prices between $28 and $8.75 dollars (see Table 18).[275] This increase in the number of outstanding shares, along with additional unexpected financings caused a 'down round',[276] a financing below the price of the previous financing. The company's share

272 Detour Gold's Press Releases 2012-2013 found at http://www.detourgold.com/investors-centre/News-Releases/default.aspx.

273 Detour Gold's Press Releases 2012-2013 found at http://www.detourgold.com/investors-centre/News-Releases/default.aspx.

274 Detour Gold's Press Releases 2012-2013 found at http://www.detourgold.com/investors-centre/News-Releases/default.aspx.

275 Detour Gold's Press Releases 2012-2013 found at http://www.detourgold.com/investors-centre/News-Releases/default.aspx.

276 Down round: "A round of financing where investors purchase stock from a company at a lower valuation than the valuation placed upon the company by earlier investors". Definition found at: http://www.investopedia.com/terms/d/downround.asp.

price dropped by 332 percent in just over 18 months (see Figure 15). As a result, the overall size of the company in regards to market capitalization has dropped, despite the increase in outstanding shares on the market. In August 2013, a share was only worth $8.75.



Figure 15 Stock chart August 2012 to August 2013 (Detour 2013)

Investors had lost confidence in the company and its management to deliver both operationally and financially. Failure to properly account for construction risk (cost escalation), commissioning delays (increased working capital requirements) resulted in shareholders selling their stock, therefore suppressing the share price. A single asset company in the midst of commissioning must have sufficient access to financial resources to weather any unexpected commissioning issues. Unlike an intermediate producer with several operating and cash flowing assets, each able to contribute capital to an asset not performing as planned, a single asset company has limited fallback options.

Once a project is in the construction phase, there is no turning back. Companies with small market caps are vulnerable to cost overruns, but most importantly are vulnerable to risk in regards to their ability to raise the additional capital needed to support the building of their projects, especially in tough economic times (e.g., recessions). Another example of a failed single asset construction project includes Colossus Minerals Inc. Serra Pelada project in Brazil.[277] Colossus went into receivership and is currently being restructured.

277 For additional information on Colossus Minerals Inc. Serra Pelada project see the following website: http://www.colossusminerals.com.

A8.4 Case study: The moratorium on uranium exploration and mining in BC

During the late 1970's, the Committee for a Clean Kettle Valley (CCKV) was developed by a small group of citizens from Boundary, BC. They had concerns over uranium exploration (e.g., the Blizzard claim) and mining near the Kettle River and Valley. The group organized small demonstrations and protests, which spurred on interest from the media who then turned this local event into a province wide affair (Boundary Alliance 2011).

In September 1979, the Bennett government announced that a Royal Commission on Uranium mining would be set up to determine the feasibility of uranium mining in BC (Boundary Alliance 2011). However, by 1980 Bennett had announced that there would be a seven-year moratorium on uranium exploration and mining in BC, despite the Royal Commission not finishing or finalizing their findings (Straight 2006). In fact, the Commission was only halfway through their two million dollar study when Bennett pulled the plug (Boundary Alliance 2011). Bennett is cited in The Leader-Post (February 28, 1980) as stating, "It is clearly the mood of the people of this province that they are not prepared to live with uranium mining. What resources B.C. has will be left in the ground until the people are prepared to do otherwise"(p.1). This decision ended a potential $300 million deal to supply uranium from the Noreen Energy Resource s Ltd.'s (now Boss Power Corp.) Blizzard project to Korea (The Leader-Post 1980). Why did Bennett place the moratorium on uranium mining prior to the completion of the Royal Commission report? Why didn't he at least ask for an interim report prior to making his decision? Was the decision made because of the following reasons?

1. Bennett was getting opposition from the NDP, as well as from within the Social Credit party itself (The Leader-Post 1980, 1);
2. The Social Credit had "…only a five-seat majority in the legislature"(The Montreal Gazette 1979, 12);
3. A poll was taken that demonstrated that a large portion of BC residents opposed uranium mining in BC (Mushka 1980, A17);
4. BC has an "abundance of natural gas, coal and undeveloped hydroelectric power" and doesn't need nuclear energy (Lyon 1980, 2);
5. BC's uranium deposits would be only 1.2 percent of the Canadian supply and are located in the Okanagan Valley (The Leader-Post 1980, 1); and,

6. Forty-six uranium deposits were located within the ridings of four of Social Credit cabinet ministers (i.e., Bill Bennett, Jim Hewitt (Agriculture Minister), Pat Jordan (Tourism Minister) and Rafe Mair (Health Minister) (The Leader-Post 1980, 1; Mushka 1980, A17).

Whatever the reason, Bennett's decision potentially added strength to the anti-nuclear struggle in Saskatchewan; a province predominated by the NDP (Mushka 1980). Also, Bennett's decision in regards to uranium mining is one of many examples of how the government has control over the industry and its future.

In 1987, the CCKV re-emerged as a result of the lapse in the uranium moratorium, as well as the high price of uranium (Boundary Alliance 2011). "There isn't a place on the periodic table with worse public relations than uranium. Yet with uranium's rising value in a hot commodities market, investors are reliving a '70s-era enthusiasm for heavy metal"(Straight October 19, 2006). In 2008, the Liberal government under Gordon Campbell banned development of all uranium deposits in BC.[278] In response, Boss Power Corp. who acquired the mineral rights for the Blizzard project filed a lawsuit against the Province of BC. In 2011, the government settled with Boss Power Corp. for $30 million.

A8.5 Case study: Clayoquot Sound, BC

The Clayoquot Sound case demonstrates the challenges in regards to land use conflict in BC, as well as the use of a new model of consensus-based negotiations.[279] During the 1980's and 1990's, the need to log old growth trees as a result of innovation and changing technology (clear-cut logging) by logging companies increased conflict over land use in BC (Wilson 1998; McGillivary 2011). In the early 1980's, MacMillian Blodel received approval to clear-cut Meares Island in the Clayoquot Sound, despite Nuu-chah-nulth First Nations Comprehensive Claim in 1981. As a result, conflict[280] (known as the 'War of the Woods' (1986-1991)) occurred between McMillian Blodel, First Nations and environmentalists (e.g., Friends of Clayoquot Sound (FOCS)) (Wilson 1998). In 1983, Clayoquot Sound became an

278 For additional information on the uranium ban and Boss Power settlement see the following website: http://www.cbc.ca/news/canada/british-columbia/uranium-mine-lawsuit-costs-b-c-30m-1.1074501.

279 A timeline for the Clayoqout Sound conflict can be found at the following website: http://web.uvic.ca/clayoquot/files/appedix/Appendix2.pdf.

280 Conflict that included protests, blockades, rallies and tree spiking.

international event, as celebrities such as Robert Kennedy Jr., as well as the rock band Midnight Oil from Australia took part in the public protest against logging in the Sound (McGillivray 2011). Over 800 protesters were arrested (the highest number of arrests in Canada) which further exacerbated a negative forestry image which now reached a worldwide audience (McGillivray 2011). The reputational capital of the industry was tarnished as international propaganda requested the boycott of BC forest products. In 1985, the BC Supreme Court granted an injunction halting logging in the area (Jepsen et al 2005).[281]

The Clayoquot Sound conflict brought to light provincial government legitimacy, the importance of acquiring party votes for the next provincial election and the need to utilize alternate forms of governance (e.g., consensus-based negotiation) to sort out conflict (Hoberg 1996). The NDP government made two attempts to implement consensus-based negotiations during the Clayoquot Sound conflict; however, they both ultimately failed. The first attempt was in 1989 when the Clayoquot Sound Sustainable Development Task Force (CSSDTF) was developed. The task force's goal was to determine "…long-term sustainable development plans, as well as short-term decisions about whether logging should occur while the talks were going on"(Hoberg 1996, 275). As a result, conflict ensued amongst participants (labor, industry, environmentalists, First Nations and government) over issues in regards to short-term logging in the Sound. The second attempt was the establishment of the Clayoquot Sound Sustainable Development Steering Committee (CSSDSC) in 1990. This attempt was at the recommendation of the CSSDTF, whose goal was to develop a long-term land-use plan, as well as resolve the issues around short-term logging in Clayoquot Sound (Hoberg 1996). In the end, the committee decided to open up logging in the Bulson Creek area, which upset environmentalists, as they believed the watershed hadn't been previously logged and should be preserved (Hoberg 1996). In fact, part of the watershed had been previously logged. In 1991, the environmentalists resigned from the steering committee.

In 1992, the NDP formed the Commission on Resources and the Environment (CORE), whose mandate was to move away from individual conflicts to a more "…comprehensive

281 *MacMillian Bloedel Ltd. v. Mullen; Martin v. R. in Right of B.C.* (1985), 61 B.C.L.R. 145, (B.C.C.A).

land use planning process…" for the entire province (Hoberg 1996, 276).[282] In the end, the CORE steering committee parted ways, as they too couldn't reach a consensus in regards to land use in BC. [283] Later that year, a coalition formed from this committee who supported Option 5; however, they too couldn't reach consensus. Ultimately, the government had to make the decision, which environmentalist's felt didn't protect enough land from resource development. This resulted in the infamous roadblocks, whereby 800 plus activists were arrested throughout the summer in 1993. As a result, the NDP government appointed a Scientific Panel for Sustainable Forest Practices in Clayoquot Sound, which recommended stringent and more costly forest practices (Hoberg 1996). In the end, the NDP accepted the panel's recommendations. The NDP also implemented a Protected Areas Strategy, which ultimately designated 12 percent of BC as protected wilderness areas (McGillivary 2011). In 1996, with all the controversy and blockades MacMillian Blodel (MB) refused to log in Clayoquot Sound. Hayter (2000) writes,

> Moreover, by refusing to log in Clayoquot Sound, MB brought attention to the fact that it lost money in the region ($7 million in TFL 44 in 1996) and thus redirected environmental opposition towards local interest groups. Indeed, its logging moratorium directly linked environmentalism with job loss, community decline, and violations of Aboriginal rights, and encouraged the provincial government to be more critical of environmentalism as an authoritarian model, especially since it had received zero stumpage from the area in the preceding two years. MB's strategy may be paying off (p.338).

In 1994, the Nuu-chah-nulth and the province entered into a precedent setting interim measurement agreement (e.g., a co-management agreement) in regards to Clayoquot Sound. Hoberg (1996) writes,

> The agreement was considered a shrewd political manoeuvre by government to split up alliance between environmentalists and First Nations peoples in the region – by coming to terms with First Nations people, the industry undercut environmentalists who claimed to be representing the interests of aboriginals (Hoberg 1996, 278).

By 1999, a joint venture corporation (Iisaak Forest Resources) emerged between the Nuu-chah-nulth (who own 51 percent) and McMillian Bloedel (49 percent), which includes a logging plan that had consensus from environmental groups including Greenpeace (Hayter

282 The Clayoquot Sound process has already taken two years and the NDP didn't want the CORE process to be stalled in regards to issues in regards to Clayoqout Sound; therefore, the NDP exempted the Sound conflict from the CORE process (Hoberg 1996).

283 A timeline for the Clayoqout Sound conflict can be found at: http://web.uvic.ca/clayoquot/files/appedix/Appendix2.pdf.

2000; McGillivary 2011). This agreement removes McMillian Blodel from direct conflict with environmentalists. Ultimately, the Nuu-chah-nulth wanted to resume logging in the Clayoquot area and in order to do so, they needed the conflict to end (Hayter 2000).

This case study illustrates the following:

- Global-local cleavages emerged with a close link between environmentalism and First Nations (Hayter 2000) (see Chapter 12);
- Questions in regards to the government's legitimacy emerged, as long-standing conflicts amongst stakeholders over natural resources were unresolved; therefore, the government had to use an alternate form of governance (e.g., consensus-based negotiation) to try sort out the conflicts. "The 'paradigm shift' of public values related to the environment has radically modified that ability of politicians to carry on with methods that no longer achieve politically workable solutions"(Drushka et al 1993, 38).
- The new way of governance set precedence on future resource extraction in BC (Hoberg 1996); and,
- Provincial governments need to acquire party votes for the next provincial election, therefore must conform to public values and beliefs (Hoberg 1996).

A8.6 Case study: The Mt. Milligan copper-gold porphyry project

The Mt. Milligan is a copper-gold porphyry deposit that is located 155 kilometers northwest of Prince George in north-central BC. Communities within commuting distance from the project site are Mackenzie and Fort St. James. There is rail, as well as access to low-cost hydroelectric power; however, the construction of a 92 km power line was required (WARDROP 2009a).

The Mt. Milligan project contains "…proven and probable reserves of 482 million tonnes (Mt) averaging 0.20% Cu and 0.39 grams per tonne (g/t) Au totaling 2.1 billion pounds (lb) copper and 6.0 million ounces (oz) gold"(WARDROP 2009a, 1-1). The project is an open-pit design with a waste/ore ratio of 0.84/1. It has a 60,000 t/d flotation mill and a projected 22.1-year mine life (WARDROP 2009a, 1-1). "Copper production will average 81 million pounds per year…" and will "…account for 49% of the revenue", whereas "…gold production will average 194,500 ounces per year…" and will account for 51% of the revenue (WARDROP 2009a, 1-1).

The earliest recorded exploration history on the ore deposit was in 1937; however, it wasn't

until 1987 when Lincoln Resources Inc. completed a diamond drilling program that discovered significant copper-gold mineralization (WARDROP 2009a). By the late 1980's, Lincoln had amalgamated with Continental Gold Corp. and later joined a joint venture with BP Resources (WARDROP 2009a).

In 1991, Placer Dome Inc. acquired the project from the joint venture, continued with an exploration drill program and completed a pre-feasibility study. In 1993, Place Dome received both provincial and federal approvals; however, due to low commodity prices Placer Dome choose not to exercise these approvals, hence allowed them to expire in 2003. In 2006, Barrick Gold Corporation purchased Placer Dome and sold most of its Canadian assets to Goldcorp Inc. Goldcorp then sold the Mt. Milligan project to Atlas Cromwell Ltd., who then changed their name to Terrane Metals Corp (WARDROP 2009a). Terrane "…initiated a comprehensive work program upon which the 2009 [Technical Feasibility] Study is based"(WARDROP 2009a).

On October 20th, 2010, Thompson Creek Metals Inc. acquired Terrane Metals Corp, Mt. Milligan project for C$700M (Cash and Shares).[284] Table 19 summarizes the events, details and transactions Thompson Creek entered into to finance the Mt. Milligan project through construction and into production. Using a project discount rate of 5 percent, a $2.00 Cu and $1000 Au price, as well as a 34 percent tax adjustment, the Post-tax NPV converted to US dollars is US$872M. In conjunction with the original acquisition, RoyalGold provided Thompson Creek with monies (US$311.5M) to complete the purchase in exchange for 25 percent of Mt Milligan's gold production at the lower of market or US$400 per ounce up to 550,000 ounces. After RoyalGold received 550,000 ounces, the price paid by RoyalGold would increase to US$450 per ounce. In May 2011, Thompson Creek recognized the need for US$350M more capital. In order to finance a portion of this anticipated overrun, Thompson Creek once again approached RoyalGold and received another US$270M with an amendment to the original terms.[285] The amendment to the October 2010 financing resulted in RoyalGold acquiring the rights to 40 percent of all gold production at lower of market or

284 October 20, 2010 Press Release found at the following link: http://www.thompsoncreekmetals.com/i/pdf/nr/nr-20101020b.pdf.

285 May 6, 2011 Press Release found at the following link: http://www.thompsoncreekmetals.com/i/pdf/nr/nr-20110506.pdf.

US$450 per ounce or market, with no cap on the ounces delivered.[286] In August 2012, Thompson Creek once again needed additional funds due to further capital cost increases. They received for the third time monies in the amount of US$200M from RoyalGold in exchange for the rights to 52.25 percent of all gold production at the lower of the market price or US$435 per ounce with no cap.[287] The final deal structure resulted in RoyalGold receiving 52.5 percent of all the gold Mt. Milligan would produce over the life of mine for US$450 per ounce.[288] In simple terms, this has the effect of lowering the realizable gold price on the Mt Milligan project from US$1250/oz down to US$830/oz. On March 13, 2013, the Mt. Milligan project's total capital cost increased from US$1.265B to U$1.53B.

If the capital cost of the project increased by over 50 percent from the feasibility study, what might that imply for the operating costs? Are the feasibility studies operating costs still valid? What does this all mean in regards to the financial and economic success of the Mt. Milligan project? Success is based on perceived value and Thompson Creek will value the project based on the cash flow it generates. However, if they originally knew that an investment of US$1.53B would generate a US$448.66M in return after 22.1 years would the same construction decision have been made? This is difficult to judge. However, Mt Milligan is currently operational and in the commissioning phase. New operating numbers are not yet available. Overall, Thompson Creek's stock price has dropped significantly from $15 in 2010 to $2.25 in 2014 reflective of not only the Mt Milligan cost overruns, but also the collapse of the molybdenum price (Stockwatch 2014b).

Table 20 illustrates the sensitivity of the Mt. Milligan project to the gold price. This exercise is predicated on that the costs are what the feasibility and press releases state they are and the discount rate of 5 percent is suitable. After taking into consideration all the project's revenue and costs based on the feasibility study at US$3.00/lb copper, the $NPV_{5\%}$ at US$1000/oz Au projects an $NPV_{5\%}$ of US$449M, whereas at a long term price of US$1250/oz Au the project aims to generate an $NPV_{5\%}$ of US$1,280M (see Table 21). Although the project would appear economic at both metal price scenarios, the rise in the gold price well above that used in the

286 May 6, 2011 Press Release found at the following website: http://www.thompsoncreekmetals.com/i/pdf/nr/nr-20110506.pdf.

287 August 9, 2012 Press Release found at the following website: http://www.thompsoncreekmetals.com/i/pdf/nr/nr-20120809.pdf.

288 August 9, 2012 Press Release found at the following website: http://www.thompsoncreekmetals.com/i/pdf/nr/nr-20120809.pdf.

feasibility study provides a significant economic benefit to Thompson Creek. Of course, this is all predicated on the operating costs being inline with the feasibility study, which may be overly optimistic in light of the recent cost inflation facing miners across the world (see Section 6.3).

Table 19 Thompson Creek's events and details on the Mt. Milligan project

Press Release Date	Event	Details	Values US$M
20-Oct-10[289]	Closes Terrane Acquisition	Cash and Shares	($700)
20-Oct-10	Project $NPV_{5\%}$, $2.00 $1000Au	Post-Tax NPV converted to USD (0.85 US/Cnd)	$872
	Adjusted for Taxes	Assume 34%	34%
20-Oct-10	RoyalGold Transaction	Concurrent with Acquisition	$312
		25% of gold at lesser of $400 or market up to 550k ounces, price goes to $450 thereafter	
06-May-11[290]	Updated Capex	Capex Increases from C$915 to C$1.265B, an increase of $350M	($350)
15-Dec-11[291]	Amended Royal Gold Deal	RGL acquires rights to 40% of ALL gold production at lower of market or $450 per ounce with no cap	$270
09-Aug-12[292]	Amended Royal Gold Deal	RGL acquires rights to 52.25% of ALL gold production at lower of market or $435 per ounce with no cap	$200
25-Feb-13[293]	Mt Milligan Capex Increase	Increased from $1.265 to 1.53B	($265)

Source: WARDROP 2009a; Mt. Milligan Press Releases[27-31]

289 October 20, 2010 Press Release found at the following website: http://www.thompsoncreekmetals.com/i/pdf/nr/nr-20101020b.pdf.

290 May 6, 2011 Press Release found at the following website: http://www.thompsoncreekmetals.com/i/pdf/nr/nr-20110506.pdf.

291 December 15, 2011 Press Release found at the following website: http://www.thompsoncreekmetals.com/i/pdf/nr/nr-20111215.pdf.

292 August 9, 2012 Press Release found at the following website: http://www.thompsoncreekmetals.com/i/pdf/nr/nr-20120809.pdf.

293 February 25, 2013 Press Release found at the following website: http://www.thompsoncreekmetals.com/i/pdf/nr/nr-20130224.pdf.

Table 20 NPV analysis of the Mt. Milligan project

Details	AU US$1000/oz	AU US$1250/oz
Original Project $NPV_{5\%}$ Post Tax	$1,685	$2,134
Adjust Gold Price for Royal Gold Transaction- 52.25% at $435/oz	$1,155[294]	$1,737
Adjust from 0.85 to 1 USD Exchange	$982	$1,476
Less the Acquisition Costs	($700)	($700)
New Sub-Total NPV after Acquisition Costs	$282	$776
Adjust for Royal Gold Inflow of $781.5M	$782	$782
Sub-Total NPV after all Royal Gold Inflows (2 amendments)	$1,064	$1,558
Adjust for Capital Cost Increases	($615)	($615)
Project $NPV_{5\%\ after\ adjustments}$	$449	$943
Project Capex	$1,530.00	$1,530.00
NPV/Capex	0.29	0.62

Source: Mt. Milligan Press Releases[27-31]

Table 21 Mt. Milligan post-tax matrix[295]

Gold Price (US$/oz)	Copper Price (US$/lb)			
	$1.50	**$2.00**	**$2.50**	**$3.00**
$700	736.2	1,308.40	1,874.70	2,510.20
	156.3	484.1	796.6	11,146.90
	7.40%	11.90%	15.60%	19.30%
	6.5	4.9	3.9	3.1
$800	1,052.90	1,613.40	2,184.20	2,821.20
	350	665.4	978.9	1326.4
	10.20%	14.20%	17.70%	21.20%
	5.3	4.2	3.4	2.8
$900	1,353.00	1,922.00	2,494.60	3,132.50
	531.6	845.7	1,159.00	1505.8
	12.70%	16.40%	19.70%	23.10%
	4.6	3.7	3	2.5
$1,000	1,660.20	2,232.00	2,805.60	3,444.10
	712.6	1,026.00	1338.4	1,685.30
	15.10%	18.50%	21.60%	24.90%
	4	3.3	2.8	2.2

Legend
NPV 0% (million $)
NPV 5% (million $)
IRR (%)
Payback (Years)

Source: Modified from WARDROP 2009a, 24-6

294 The C$1,146.9 at $700/oz gold is adjusted for $704.8/oz gold price, which extrapolates to NPV 5% post tax of $1155M (see Figure 12).

295 The Mt. Milligan Post-Tax Matrix (Figure 12) is in Canadian Dollars and was converted to USD (0.85 US/Cnd) in line with the exchange rate at the time. See Legend in Figure 12.

A8.7 Case study: The Northeast Coal project

Headlined in the Star-Phoenix (September 15, 1981) newspaper Bill Bennett is quoted as stating, "British Columbia must sell its coal now because it is back in fashion and the price is right"(p.D9). In 1981, the Bennett government completed a $2.5 billion coal deal between BC mining companies and Japan. From this deal, the government was to receive royalties worth $193 million (The Leader-Post 1981). At a celebration luncheon Bennett is quoted as stating,

> Let us never again, in a false sense of nationalism, forget that the people we have to earn our prosperity from are other countries, and that it may be shortsighted to impose quotas and restrictions and to deny the international nature that is Canada's role if we are to be successful in the future (Comparelli 1984, A1).

The North East Coal project entailed the development of roads, hydro and a railway, as well as other services that cost approximately $483 million (The Leader Post 1981). The project involved the following infrastructure development:

- A rail spur line to transport coal from the mine site (Tumbler Ridge, BC) to Prince George. From Prince George it will be transported to Prince Rupert via CNR. The spur line alone will cost $315 million (The Leader-Post 1981);
- A road to the port at Ridley Island, Prince Rupert; and,
- A new town, Tumbler Ridge.

These costs were to be paid by surcharges obtained from coal sales, as well as from freight charges (The Leader-Post 1981). Despite underestimating the costs of building the project, Northeast coal faced significant challenges as a result of the looming economic recession. The decline in Japanese steel production reduced the demand for BC coal and this resulted in BC coal mines having to accept Japanese requests for lower coal prices (Tierney 1984). The Northeast coal project also put older coal mines throughout the province under considerable strain as they could not compete and had to cut production (Tierney 1984). As a result, 3000 miners were laid-off from coal projects located in southeastern BC (Tierney 1984). Northeast coal had to receive government subsidies, thereby further exacerbating the situation at southeastern coal mines. The overall lessons learned from the Northeast Coal project was that if you are deciding to develop and build a project during a boom commodity cycle, you are already to late! Also, don't sell all your coal into one market, as you are vulnerable to re-negotiations especially during economic downturns.

A8.8 Case study: Foreign relations, constitutional issues and the west coast salmon fishery, 1996-1999

There has been a long history of disputes between the US, Canada and BC. As a result, British Columbians have felt that they cannot trust the federal government to protect the province's interests, especially in regards to who has the primary right over BC resources (e.g., fish, forests, etc.) (Black 1996). Nickerson (1997) writes, "There's a growing sense in Canada that the US is getting a little cock-a-hoop with all this 'only-superpower-on-the-planet' business. That America is becoming pushier and harder than ever to get along with"(p.A1).

Resources such as fish and water that cross international boundaries prove to be extremely complicated in regards to international treaty negotiations, hence amplifying disputes over resource ownership. A great example is the Columbia River dam and hydroelectric project proposed in the 1960's. BC, Ottawa, Washington and the US had to agree on three fundamental factors in regards to the project in order for it to get built: (1) an international agreement on financing; (2) protection of the Fraser River salmon runs; and, (3) provision of the "…downstream flood control and power generation"(Black 1996, 38). They reached an agreement and the project was built in 1984.

A more recent example is the "Alaskan-Canada Salmon War of 1997". It illustrates the contentious relationship between the Canadian governments, as well as the increasing complexity of international resource sharing due to environmentalism and conservation (Kiffer 2007). Salt-water fish stocks in Canada fall under federal authority, whereas in the US they fall under state jurisdiction, until international treaties bring them into the federal domain (Black 1996). Since the 1970's, the US and Canada have been in negotiation over the right to access salmon stocks on the West Coast. It wasn't until 1985 that they agreed on and signed the Pacific Salmon Treaty. However, it was the inability of both countries to agree to the yearly revisions or annexes to that Treaty which ultimately landed them in dispute (Kiffer 2007). In 1997, BC started legal action in regards to violations of overfishing against the US that contravened the Treaty. In The Record (September 9, 1997) newspaper, Glen Clark is quoted as stating, "This is about using the American court system to force the states to

comply with the principles of the salmon treaty, conserve the resource and force them to get back to the table and negotiate a treaty in both our interests"(p. D11).

During the 1990's, the salmon runs along the West Coast were in significant decline, thereby adding pressure to the US and Canadian fishing industries. The industry at the time was worth $300 million annually to Canada (PBS 1997). The absence of fish in Canadian waters and abundance of fish in US's District 4 (near Prince of Wales Island) fishery led Canada to accuse the US of overfishing (Kiffer 2007). British Columbians felt that due to the limited numbers in the returning salmon stock annually, conservation methods should be administered. The US didn't initially agree. So, "a full fledged salmon war" broke out on the West Coast (Kiffer 2007).

As a result of the conflict, the Canadian Department of Fisheries and Oceans increased patrols and enforcement along the coast and consequently four American fishing vessels were briefly detained in Port Hardy, BC. The province also pursued its goal by closing an American military weapons testing range on Vancouver Island (Crary 1997). A legal dispute ensued between Ottawa and BC, as both claimed territorial authority over the US military base. As a result, Clark accused Ottawa of appeasing to the US, thereby "…antagoniz[ing] both big business and environmentalists"(Crary 1997, 20A). Since the Treaty of Washington (1871), BC has complained that Ottawa and Washington, D.C. would "…sacrifice their fishery interests for much wider game of international disputes"(Black 1996, 39). Clark is quoted as stating, "This is a question of a foreign power that has been stealing from British Columbia, robbing fish from British Columbia, using our court system to go after Canadian systems"(PBS 1997). Clark also threatened to cut-off provincial spending on the restoration of fish habitat, as this is the only responsibility BC has (as per the Constitution) in regards to the federal fishery (Ablett 1998). Overall, BC accused Ottawa of mismanagement in regards to the industry, as well as the "…spinelessness in dealings with Alaska and First Nation's fishers"(Black 1996, 39). In 1990, First Nations won the 'Aboriginal right to a fishery' as per the *R. v. Sparrow* case[296], which further complicated the West Coast salmon fishery (see Section 14.4.1).

296 R. v. Sparrow (1990) I S.C.R. 1075.

In 1997, the Pacific Salmon Commission brought fishermen from each side to the bargaining table; however, the Canadians called off the talks on May 9, 1997. Dennis M. Brown, adviser to the Premier of BC is quoted as stating, "It is not our intention to sabotage the talks, but the frustration level in Canada has finally snapped"(DePalma 1997). As a result, over a 100 Canadian fishing vessels formed a blockade around the US Ferry at Prince Rupert for three days. In response, the state of Alaska sued the fishermen in order to recover $2.8 million in costs incurred while the ferry was blocked from service (Kiffer 2007; DePalma 1997). The state also suspended ferry service to Prince Rupert for five months. It wasn't until June 3, 1999 that a landmark salmon fishing agreement was signed between the US and Canada. Ablett (1998) believes that it was Clark's in-your-face-style of politics that ultimately hurt fish talks and treaty negotiations, thereby stalling the process and costing millions. Some speculate that Clark intentionally escalated the salmon dispute in order to deviate the voter's away from the numerous problems the NDP were facing, such as scandals, deficits, court cases, conflict with business, as well as environmentalists (Crary 1997).

A8.9 Case study: The Flathead Valley

In 2005, the Campbell government presented legislation to outlaw any mining, as well as oil and gas development in the Flathead Valley. What spurred this on was the US government's purchase of 80 percent of oil and gas leases (issued in the 1980s) for the US side of the Flathead Valley (Testa 2010). After five years of negotiations, an agreement was reached, whereby both BC and Montana, U.S. would prohibit mining, as well as oil and gas activities in the Flathead basin (Testa 2010). Ultimately, the Flathead watershed was designated a UNESCO world heritage site and both governments had been lobbying for sometime to have the Flathead Valley included in that designation (Testa 2010). The East MLA for the Kootenay area Bill Bennett supported this action, as the protection agreement will allow for historic uses such as fishing and trapping in the area (Brethour 2010). Environmental groups such as the Sierra Club want the area designated as a National Park, thereby restricting the areas use (Brethour 2010). Bennett is quoted as stating on a radio talk show that,

> …environmentalists "have a tendency" to lie, exaggerate and use fear tactics to attain their goals, and are often motivated by self-aggrandizement. It becomes a matter of ego, some times for these folks, to chalk up another big win on the map of British

> Columbia, and say, there, we've set aside another area that we can claim for our own (Brethour 2010).

It is estimated that BC loss $7 billion dollars in possible revenues and had to pay out approximately $17 million to two private mining companies (e.g., Max Resource Corp., and Cline Mining Corporation) for investments they have already made in exploring the Flathead area (Testa 2010). Two conservation groups (e.g., Nature Conservancy Canada and The Nature Conservancy in the US) donated $9.4 million to help protect the land around the Glacier National Park, which is adjacent to the Flathead Valley basin (Bloomberg Business Week 2011). The mining industry felt that this decision would hurt the BC economy, investor confidence and that the province seems to have bowed down to political interests in the US once again (The Seattle Times 2010). However, Campbell was given an award (Flathead Lakers 2010 Stewardship Award) for his efforts to preserve the Flathead area (Testa 2010). Former US. Governor Brian Schweitzer states, "[Campbell] came to power with a coalition that was pro-mining, pro-logging…He was negotiating against his own base"(Testa 2010). Schweitzer comments highlight on Campbell's change of heart and how it ultimately contributed to his demise as leader of the BC Liberal party.

A8.10 Case study: The BC Jobs Plan and the New Prosperity copper-gold mine project

There are public concerns that one of the eight mines projected in the BC Jobs Plan to be built by 2015 would be the New Prosperity project. The project will cost $1.1 billion and would provide 550 direct jobs and 1280 indirect jobs over a 20-year mine life (The National Post October 20, 2011). The project will guarantee $4.3 billion in federal tax revenue, $5.5 billion in provincial tax revenue and increase BC's real GDP by $11 billion (Steuck 2011). The provincial government in 2010 approved the project. Since then the project has undergone two CEAA panel reviews, which found that the project would have "…'significant adverse environmental' effects on water quality, fish and fish habitat…"(Moore 2013). Chief Bev Sellars, (2011) is cited as stating,

> This is a dead project and this attempt to bring it back to life is the mining version of the Frankenstein story. This proposal was a monster that untied First Nations across BC and Canada in opposition, together with environmentalist, outfitters, ranchers, fishers and others (CNW Newswire February 10, 2011).

Xeni Gwet'in Chief Marilyn Baptiste states,

> We are now in the 21st Century and need meaningful reform and relationship-building to create certainty in mining and generate jobs. We do not need to resurrect a project that caused nothing but conflict and is rooted in a destructive 19th Century grab-all approach to mining (CNW Newswire February 10, 2011).

The panel had to reassess the project again despite two rejections because it was discovered that the panel used the wrong information in determining the project's seepage rates (which they felt would eventually contaminate Fish Lake) for the project (Moore 2013). Prior to their decision, the Mines Minister Bill Bennett went to Ottawa to urge the Federal government to approve the project. In response, Chief Roger William of the Xeni Gwet'in First Nations states,

> We hope the ministers have our constitutional rights in mind, because this project clearly violates our aboriginal rights, as well as our human rights as indigenous peoples. If the federal government approves this mine, it could be on the hook for millions to the company in compensation when the courts strike down those approvals. Two federal environmental reviews have now found that the mine proposed by Taseko Mines Ltd. would infringe on aboriginal rights to hunt and trap – an impact that cannot be mitigated (Moore 2013).

The project has provided much tension and controversy throughout industry and First Nation communities in BC. When is "enough is enough"? TNG Tribal Chief Joe Alphonse states,

> Enough is enough. It is time to put an end to this company wasting everybody's time and resources on a project that most now realize is a dead issue. This latest move by the company leaves little doubt now that its plan all along was to get the cheapest project it could. Now it is desperately trying to find any way it can to revive this project regardless of its impact on the environment and our First Nations rights (CNW Newswire February 24, 2011).

In 2011, the estimated cost of this process for the company is approximately $100 million (CNW Newswire February 24, 2011). Baptiste states, "Too much money and effort has already been wasted on this mine. It has been rejected in the strongest of terms and it is time to move on"(CNW Newswire February 24, 2011). The project has left a 'negative' legacy in regards to the industry's image, as well as on the relationships between the industry, the First Nations, the electorate and governments. Out of all the projects proposed in BC, this project is the most politically controversial, despite seemingly the most economically feasible project out of all the projects studied.

APPENDIX 9 566 Worldwide copper projects, 2013

Asset Name	Company Name	Asset Name	Company Name
Cayeli	Inmet Mining Corp	McFauld's Lake	Cliffs Chromite Far North Inc (Cliffs Natura
Centinela	Antofagasta plc	McIlvenna Bay	Foran Mining Corp
Central Region	Kazakhmys plc	Mengapur	Monument Mining Ltd
Cerro Colorado	BHP Billiton Group	Mesaba	Teck Resources Ltd
Cerro de Maimon	Perilya Ltd	Miami	Freeport-McMoRan Copper and Gold Inc
Cerro Negro	Codelco	Michilla/Lince	Antofagasta plc
Chah Firooz	National Iranian Copper Industries	Michiquillay	Anglo American plc
Chambishi West	China Nonferrous Mining Corp Ltd	Miheevskoye	Russian Copper Co Ltd
Chapi	Cia Minera Milpo SA	Milpillas	Industrias Penoles Sa De Cv
Chapra-Siddeshwar	Hindustan Copper Ltd	Mina Ministro Hales	Codelco
Chaucha	Southern Copper Corp	Mine Canyon	Phoenix Copper Corp
Chehel Kureh	National Iranian Copper Industries	Minera Valle Central	Amerigo Resources Ltd
Chengmenshan	Jiangxi Copper Co Ltd	Mineral Hill	KBL Mining Ltd
Cheowa-Neningombe	Zambezi Resources Ltd	Mineral Park	Mercator Minerals Ltd
Chibuluma South	Jinchuan Group Ltd	Ming	Rambler Metals and Mining plc
Chimborazo	BHP Billiton Group	Miniere Musoshi Kinsenda	Jinchuan Group Ltd
Chingola Tailings	Berkeley Mineral Resources plc	Minto	Capstone Mining Corp
Chloride	Sierra Resource Group Inc	Mirador	Tongling NonFerrous Metals Group Holdings Co
Chongwe	Zambezi Resources Ltd	Mirdita	Tirex Resources Ltd
Chu Chua	Newport Exploration Ltd	Mkushi	Ratel Group Ltd
Chuquicamata	Codelco	Mokambo South	Elephant Copper Ltd
Clermont	Antofagasta Minerals SA (Antofagasta plc)	Mollacas	Metminco Ltd
Clinton	Fancamp Exploration Ltd	Montechristo	Q Resources plc
Cloncurry	Washington H Soul Pattinson and Co Ltd	Moonlight	Sandfield Resources Ltd
Cloncurry Copper	Xstrata plc	**Morrison**	**Pacific Booker Minerals Inc**
Cloncurry North	Yunnan Copper Industry Co Ltd	Mount Cannindah	Drummond Gold Ltd

Asset Name	Company Name	Asset Name	Company Name
Cobar	Glencore International AG	Mount Elliott	Ivanhoe Australia Ltd
Cobre Panama	Inmet Mining Corp	Mount Lyell	Sterlite Group
Cockie Creek	Superior Resources Ltd	Mount Polley	Imperial Metals Corp
Collahuasi	Xstrata plc	Mount Remarkable	Syndicated Metals Ltd
Comide	Comide SPRL	Mowana	African Copper plc
Comval	Mining Group Ltd	Mt Fitch JV	Compass Resources Ltd
Conchi	Antofagasta plc	Mt Gordon	Aditya Birla Minerals Ltd
Condestable	Iberian Minerals Corp (Trafigura Beheer)	Mt Gunson	Xstrata plc
Congo Mines and Infrastructure Construction	China Railway Engineering Corp	Mt Margaret	Ascot Resources Ltd
Constancia	HudBay Minerals Inc	Mt Mulcahy	Pegasus Metals Ltd
Contact	International Enexco Ltd	Mt Norma	Queensland Mining Corp Ltd
Cook Lake	Sabina Gold and Silver Corp	Mufulira	Glencore International AG
Copaquire	OZ Minerals Ltd	Mufumbwe	African Consolidated Resources plc
Copper Canyon	NovaGold Resources Inc	Mufunta	Shalina Resources Ltd
Copper Creek	Redhawk Resources Inc	Muji	Unnamed owner
Copper Flat	Themac Resources Group Ltd	Muliashi North	China Nonferrous Mining Corp Ltd
Copper Hill	Golden Cross Resources Ltd	Mumbwa	Blackthorn Resources Ltd
Copper Mountain	Copper Mountain Mining Corp	Mundonguara	Baobab Resources plc
Copperwood	Orvana Minerals Corp	Muratdere	Lodos (Pragma)
Corner Bay	C-Bay Minerals Inc	Murray Brook	Votorantim Metals
Coroccohuayco	Xstrata plc	Mutanda	Glencore International AG
Cotabambas	Panoro Minerals Ltd	Mutooroo	Havilah Resources NL
Cozamin	Capstone Mining Corp	Mutoshi	MMG Ltd
Cristalino	Vale SA	Mwambashi	NFC Africa PLC
Cuatro Hermanos	Virgin Metals Inc	Nakru	Barrick Gold Corp
Curipamba	Salazar Resources Ltd	Namosi	Newcrest Mining Ltd
Damao Qi	Baotou Zhongde Furui Mining Co Ltd	Ndola	Elephant Copper Ltd
Dar Alou	National Iranian Copper Industries	Neves-Corvo	Lundin Mining Corp
Daris	Alara Resources Ltd	New York Canyon	Canyon Copper Corp
Dastakert	Global Metals (ARM) Ltd	Niblack	Heatherdale Resources Ltd

Asset Name	Company Name	Asset Name	Company Name
Deep Glogow	KGHM Polska Miedz SA	Nifty	Aditya Birla Minerals Ltd
Deerni	Zijin Mining Group Co Ltd	Nimu	Tibet Mineral Development Co Ltd
DeGrussa	Sandfire Resources NL	Norpax	Puget Ventures Inc
Dexing Complex	Jiangxi Copper Co Ltd	NorthMet	PolyMet Mining Corp
Deziwa	Gecamines Holdings (Government Of Dr Congo)	Northparkes	Rio Tinto plc
Dibete	Botswana Metals Ltd	Nukudamu	Conto Resources Ltd
Dilala East	Jinchuan Group Ltd	Nussir	Nussir ASA
Diqing	Yunnan Copper Co Ltd	Nymagee	YTC Resources Ltd
Discovery	Hannans Reward Ltd	Ok Property	Prophecy Coal Corp
Dordabis	North River Resources plc	Ok Tedi	PNG Sustainable Development Program Ltd
DOT	DOT Resources Ltd	Olympic Dam	BHP Billiton Group
Dragoon	Southern Silver Exploration Corp	Omitiomire	International Base Metals Ltd
Drmbon	Base Metals CJSC	Onaman	Sage Gold Inc
Duck Creek	Queensland Mining Corp Ltd	Ongombo	Namibian Copper NL
Duck Pond	Teck Resources Ltd	Ootsa	Gold Reach Resources Ltd
Duobaoshan	Zijin Mining Group Co Ltd	Ophion	Discovery Metals Ltd
Dzhusinskoe	Ormet	Oracle Ridge	Oracle Mining Corp
Eagle Eye	Elephant Copper Ltd	Oroyek	Federal Subsurface Resources Agency
Eaglehead	Carmax Mining Corp	Osborne	Ivanhoe Australia Ltd
East Region Operations	Kazakhmys plc	Otjihase	Weatherly International plc
Ecaille C	Gecamines Holdings (Government Of Dr Congo)	Oyama	Volcan Compania Minera SA
Einasleigh	Kagara Ltd	Oyu Tolgoi	Turquoise Hill Resources Ltd
El Arco	Southern Copper Corp	Palabora	Palabora Mining Co Ltd
El Cobre	Westminster Resources Ltd	Palmer	Constantine Metal Resources Ltd
El Espino-Venus	Pucobre	Pampa Escondida	BHP Billiton Group
El Faique	Cia De Minas Buenaventura SA	Parkin	Wallbridge Mining Co Ltd
El Morro	Goldcorp Inc	Pebble	Northern Dynasty Minerals Ltd
El Pachon	Xstrata plc	Pedra Branca	Avanco Resources Ltd
El Pilar	Mercator Minerals Ltd	Perch River	C-Bay Minerals Inc

Asset Name	Company Name	Asset Name	Company Name
El Promontorio	Azure Minerals Ltd	Phonsavan	PanAust Ltd
El Roble	Atico Mining Corp	Phu Kham Copper-Gold	PanAust Ltd
El Soldado	Anglo American plc	Pilares	Southern Copper Corp
El Tesoro	Antofagasta plc	Pinta Verde	BHP Billiton Group
Eloise	FMR Investments Pty Ltd	Pinto Valley Division	BHP Billiton Group
Eloise Exploration Area	Breakaway Resources Ltd	Podolskoye	Ural Mining and Metallurgical Co
Erdenet-Oovo	Russian Technologies Corp	Polo Sur	Antofagasta plc
Escalones	South American Silver Corp	Poplar	Canadian Dehua International Mining Inc
Esperanza	Antofagasta plc	Potter	Millstream Mines Ltd
Etoile	Shalina Resources Ltd	Priorskoe	Russian Copper Co Ltd
Eureka	Bezant Resources plc	Productora	Hot Chili Ltd
Fabie Bay-Magusi	Mag Copper Ltd	Prominent Hill	OZ Minerals Ltd
Filipina-Santa Rosa	Compania Minera Filipinas Spa	Proyecto de Rio Tinto	EMED Mining Public Ltd
Florence	Curis Resources Ltd	Pukaqaqa	Cia Minera Milpo SA
Franke	KGHM International Ltd (KGHM Polska Miedz)	Pulang	Yunnan Copper Industry (Group) Co Ltd
Frieda River	Xstrata plc	Pumpkin Hollow	Nevada Copper Corp
Frontier	Eurasian Natural Resources Corp plc	Punitaqui	Glencore International AG
Fujiawu	Jiangxi Copper Co Ltd	Puquios	Cuprum Resources Corp (Dominion Minerals Cor
Fyre Lake	Pacific Ridge Exploration Ltd	Puthep	PanAust Ltd
Galeno	China Minmetals Corp	Pyhasalmi	Inmet Mining Corp
Galore Creek	**NovaGold Resources Inc**	Pyramid	Antofagasta Minerals SA (Antofagasta plc)
Gameleira	Vale SA	Quartz Circle	Cove Resources Ltd
Getty	Getty Copper Inc	Quebrada Blanca	Teck Resources Ltd
Ghanzi	Cupric Canyon Capital LP	Quechua	Pan Pacific Copper Co Ltd
Gibraltar	Taseko Mines Ltd	Quellaveco	Anglo American plc
GJ/Kinaskan	Teck Resources Ltd	Quinns	Caravel Minerals Ltd
Gnat Pass	Quartz Mountain Resources Ltd	Radomiro Tomic	Codelco
Granduc	Castle Resources Inc	Radwanice-Gaworzyce	KGHM Polska Miedz SA
Grasberg	Freeport-McMoRan Copper and Gold Inc	Rapu Rapu	Philco Resources Ltd
Gray Eagle	Independence	Ray Complex	Asarco Inc

Asset Name	Company Name	Asset Name	Company Name
Great Burnt Lake	Celtic Minerals Ltd	Red Bore	Thundelarra Exploration Ltd
Guelb Moghrein	First Quantum Minerals Ltd	**Red Chris**	**Imperial Metals Corp**
Gunnison	Excelsior Mining Corp	Red Hills	Tosca Mining Corp
Haib	Teck Resources Ltd	Redstone	Copper North Mining Corp
Halilaga	Teck Resources Ltd	Reed Lake	HudBay Minerals Inc
Haquira	First Quantum Minerals Ltd	Rehboth	Jiangxi Bureau of Geological Survey and Mine
Harper Creek	**Yellowhead Mining Inc**	Relincho	Teck Resources Ltd
Hazel Creek	Washington H Soul Pattinson and Co Ltd	Rencoret	Antofagasta plc
Heishan	Jinchuan Group Ltd	Rephidim	Vedanta Resources plc
High Lake	MMG Ltd	Repparfjord	Metallica Mining ASA
Hillside	Rex Minerals Ltd	Resolution	Rio Tinto plc
Hinoba-an	Copper Development Corp	Riikonkoski	TME Resources Inc
Hollandaire	Silver Lake Resources Ltd	Rio Grande	Regulus Resources Inc
Hood River	MMG Ltd	Rio Verde	Avanco Resources Ltd
Horden Lake	El Condor Minerals Inc	Robinson	KGHM International Ltd (KGHM Polska Miedz)
Horseshoe	Horseshoe Metals Ltd	Rock Creek	Revett Minerals Inc
Huckitta	Mithril Resources Ltd	Rocklands Group	CuDECO Ltd
Huckleberry	Imperial Metals Corp	Rondoni	Volcan Compania Minera SA
Hudehe	Xinjiang Nonferrous Metals Co	Rookwood	Fitzroy Resources Ltd
Hushamu	Northisle Copper and Gold Inc	Roseby	Altona Mining Ltd
Ikiztepe-Sarp	Valhalla Resources Ltd	Rosemont	Augusta Resource Corp
Ilgarari	Kumarina Resources Ltd	Rosia Poieni	SC Cupru Min SA Abrud (BayFront Capital)
Inca de Oro	PanAust Ltd	Rosita	Alder Resources Ltd
Indian Copper Complex	Hindustan Copper Ltd	Ruashi-Etoile	Jinchuan Group Ltd
Iron Creek	Independence Resources plc	Ruttan Mine	Trevali Mining Corp
Ivan	Cia Minera Milpo SA	Safford	Freeport-McMoRan Copper and Gold Inc
Jabal Sayid	Barrick Gold Corp	Safyanovskaya-Med	Uralelectromed
Jacobus	Sage Gold Inc	Saindak	China Metallurgical Group Corp

Asset Name	Company Name	Asset Name	Company Name
Jaguari	Mineracao Caraiba SA	Salt River	Thabex Ltd
Jajay	Teck Resources Ltd	Salvador Division	Codelco
Jasperoide	Hochschild Mining plc	San Enrique Monolito	Anglo American plc
Jervois	Kentor Gold Ltd	San Jorge	Coro Mining Corp
Jiama	China Gold International Resources Corp Ltd	Sanchez	Freeport-McMoRan Copper and Gold Inc
Josemaria	NGEx Resources Inc	Santo Domingo	Capstone Mining Corp
Jurong	Tongling NonFerrous Metals Group Holdings Co	**Schaft Creek**	**Copper Fox Metals Inc**
Kabolela	Central African Mining and Exploration Co pl	Scott Lake	Cogitore Resources Inc
Kaiser	Global Mineral Resources Ltd	Sepon Copper	MMG Ltd
Kakanda	Greenock Resources Inc	Serrote da Laje	Aura Minerals Inc
Kalkaroo	Havilah Resources NL	Shaxi	Tongling NonFerrous Metals Group Holdings Co
Kalukundi	Africo Resources Ltd	Sherridon	Halo Resources Ltd
Kalumines	Teal Exploration and Mining Inc	Shinas-Hatta	Mawarid Mining LLC (MB Holding Co LLC)
Kamenushinskoe	Salair Chemicals Combine (Urals Mining)	Shituru	Shanghai Pengxin Mineral Industry Investment
Kamoa	Ivanplats Ltd	Sierra Gorda	KGHM International Ltd (KGHM Polska Miedz)
Kananga	Katanga Mining Ltd	Sierrita	Freeport-McMoRan Copper and Gold Inc
Kangaluwi	Zambezi Resources Ltd	Silver Bell	Asarco Inc
Kanmantoo	Hillgrove Resources Ltd	Simuku	Barrick Gold Corp
Kansuki	Glencore International AG	Snow Lake	Rockcliff Resources Inc
Kaoko	Teck Resources Ltd	Soldiers Cap	Ivanhoe Australia Ltd
Kapulo	Mawson West Ltd	SOMINE	Majescor Resources Inc
Karakartal	Alacer Gold Corp	Sossego	Vale SA
Karchiga	Orsu Metals Corp	Southwest Tintic	Freeport-McMoRan Copper and Gold Inc
KGHM Polska Miedz SA	KGHM Polska Miedz SA	Spence	BHP Billiton Group
Kidd Creek	Xstrata plc	Spruce Point	Rockcliff Resources Inc
Kilembe	Kilembe Mines Ltd (Government of Ug	Squaw Peak	MinQuest Inc

Asset Name	Company Name	Asset Name	Company Name
Kingking	St Augustine Gold and Copper Ltd	Stavely	New Challenge Resources Ltd
Kinsevere	MMG Ltd	Stepnoye	Siberian Polymetals
Kisanfu	Freeport-McMoRan Copper and Gold Inc	Suaqui Verde	Inmet Mining Corp
Klirou	EMED Mining Public Ltd	Sulphur Springs	Venturex Resources Ltd
Kolwezi	Camrose Resources Ltd (Eurasian Natural Resources Corp plc)	Sun	Andover Mining Corp
Kombat	Kombat Copper Inc	Surda	India Resources Ltd
Konkola	Vedanta Resources plc	Sustut	AuRico Gold Inc
Koonenberry	Ausmon Resources Ltd	Taca Taca	Lumina Copper Corp
Kopalinskoye	Data Mining LLC	Taft Complex	National Iranian Copper Industries
Kounrad Dump	Central Asia Metals plc	Tarutinskoye	State Government
Kuiseb	Nimrod Metals Ltd (Takoradi)	Taseko	Granite Creek Gold Ltd
Kultuminskoye	Norilsk Nickel (MMC)	Taysan	Crazy Horse Resources Inc
Kumarina	Horseshoe Metals Ltd	Teghout	Armenian Copper Programme CJSC
Kutcho Creek	Capstone Mining Corp	Telegrafo Sur	Antofagasta plc
Kwanika	Serengeti Resources Inc	Temora	Straits Resources Ltd
Kylylahti	Altona Mining Ltd	Tennant Creek Mineral Field	Emmerson Resources Ltd
La Americana	Codelco	Thaduna	Ventnor Resources Ltd
La Balsa	Bell Copper Corp	Tharsis	Ormonde Mining plc
La Caridad	Southern Copper Corp	Thierry	Cadillac Ventures Inc
La Corona de Cobre	Global Hunter Corp	Tillex	Metals Creek Resources Corp
La Granja	Rio Tinto plc	Tintaya	Xstrata plc
La Quebrada	Mandalay Resources Corp	Tomichi	Burnstone Ventures Inc
La Verde	Catalyst Copper Corp	Tominskoye	Russian Copper Co Ltd
La Verde Grande	Yale Resources Ltd	Toromocho	Aluminum Corp of China Ltd
La Zarza	Ormonde Mining plc	Tottenham	Mincor Resources NL
Lac la Hache	GWR Resources Inc	Touro	Private interest
Lady Annie	CST Mining Group Ltd	Trapiche	Cia De Minas Buenaventura SA
Langdou	Zijin Mining Group Co Ltd	Trident	First Quantum Minerals Ltd
Lannitang	Zijin Mining Group Co Ltd	Tsagaan Suvarga	Mongolyn Alt Corp
Lara	Redzone Resources Ltd	Tschudi	Weatherly International plc

Asset Name	Company Name	Asset Name	Company Name
Las Bambas	Xstrata plc	Twin Buttes	Freeport-McMoRan Copper and Gold Inc
Las Cruces	Inmet Mining Corp	Twin Metals	Duluth Metals Ltd
Las Luces	Grupo Minero Las Cenizas	Uchaly	Uchaly Mining
Laver	Boliden AB	Udokanskoe	Metalloinvest
Legacy	Murray Brook Minerals Inc	Van Dyke	Copper Fox Metals Inc
Leichhardt	Cape Lambert Resources Ltd	Veseneye-Aralchinskoye	Russian Copper Co Ltd
Lessard	Landore Resources Ltd	Victoria	KGHM International Ltd (KGHM Polska Miedz)
Levack Complex	KGHM International Ltd (KGHM Polska Miedz)	Villebon	St Georges Platinum and Base Metals Ltd
Levoberezhnoye	Ural Mining and Metallurgical Co	Viscaria	Avalon Minerals Ltd
Liberty-Indee	Venturex Resources Ltd	Vista Hermosa	QRS Capital Corp
Lipena	New World Resource Corp	Vizcachitas	Los Andes Copper Ltd
Little Deer Pond	Thundermin Resources Inc	Volkovskoe	Ural Mining and Metallurgical Co
Llahuin	Lundin Mining Corp	West Ansil	Xstrata plc
Llano	Antofagasta plc	West Kenya JV	African Barrick Gold plc
Lomas Bayas	Xstrata plc	West Wall	Xstrata plc
Lone Mountain	Copper One Inc	Wetar	Finders Resources Ltd
Longjiangting	Zijin Mining Group Co Ltd	Whim Creek	Venturex Resources Ltd
Lookout Hill	Turquoise Hill Resources Ltd	White Range	Queensland Mining Corp Ltd
Los Azules	McEwen Mining Inc	Wim	Murgor Resources Inc
Los Bronces	Anglo American plc	Witvlei	North River Resources plc
Los Calatos	Metminco Ltd	Woodjam	Gold Fields Ltd
Los Chancas	Southern Copper Corp	WQ(SB)	China Daye Non-Ferrous Metals Mining Ltd
Los Helados	NGEx Resources Inc	Wunugetushan	China National Gold Group Corp
Los Humos	Industrias Penoles Sa De Cv	Wushan	Jiangxi Copper Co Ltd
Los Pelambres	Antofagasta plc	Xiaohongshan	Shandong Tianye Group
Los Sulfatos	Anglo American plc	Xietongmen	Jinchuan Group Ltd
Louise Lake	Victory Mountain Ventures Ltd	Xingjiang	China Daye Non-Ferrous Metals Mining

Asset Name	Company Name	Asset Name	Company Name
Luanshya	Ng'wena Mining Resources Ltd	Yandera	Marengo Mining Ltd
Luanshya Division	China Nonferrous Mining Corp Ltd	Yanxi	China Daye Non-Ferrous Metals Mining Ltd
Lubambe	Vale SA	Yeoval	Zodiac Resources Pty Ltd
Luchun Da Ma Jian Mountain	Brockman Mining Ltd	Yerington/MacArthur	Quaterra Resources Inc
Lugokanskoye	Norilsk Nickel (MMC)	Yinshan	Jiangxi Copper Co Ltd
Luisha South	African Metals Corp	Yongping	Jiangxi Copper Co Ltd
Lumwana	Barrick Gold Corp	Yubileinoye	Ooo Bashkirskaya Med
Lupoto	Tiger Resources Ltd	Yubileinoye	Federal Subsurface Resources Agency
Lustdust	Alpha Gold Corp	Yuinmery	Empire Resources Ltd
Luz del Cobre	Red Tiger Mining Inc	Yuma King	Vane Minerals plc
MacLeod Lake	Western Troy Capital Resources Inc	Zafranal	AQM Copper Inc
Magistral	Cia Minera Milpo SA	Zaldivar	Barrick Gold Corp
Maitland	Kagara Ltd	Zangezur	Cronimet
Mankayan	Gold Fields Ltd	Zhezkazgan Complex	Kazakhmys plc
Mantos Blancos	Anglo American plc	Zijinshan Copper	Zijin Mining Group Co Ltd
Mantoverde	Anglo American plc	**Kemess North**	**AuRico Gold Inc**
Marcona	Minsur SA	**KSM**	**Seabridge Gold Inc**
Maria	Minera Frisco SAB de CV	**Mount Milligan**	**Thompson Creek Metals Co Inc**
Maroochydore	Aditya Birla Minerals Ltd	**New Prosperity**	**Taseko Mines Ltd**
Marshall Lake	White Tiger Mining Corp	**Snowfield**	**Newhawk Gold Mines Ltd (Silver Standard)**
Maroochydore	Aditya Birla Minerals Ltd	**Tulsequah Chief**	**Chieftain Metals Inc**
Marshall Lake	White Tiger Mining Corp		
Masjed Daqi	National Iranian Copper Industries		

Source: MEG 2013

*The BC projects studied are highlighted in bold.

APPENDIX 10 434 Worldwide copper mines, 2012

Asset Name	Company Name	Asset Name	Company Name
Aguas Tenidas	Iberian Minerals Corp	Kidd	Xstrata AG
Aitik	Boliden	Kinsevere Minesite Project	China Minmetals Nonferrous
Al Amar	Maaden	Kinsevere Minesite Project	Minmetals
Al Masane Project	Arabian American Develop	Kipoi Minesite	Gecamines
Al Masane Project	Private & Other	Kipoi Minesite	Tiger Resources
Aljustrel	MTO SGPS SA	Kinsevere Minesite Project	China Minmetals Nonferrous
Alumbrera	Goldcorp	Koktaus	Russian Copper Company
Alumbrera	Xstrata AG	Konkola Minesite	Vedanta Resources
Alumbrera	Yamana Gold	Konkola Minesite	ZCCM
Andacollo Minesite	ENAMI	Konkola North Project	African Rainbow Minerals
Andacollo Minesite	Teck	Konkola North Project	Vale
Andaychagua	Minera Volcan	Konkola North Project	ZCCM
Andaychagua	Trafigura	La Caridad Minesite	Minera Mexico
Andina Minesite	Codelco	La Caridad Minesite	Southern Copper (ex SPCC)
Angas	Terramin	La Cascada SxEw	Haldeman Mining Company
Antamina	BHP Billiton	La Ronde	Agnico-Eagle Mines
Antamina	Mitsubishi Corp	Lady Annie	CST Mining Group
Antamina	Teck	Lala	Chalco
Antamina	Xstrata AG	Lala	Private & Other
Ashele	Xinjiang	Lala	Yunnan Copper
Ashele	Xinjiang Geology Bureau	Lala	Yunnan Industrial Invest
Ashele	Xinjiang Nonferrous Metals	Lalor Lake Project	HudBay Minerals
Ashele	Zijin Mining	Langlois	Nyrstar
Assarel	Assarel-Invest JSCo	Las Cruces SxEw	Inmet Mining
Assarel	Private & Other	Lomas Bayas SxEw	Xstrata AG
Atacama Kozan (El Bronce)	Inversiones Errazuriz	Los Bronces Minesite	Anglo American plc
Atacama Kozan (El Bronce)	Nittetsu Mining	Los Bronces Minesite	Codelco
Atacocha	Minera Atacocha	Los Bronces Minesite	Mitsubishi Corp
Atacocha	Votorantim	Los Bronces Minesite	Mitsui & Co
Atlas	Atlas Consolidated Mining	Los Pelambres	Antofagasta plc
Austria Duvaz	Austria Duvaz	Los Pelambres	Marubeni
Bagdad Minesite	F-McM Copper & Gold	Los Pelambres	Mitsubishi Corp

Asset Name	Company Name	Asset Name	Company Name
Balkhash	Kazakhmys	Los Pelambres	Mitsubishi Materials
Baluba	China Non-Ferrous Metals	Los Pelambres	Mitsui & Co
Baluba	ZCCM	Koktaus	Russian Copper Company
Batu Hijau	Furukawa	Konkola Minesite	Vedanta Resources
Batu Hijau	Mitsubishi Materials	Los Pelambres	Nippon Mining and Metals
Batu Hijau	Newmont Mining	Luita Minesite	ENRC
Batu Hijau	Private & Other	Luita Minesite	Gecamines
Batu Hijau	PT Multi Daerah Bersaing	Lumwana	Barrick Gold Corp
Batu Hijau	PT Pukuafu Indah	Mahr Tunnel	Minera Volcan
Batu Hijau	Pusat Investasi Pemerintah	Mahr Tunnel	Trafigura
Batu Hijau	Sumitomo Corp	Manto Verde SxEw	Anglo American plc
Batu Hijau	Sumitomo Metal Mining	Mantos Blancos Minesite	Anglo American plc
Bingham Canyon Minesite	Rio Tinto	Mantos de la Luna SxEw	Minera Mantos de la Luna
Bisha Project	Nevsun Resources Ltd	Mengya Project	Huludao Zinc Co
Bisha Project	Private & Other	Michilla Minesite	Antofagasta plc
Bismark	Industrias Penoles	Michilla Minesite	Private & Other
Black Mountain	Black Mountain	Miduk	National Iranian Copper
Black Mountain	Exxaro Resources	Milpillas SxEw	Industrias Penoles
Black Mountain	Vedanta Resources	Milpo	Milpo
Boddington Expansion Proj	Newmont Mining	Milpo	Votorantim
Boliden Mill	Boliden	Mineral Park Minesite	Mercator Minerals
Bolivar Dia Bras	Sierra Metals	Ministro Mina Hales (MMH)	Codelco
Boseto Project	Discovery Metals	Minto	Capstone Gold Corp
Bracemac McLeod	Donner Metals	Mission	Grupo Mexico
Bracemac McLeod	Xstrata AG	Montana Tunnels Restart	Eastern Resources
Brunswick	Xstrata AG	Morenci Minesite	F-McM Copper & Gold
Butte Minesite	Montana Resources	Morenci Minesite	Sumitomo Corp
Cadia Hill	Newcrest Mining	Morenci Minesite	Sumitomo Metal Mining
Campo Morado	Nyrstar	Morococha	Pan American Silver Corp
Cananea Minesite	Minera Mexico	Morococha	Private & Other
Cananea Minesite	Southern Copper (ex SPCC)	Mount Gordon Minesite	Birla Copper
Canatuan	TVI Pacific	Mount Isa Cu section	Xstrata AG
Candelaria	F-McM Cu & Gold	Mount Lyell	Sterlite Industries

Asset Name	Company Name	Asset Name	Company Name
Candelaria	Sumitomo Corp	Mount Polley	Imperial Metals
Candelaria	Sumitomo Metal Mining	Mowana	African Copper
Carlota SxEw	KGHM Polska Miedz	Mowana	Sicovam
Casapalca (Americana)	Compania Minera Pomatarea	Mowana	Zambia Copper Investments
Casapalca (Americana)	Grupo Gubbins	Mufulira	First Quantum Minerals
Casapalca (Americana)	Private & Other	Mufulira	Glencore
Caserones Minesite Proj	Mitsui Mining & Smelting	Mufulira	ZCCM
Caserones Minesite Proj	Nippon Mining and Metals	Muliashi SxEw Project	China Non-Ferrous Metals
Catalina Huanca	Trafigura	Muliashi SxEw Project	Sicovam
Cayeli	Inmet Mining	Muliashi SxEw Project	Zambia Copper Investments
Caylloma	Fortuna Silver Mines Inc	Mutanda	Glencore
Cerro Colorado SxEw	BHP Billiton	Mutanda	Groupe Bazano
Cerro Corona	Gold Fields Ltd	Myra Falls	Nyrstar
Cerro Corona	Private & Other	Nchanga Minesite	Vedanta Resources
Cerro Lindo	Milpo	Nchanga Minesite	ZCCM
Cerro Lindo	Votorantim	Neves Corvo	Lundin Mining Corporation
Cerro Verde Minesite	Buenaventura	New Afton Project	New Gold Inc.
Cerro Verde Minesite	Cerro Verde	Nifty Minesite	Birla Copper
Cerro Verde Minesite	F-McM Copper & Gold	Nkana	First Quantum Minerals
Cerro Verde Minesite	Sumitomo Corp	Nkana	Glencore
Cerro Verde Minesite	Sumitomo Metal Mining	Nkana	ZCCM
Chambishi Minesite	China Non-Ferrous Metals	Norilsk	RAO Norilsk
Chambishi Minesite	Private & Other	Northparkes	Rio Tinto
Chambishi Minesite	ZCCM	Northparkes	Sumitomo Corp
Changba (Baiyin)	China CITIC Group	Northparkes	Sumitomo Metal Mining
Changba (Baiyin)	CITIC Guoan Group	Ojos del Salado	F-McM Copper & Gold
Changba (Baiyin)	Gansu Provisional Asset	Ojos del Salado	Sumitomo Corp
Changba (Baiyin)	Gansu Provisional Economic	Ojos del Salado	Sumitomo Metal Mining
Chapada	Yamana Gold	Ok Tedi	Government of PNG
Charcas	MEDIMSA	Olympic Dam	BHP Billiton
Charcas	Minera Mexico	Osborne	Ivanhoe Australia
Charcas	Southern Copper (ex SPCC)	Osborne	Rio Tinto

Asset Name	Company Name	Asset Name	Company Name
Chelopech	Dundee Bancorp	Osborne	Turquoise Hill Resources
Chelopech	Dundee Precious Metals	Otjihase	Weatherly International
Chengmenshan Expansion	Jiangxi Copper Corporation	Oyu Tolgoi Project	Mongolian Government
Chibuluma South	Jinchuan	Oyu Tolgoi Project	Rio Tinto
Chibuluma South	ZCCM	Oyu Tolgoi Project	Turquoise Hill Resources
Chino Minesite	F-McM Copper & Gold	Pachapaqui Project	Korea Zinc Group
Chungar	Minera Volcan	Palabora	Anglo American plc
Chungar	Trafigura	Palabora	Palabora
Chuxiong	Chalco	Palabora	Rio Tinto
Chuxiong	Yunnan Copper	Perseverance	Xstrata AG
Chuxiong	Yunnan Industrial Invest	Philex	First Pacific
Cobar - CSA	Glencore	Philex	Philex
Cobriza	The Doe Run Company	Phoenix (BatMtn)	Newmont Mining
Codelco Norte Minesite	Codelco	Phu Kam	Guandong Rising Assets Man
Collahuasi Minesite	Anglo American plc	Phu Kam	Pan Australian Resources
Collahuasi Minesite	Mitsui & Co	Phu Kam	Private & Other
Collahuasi Minesite	Mitsui Mining & Smelting	Piedras Verdes SxEw	Frontera Copper Corp
Collahuasi Minesite	Nippon Mining and Metals	Pinto Valley Minesite	BHP Billiton
Collahuasi Minesite	Xstrata AG	Prominent Hill	OZMinerals Ltd
Colquijirca	Buenaventura	PT Freeport Indonesia	F-McM Copper & Gold
Colquijirca	Grupo Fernadini	PT Freeport Indonesia	Government of Indonesia
Colquijirca	Inversiones Colqujirca SA	PT Freeport Indonesia	Rio Tinto
Colquisiri	Minera Colquisiri	Punta del Cobre Minesite	Punta del Cobre
Condestable	Condestable	Pyhasalmi	Inmet Mining
Condestable	Iberian Minerals Corp	Quebrada Blanca Minesite	ENAMI
Contonga	Nyrstar	Quebrada Blanca Minesite	Pudahuel
Copper Mountain Project	Copper Mountain Mining	Quebrada Blanca Minesite	Teck
Copper Mountain Project	Mitsubishi Materials	Quiruvilca	Southern Peaks Mining
Cozamin	Capstone Gold Corp	Radomiro Tomic SxEw	Codelco

Asset Name	Company Name	Asset Name	Company Name
Cuajone	Private & Other	Raglan	Xstrata AG
Cuajone	Southern Copper (ex SPCC)	Rapu Rapu	KORES
Cyprus Miami Minesite	F-McM Copper & Gold	Rapu Rapu	LG International Corp
Dahongshan	Chalco	Rapu Rapu	Malaysia Smelting Corp
Dahongshan	Yunnan Copper	Raura	Raura
Dahongshan	Yunnan Industrial Invest	Ray Minesite	Grupo Mexico
DeGrussa	Sandfire Resources	Reed Lake	HudBay Minerals
Dexing	Jiangxi Copper Corporation	Reed Lake	VMS Ventures
Didipio Project	Oceana Gold Ltd	Ridder	Glencore
Didipio Project	Private & Other	Ridder	Kazzink
Dikulushi	China Minmetals Nonferrous	Ridgeway	Newcrest Mining
Dikulushi	Gecamines	Robinson (Ely)	KGHM Polska Miedz
Dikulushi	Mawson West	Rosebery	China Minmetals Nonferrous
Dikulushi	Minmetals	Rosebery	Minmetals
Doe Run	The Doe Run Company	Ruashi Etoile Minesite	Gecamines
Dongguashan	Tongling	Ruashi Etoile Minesite	Jinchuan
Dongshenmiao	Gansu Jianxi Industry	Rubtsovsky	UGMK
Dongshenmiao Zijin	Zijin Mining	Sabinas	Industrias Penoles
Duck Pond	Teck	Safford SxEw	F-McM Copper & Gold
Dzhezkazgan	Kazakhmys	Salobo I Project	Vale
El Abra Minesite	Codelco	Salvador Minesite	Codelco
El Abra Minesite	F-McM Copper & Gold	San Francisco	Grupo Frisco
El Monte	Carrizal Mining	San Vicente	Comibol
El Soldado Minesite	Anglo American plc	San Vicente	Pan American Silver Corp
El Soldado Minesite	Codelco	Santa Barbara	MEDIMSA
El Soldado Minesite	Mitsubishi Corp	Santa Barbara	Minera Mexico
El Soldado Minesite	Mitsui & Co	Santa Barbara	Southern Copper (ex SPCC)
El Teniente Minesite	Codelco	Santa Francisca Project	Grupo Frisco
El Tesoro SxEw	Antofagasta plc	Sarcheshmeh	National Iranian Copper
El Tesoro SxEw	Marubeni	Sepon/Khanong SxEw	China Minmetals Nonferrous
Eloise	FMR Investments Pty Ltd	Sepon/Khanong SxEw	Minmetals
Endeavor	Toho Zinc	Shahumyan (Kapan)	Dundee Bancorp
Erdenet	Mongolian Governm	Shahumyan (Kapan)	Dundee Precious

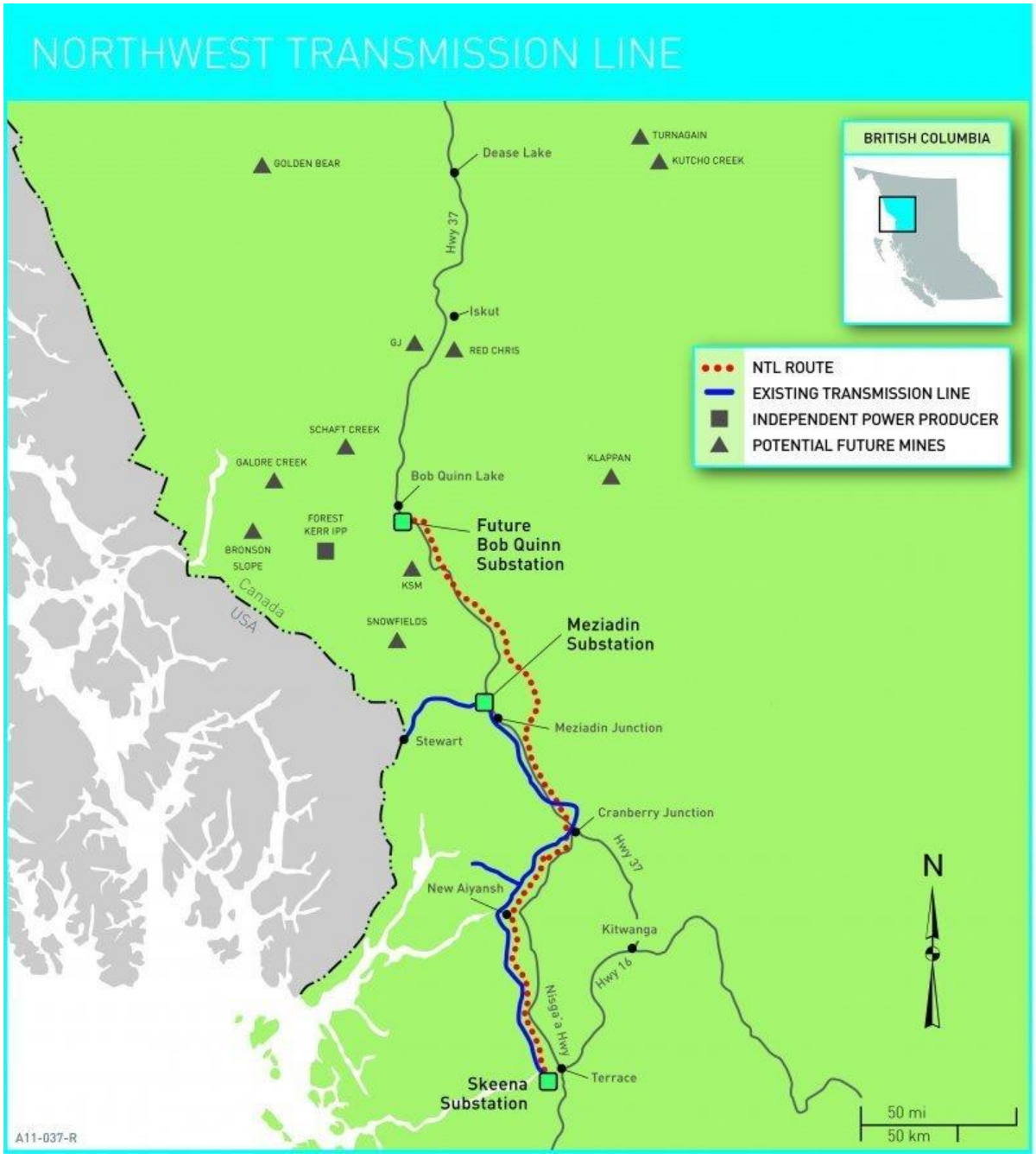
Asset Name	Company Name	Asset Name	Company Name
Erdenet	Russian Government	Shituru SxEw Project	Gecamines
Ernest Henry	Xstrata AG	Shituru SxEw Project	Touch Lucky Investments
Escondida Minesite	BHP Billiton	Sierrita Minesite	F-McM Copper & Gold
Escondida Minesite	IFC	Silver Bell Minesite	Grupo Mexico
Escondida Minesite	Mitsubishi Corp	Silver Bell Minesite	Mitsui Mining & Smelting
Escondida Minesite	Mitsubishi Materials	Sin Quyen	Private & Other
Escondida Minesite	Nippon Mining and Metals	Sossego	Vale
Escondida Minesite	Rio Tinto	Spence SxEw	BHP Billiton
Esperanza Project	Antofagasta plc	Sungun	National Iranian Copper
Esperanza Project	Marubeni	Tati Nickel	RAO Norilsk
Falconbridge Nickel Ops	Xstrata AG	Tati Nickel	Tati Nickel
Franke SxEw	KGHM Polska Miedz	Tayahua (Santiago) Project	Grupo Frisco
Fransisco Madero	Industrias Penoles	Tayahua (Santiago) Project	Minera Tayahua
Frontier Restart	ENRC	Telfer	Newcrest Mining
Frontier Restart	Gecamines	Tenke-Fungurume	F-McM Copper & Gold
Fushun Hongtoushan	CNMC	Tenke-Fungurume	Gecamines
Fuzichong	China State Enterprise	Tenke-Fungurume	Lundin Mining Corporation
Gaby	Codelco	Tintaya Exp (Antapaccay)	Xstrata AG
Gacun	Western Mining Company	Tizapa	Dowa Mining
Garpenberg	Boliden	Tizapa	Industrias Penoles
Gay	UGMK	Tizapa	Sumitomo Corp
Gibraltar Minesite	Dowa Mining	Toquepala Minesite	Southern Copper (ex SPCC)
Gibraltar Minesite	Furukawa	Tres Valles	Vale
Gibraltar Minesite	Nyrstar	Triple Seven	HudBay Minerals
Gibraltar Minesite	SOJITZ	Tritton	Straits Resources
Gibraltar Minesite	Taseko Mines	Tyrone Minesite	F-McM Copper & Gold
Golden Grove	China Minmetals Nonferrous	Uchal	Bashkortostan Republic
Golden Grove	Minmetals	Uchal	Uchaly Gok
Guelb Moghrein	First Quantum Minerals	Uchal	UGMK
Guemassa	Managem	Vale - Sudbury	Vale
Guemassa	Omnium Nord Africain	Valentin	Minera Valentin

Asset Name	Company Name	Asset Name	Company Name
Highland Valley Copper	Highmont Mining	Varvarinskoye	Polymetal
Highland Valley Cu	Inmet Mining	Voisey's Bay	Vale
Highland Valley Copper	Teck	Wenshan Dulong	Hualian Zinc and Indium Co
Hindustan Copper	Hindustan Copper	Wolverine Project	Shaanxi Nonferrous Metals
Huanzala	Mitsui Mining & Smelting	Wunugetushan	China National Gold Group
Huaron	Pan American Silver Corp	Wunugetushan	Jinyu Mining
Huckleberry	Dowa Mining	Wuxian Xiaomaoshan	China State Enterprise
Huckleberry	Furukawa	Xiaoteshan (Baiyin)	China CITIC Group
Huckleberry	Imperial Metals	Xiaoteshan (Baiyin)	CITIC Guoan Group
Huckleberry	Marubeni	Xiaoteshan (Baiyin)	Gansu Provisional Asset
Huckleberry	Mitsubishi Materials	Xiaoteshan (Baiyin)	Gansu Provisional Economic
Huili Tianbaoshan	Huili Zinc Mining	Xixiashan Nanjing	Huludao Zinc Co
Iscaycruz	Glencore	Xixiashan Nanjing	Nanjing Mining
Iscaycruz	Minera Los Quenuales	Xixiashan Nanjing	Sichuan Western Resources
Ivan/Zar/Emperatriz SxEw	Milpo	Yangla	Chalco
Ivan/Zar/Emperatriz SxEw	Votorantim	Yangla	Yunnan Copper
Jaguar	Independence Group	Yangla	Yunnan Industrial Invest
Jaguarari	Caraiba Metais	Yauliyacu	Glencore
Jaguarari	Glencore	Yauliyacu	Minera Los Quenuales
Jianchang Bajiazi	Huludao Zinc Co	Yauricocha	Sierra Metals
Jiawula	Jiawula Mining	Yongping	Jiangxi Copper Corporation
Jinchuan	Jinchuan	Zaldivar SxEw	Barrick Gold Corp
Kamantoo Project	Hillgrove Resources	Zinkgruvan	Lundin Mining Corporation
Kamoto_KOV Minesite	Gecamines	Zyryanovsk	Glencore
Kamoto_KOV Minesite	Glencore	Zyryanovsk	Kazzink
Kamoto_KOV Minesite	Katanga Mining		
Kansanshi	First Quantum Minerals		
Kansanshi	ZCCM		
Karaganda	Kazakhmys		
Kazakhmys East Mines	Kazakhmys		

Asset Name	Company Name	Asset Name	Company Name
Kevitsa	First Quantum Minerals		
KGHM Polish Copper	KGHM Polska Miedz		
Khandiza Project	Almalyk (AGMK)		

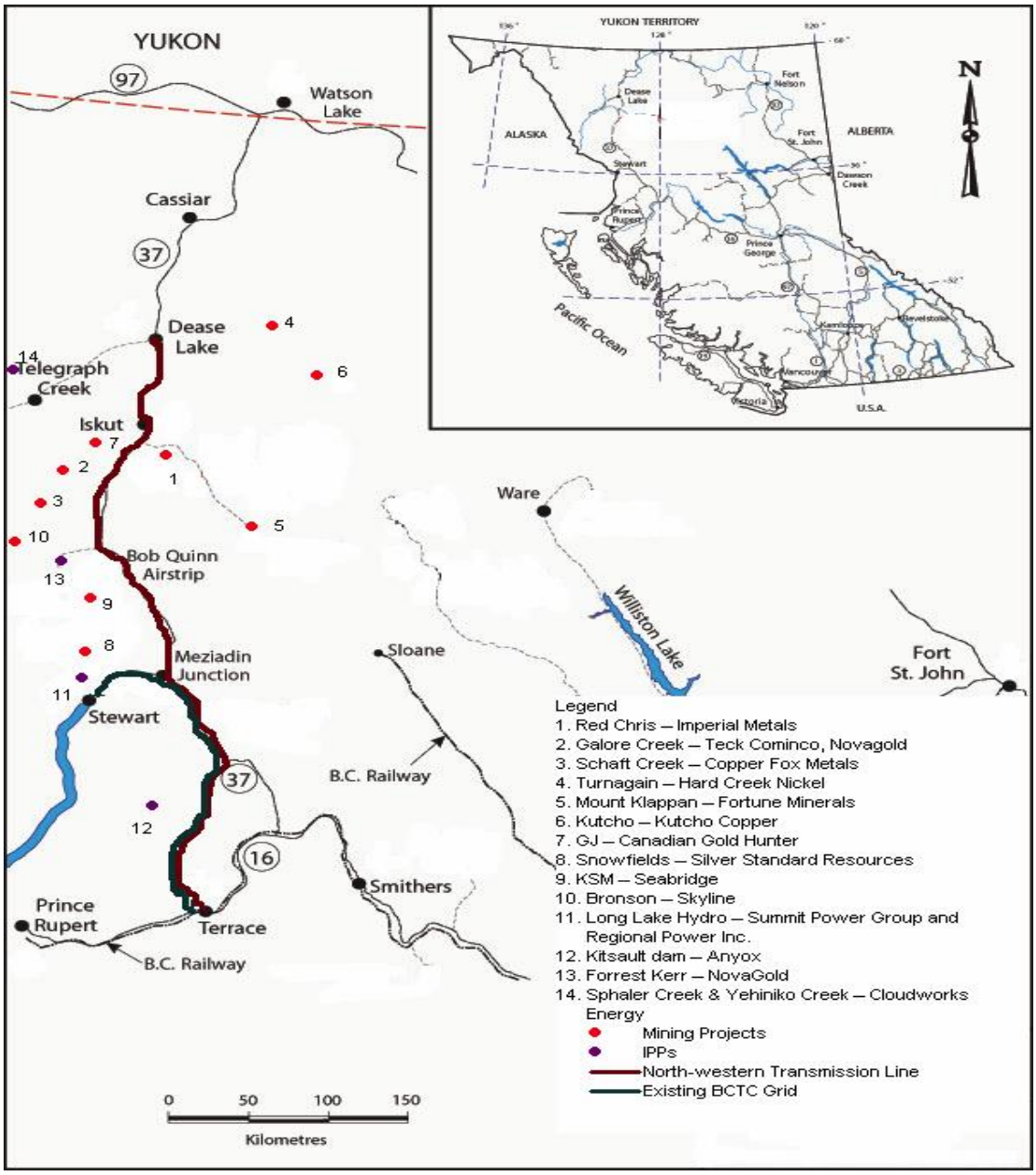
Source: Wood Mackenzie L.M. Group 2012

APPENDIX 11 Maps of Northwest BC showing key mining projects and infrastructure



Source: Northern Development Initiative Trust 2012

Appendix 11 Cont'd Maps of Northwest BC showing key mining projects and infrastructure



Source: North and Derrick 2009, 9; Northern Development Initiative Trust 2012

APPENDIX 12 The media and their influence on the BC mining industry!

A12.1 Introduction

In order to acquire a better understanding of the media's influence on mining in BC, a hegemonic[297] analysis is pursued whereby the political, economic, social and technological influences of dominant groups are studied. More specifically, social, cultural and ideological influences are tracked in regards to the relationship between the media and BC politics in order to draw attention to the systematic behaviors and the resultant consequences of the media on audience interpretation, understanding and their fundamental shifts in values. Overall, the media shapes public consciousness, ultimately having an influence on the political party of the day, but also on the legitimacy of long-term mining policy in BC.

The questions that will be addressed are: What are the challenges for the BC government with respect to the way in which the media performs its job and on the way their output may be assimilated by the audience in the process? How do these challenges affect mining policy in BC? The purpose of exploring these challenges are:

1. To acquire a better understanding on the way in which the BC government (e.g. politicians, parties, activists, etc.) operates in regards to producing exploration and mining policy in the province; and,
2. To understand the impact the media (in particular, discourse) has on policy choices, thereby promoting knowledge on the relations between actors in the making of mining policy in BC.

The advantage to using a political milieu[298] perspective is the abundance of data available, as well as it has a diverse relationship with all the actors studied (Hackett 2001). Also, the synergetic polarization shared by mining and politics in BC is unquestionable.

The term 'media' or 'media of mass communication' consists of newspapers, radio, television and the Internet. The media is also known as 'the press,' and is the medium in which the audience receives their information. Therefore it is an "agent of socialization" (Cohen 1963). This study focuses on print media (e.g. newspapers) rather than broadcast media (e.g. television) for the following reasons:

297 Hegemony - "…by producing ways of thinking and seeing, and especially by subtly eliminating alternative views to reinforce the status quo"(Mayhew1997, 207).

298 Milieu is the setting or landscape in which something occurs (Peet 2001).

1. There is a greater specialization in newspapers on subject matter in comparison with other media (Cohen 1963, 7);
2. There is a greater accessibility and more time-economy with newspapers (Cohen 1963, 8);
3. The newspapers are not so ephemeral as found with broadcast media. For instance, newspapers can be collected, studied and compared with greater ease than other media sources. Also, the real authors can be sought and communicated with (Cohen 1963, 8);
4. Newspaper coverage is more lasting, as there is more opportunity to pick-up the article and reread and examine it (Cohen 1963, 8);
5. Newspapers are more extensive and thorough (Cohen 1963, 8);
6. Television tends to blend together facts, analysis, as well as opinion into a restricted timeslot, whereas newspaper articles' facts, analysis and opinion are broken down and more obvious to the reader (Cohen 1963, 8); and,
7. Newspapers anchor the Canadian Press news agency (Hackett 2001).

The abundance of print media available on politics characterizes the power struggle between the media and political party; thereby emphasizing the possible influence the media has on the mining industry in BC. There is very little data available discussing the latter relationship further validating the importance of this study.

Political parties design mining policy that which is influenced by votes from voters who influence or are influenced by the media. The following section deciphers the media's influence by highlighting on the history of media in BC, as well as the roles of the media. The study will conclude with a discussion on media and mining and the influence the media may have on long-term mining policy in BC.

A12.2 A brief history on media and politics in British Columbia

A12.2.1 Newspapers

The first newspapers in BC were used as the medium in which a particular party or party member used to oppose efforts by other parties or as a medium to start their political careers (Hackett 2001; McLintock and Kristianson 1996). In 1860, Amor de Cosmos (who later became the second premier of BC) founded the British Colonist newspaper to oppose efforts made by Governor Sir James Douglas (McLintock and Kristianson 1996). In 1862, David Williams Higgins started the Victoria Daily Chronicle (a revival newspaper to the British Colonist) and later became the MLA for Esquimalt in 1866 and then speaker of the

legislature from 1890 to 1898 (McLintock and Kristianson 1996). These two papers merged in 1866. In 1894, the Province was founded in Victoria and in 1898 was moved to Vancouver as result of the Gold Rush. In 1912, the Vancouver Sun was started.

Early on it seems the province's newspapers took on a partisan stand (McLintock and Kristianson 1996). According to the McKim's Directory of Canadian Publications (a handbook on Canadian Journalism printed from 1889 to 1941), the Victoria Times and the Vancouver Sun newspapers were deemed as being sympathetic to the Liberals, whereas the Colonist and the Province newspapers were believed to be sympathetic to the Conservatives (as noted in McLintock and Kristianson 1996, 124). These partisan stands were reflected in front-page editorials, whereby reporters spread a particular party's propaganda or by negative press (McLintock and Kristianson 1996). Up to 1972, these editorials where common place as reporters were paid for doing government relations work, as well as writing partisan columns; however, this type of activity was halted under the newly elected NDP – a party without an affiliated newspaper (McLintock and Kristianson 1996).

Up until 1971, no official record was kept on legislative proceedings; however, newspapers acted as principal recorder of legislative activity (McLintock and Kristianson 1996). Today, legislative activities as well as the day-to-day goings-on of BC politicians are recorded by the press gallery. The press gallery "…refers to the self-governing body of journalists accredited to cover legislative sessions, and by extension, to the membership itself"(Reeder 1997, 25). As a collective, the press gallery comprises of 24 full-time and 11 associates who provide informative and 'factual' opinions on the day-to-day goings on in government (McLintock and Kristianson 1996). The members are governed by a constitution and bylaws and have a duly elected executive that governs over the press gallery's members.

A12.2.2 Television and opinion polls

The introduction of the television in the 1950's altered the way public opinion and voter choice were influenced by the media. Political discourse was presented with the "…emphasis on personalities, entertainment value, images rather than issues, broadest denominator (or least objectionable) programming, visually attractive events, and brief speech clips"(Hackett 2001, 384). Television revolutionized the way the "…public learned about political events"

and mobilized single-advocacy groups, as well as centralized political activities (Meisel and Mendelsohn 2001, 171). Advocacy and lobby groups now had mainstream access to voters and government, rather than having to rely on the traditional party connections. Also, issues in regards to environmentalism, feminism, mining, forestry, fisheries and the First Nations became mainstream further influencing audience and political values.

Carty (2001) writes, "Television, with its emphasis on personality, and its structural bias towards gathering a national audience, reinforced the imperatives in the system that were producing new forms of party"(p.29). Party structure changed, whereby a campaign strategist trained in public relations, advertising, marketing and survey research was hired to help choose and shape policy directions (Meisel and Mendelsohn 2001). Television also helped to mobilize attitude and opinion polling, whereby the parties could get systematic and somewhat accurate information on the interests and concerns of their political audience. Opinion polls were not publicized until the 1970's; however, by 1995 polls were deemed as misleading whereby polling statistics (e.g., sample size) had to be publicized along with the data (McLintock and Kristianson 1996).

A12.2.3 Internet: Web

The fragmentation of mass media by the introduction of the Internet in the mid-1990's onwards changed the face of media and politics in BC. The Internet (costing a fraction of other mass media) allowed parties to reach an ever-growing audience (Alexander 2001). Grossman (1995) states, "…the use of increasingly sophisticated two-way digital broadband telecommunications networks, [it is assumed that] members of the public are gaining a seat of their own at the table of political power"(p.4, as cited in Alexander 2001, 461).

The Reform and the NDP were the first parties to set-up their own websites (Alexander 2001). According to Alexander (2001), the Internet provided the following incentives to parties:

1. Improve intra-party communication;
2. Collect data and information about voters;
3. Employ online polls to gauge citizen sentiment on policy issues;
4. Ambush an opponent;
5. Recruit and engage volunteers quickly and effectively;

6. Engage citizens in virtual town hall meetings;
7. Respond to fast-breaking issues or criticisms immediately; and,
8. Offer local, regional and national perspectives on political and policy issues (p.463).

Overall, electronic politics (e-politics) became the new way parties communicated and miscommunicated with audiences. In some ways, the Internet gave the parties/politicians a way to reclaim some 'power' back by bypassing the media; however, it also created its own challenges for politicians (Alexander 2001). For instance, it's a medium that contains vast volumes of data (with conflicting opinions and statistics) that can lead to confusion, anger and frustration, thereby negating the importance of ideas, opinions and statistics (Alexander 2001). Overall, the Internet opened up a dialogue between electorate and politician that traditionally once wasn't there.

A12.3 The role of the media

As highlighted throughout history, the primary roles of the media are as follows:

1. Role of a recorder, servant and active participant.
    a. A representative of the public
    b. A critic of the government
    c. Advocate of policy
    d. Policy maker
2. Role as an informer and educator.
    a. Provide factual information to the public so they can make their own judgments about issues.
3. Role as interpreter.
    a. Implies judgment on significant events (Cohen 1963, 17-53).

These are the primary roles of the media; however, there are things to consider about these roles when trying to understand the fundamental shifts in audience values in regards to BC politics and mining.

A12.3.1 Objectivity: A dilemma

How does the press present their information without it being manipulated for personal or policy ends? Cohen (1963) writes,

> The preference for objective reporting is as deep and as real on the reporter's side of the printing press as on the reader's side; it is the base line from which the correspondent's discussion and analysis of news tend to start, even though they rarely end there (p.51).

Writing the truth has its challenges, as truthful narrations tend to be usually from verbatim recordings (e.g., legislative assembly). The mere selecting of news is an editorial judgment, thereby negating any objectivity; however, aiming for unbiased news is the closest to objectivity the reporter will be able to obtain throughout their career (Cohen 1963; McLintock and Kristianson 1996).

A12.3.2 Cynicism: Is the media an instrument for government?

Election campaign coverage occurs for 28 days every four to five years (McLintock and Kristianson 1996). Reporters ride on the bus with the politicians and report on all the same stories involving the tour and the campaigning politician. During the tour, speeches become repetitive and choreographed schedules negate the reporters' ability to meet and interview community members for their opinions (McLintock and Kristianson 1996). As a result, reporter cynicism emerges whereby they feel they are being 'used' as the medium to air the party's message, as well as to broadcast scandals on the opposition (McLintock and Kristianson 1996). This affects their objectivity, thereby having an overall effect on the audience's opinion on the politician, policies and party.

A12.3.3 Media: Agent of socialization!

The media are "map-makers" who have a significant impact on our everyday lives (Cohen 1963, 121). This impact is no better illustrated than by the media's influence on BC's political system. For example, the media changed the face of BC politics by being important "agents of political socialization"(Hackett 2001, 381). Hackett (2001) writes,

> In a very general sense, some media (notable television) are important agents of political socialization, contributing to the long-term process started in childhood by which people acquire politically relevant values, orientations and knowledge…News does not simply "reflect" reality: the mere necessity of selecting some events to cover while ignoring others – and choosing language and frameworks in which to describe these events – makes such a goal impossible. By directing audience attention towards some aspects of reality and away from others, the news media help to define reality for their audiences and to structure the public's perception of the political world"(p.381).

A12.3.4 Priming: The name of the game!

'Media priming' is just one technique used to draw the attention of the audience towards an intended subject. Hackett (2001) writes, "…the media can influence the very standards by which voters judge governments, political leaders, policies, parties and candidates…"(p.382). For instance, the media tends to focus on to political scandals (especially during election times), thereby drawing the voters away from other important issues such as unemployment (Hackett 2001). The media can thereby indirectly influence voters' opinion and support for political parties. Cohen (1963) writes, "…the press is significantly more than a purveyor of information and opinion. It may not be successful much of the time in telling people what to think, but it is stunningly successful in telling its readers what to think about"(p.13).

A12.3.5 The art of fabrication and over-sensationalizing

Regardless of who you are you won't have enough direct experience with the whole range of topics on politics, mining and the media in BC. Tyabji-Wilson (2002) cites Vander Zalm's viewpoint on the press gallery's antics and he states,

> There is a farther greater danger with people in the press gallery fabricating a story or sensationalizing something than there is for someone in the general media - because their [the press gallery's] shopping list is much more confined, they don't have so much to go with. Because they have much less to choose from, they will take some little thing and make something much bigger (p.300).

For a majority of the audience, information (good or bad) reaches them via the media. If the audience does not see a story in the media, they believe that it probably has not occurred (Hackett 2001). However, if the article or topic is widespread and cited by other news agencies, many in the audience take it for granted that it is 'fact'. How would the audience know if the article has been fabricated? How would the audience determine the article's accuracy? How much information is needed for the audience to make an informed decision?

A12.3.6 Newspapers are businesses: Their job is to sell papers!

Cohen (1963) says it best when he writes, "The unending discussion about the political and social consequences and responsibilities of the press in American life can never quite obscure the fact that every newspaper – even the best - is a business enterprise"(p.66). The ownership of media outlets in Canada is retained by a small number of companies. For instance, by the

end of 1998, Hollinger (once headed by Conrad Black) owned 55 out of 105 of Canada's daily newspapers (Hackett 2001). By 2001, a single company owned all English-language daily newspapers in BC (Hackett 2001). Does corporate control by few companies inhibit a diversified and independent press? Does the 'media industry' infringe upon democracy, whereby meeting the bottom line trespasses upon social and political communication?

A12.3.7 Partisanship never left newspapers!

During the 1970's, the NDP put a stronghold on paid partisanship work by reporters; however, this had little influence on the owners of the daily newspapers in Canada. For example, Conrad Black has publically voiced his deeply conservative opinions on a whole variety of issues, as well as has hired "like-minded editors" for his newspapers (Hackett 2001, 392). This has affected the objectivity and diversity of published opinion.

A12.3.8 Advertising: Selling audiences to advertisers!

Government advertising is another effective way politicians get their message out. Politicians utilize this method most often as a way to promote projects, add spin to an announcement and ensure their criticisms on an project is seen by the voting public (Carty 2001; McLintock and Kristianson 1996). Carty (2001) writes,

> It was inevitable that advertising and politics would be drawn to one another from the beginning: politicians wanted help selling their message, especially in the absence of a docile press, and ad men wanted work. The war made the government the largest advertiser in the country, so the stakes were substantial. Thus was born the ad agency-party-government *ménage a trois*: advertisers did party work in exchange for government contracts. Naturally the governing party had a significant advantage and therefore this pattern was most developed by the Liberals (p.25).

Advertising comprises virtually all of the revenue for private radio and TV stations, over 75 percent of the revenues for daily newspaper and over 50 percent of the revenues for all public broadcasting (Hackett 2001). Financial dependence on advertising equates to attracting certain audiences that would be interested in the products they are marketing through their newspapers. Does this segregate audience exposure to the newspaper if it is not catered to the general public, but rather to an elite group? Does advertising threaten diversified and independent press? Does it act like a type of censorship, whereby it caters to certain groups of audiences?

A12.3.9 Media audience bias?

Reporters write their stories according to requirements of their own publications, editor, advertisers and peers, as well as for the unseen audience. Hackett (2001) writes,

> News oriented towards the mass market (as distinct from specialized or affluent segments of the market) tends to address the reader/viewer as a taxpayer, a consumer, and a passive spectator of politics-as-entertainment, rather than as, for instance, a worker or an active citizen. For example, if people are encouraged to think of themselves as consumers rather than as workers, they are less likely to identify with a party claiming to represent "working people," as the NDP has done in the past (p.386).

A12.3.10 News article significance

The editor's desk is where the news is made! The editor decides what is newsworthy, what the audience will think about and what the article's significance is. For example, the most important news of the day usually has the largest headlines and is located on the front page in either the right-hand or left-hand column (Cohen 1963). The familiarity with this format, along with other characteristics, allows the audience to become "conversant" with the newspapers values, thereby becoming "complacent" as these values become their own (Cohen 1963).

A12.4 A discussion on media and mining in BC

The media shapes public consciousness ultimately having an influence on the political party of the day, but also on the legitimacy of long-term mining policy in BC. This influences the audience's interpretation, understanding and their fundamental shifts in values in regards to politics and mining in BC. It also highlights the political, economic, social and technological aspects that influence the media's focus, the audience's response and the overall change in values in regards to BC's mining industry. Payne (1982) writes, "…mining policy was formulated on the basis of the public interest defined in a broad sense…"(p.35). This public interest is defined throughout each of the party's mandates and it is up to the voter to choose which of these mandates best support their philosophies.

A12.4.1 Audience perception and response

The mere fact that something is printed in the newspaper helps to influence the audience's perception and response. For example, in 1974 an anti-Bill 31 (Mine Royalties Act supported by the NDP under Premier Dave Barrett) response by the BC mining industry received significant attention by the daily newspapers (e.g., the Vancouver Province). Out of approximately 95 articles found in the Province, 67 noted the industry's critical reaction to Bill 31 (Payne 1982). The industry also campaigned, whereby companies such as Placer Dome engaged in extensive advertising campaigns noting that Bill 31 threatened the mining industry's well being in BC (Payne 1982). The anti-Bill 31 activity mobilized support from the opposing political parties at the time (e.g., Social Credit, the Liberals and the Conservatives) who under their own agendas jumped on board the anti-Bill 31 train. A long battle ensued, whereby the United Steelworkers of America (a USA based mining union) supported the NDP and Bill 31; however, despite its passage, Bill 31 had a detrimental two-fold impact on the NDP government and BC: (1) a significant reduction in exploration budgets; and, (2) a huge reduction in NDP support during the 1974 election, especially in ridings noted as being mining intensive (e.g., Kamloops) (Payne 1982, 21). Companies such as Newmont Mining Corporation of Canada suggested they would cease any further mineral exploration in BC if Bill 31 was passed (The Vancouver Sun 1974, 34). Many of the prospectors headed north to the Yukon Territory where favorable industry policies still existed.

With the return of the Social Credit in 1975, the NDP's public image as anti-mining, anti-development would remain. However, the mining industry in BC also had to clean up its image as it no longer was the province's economic engine and had acquired numerous critics. Gerald Hobbs (former president of Cominico Ltd.) is cited in The Vancouver Sun (April 28, 1973) as stating, "The industry has done a very poor job of explaining its role to the public and the politicians. Natural resource extraction is vital to this country's well-being"(as cited in Froehlich 1974, 27). Even today, this role is poorly explained.

A12.4.2 Opinion polls

The media did not only use opinion polls; but corporations and associations in the resource industries also used them to gauge public opinion. For example, the Mining Association of British Columbia (MABC) initially started to use polling to tweak their responses to premier Dave Barrett's (NDP) mining legislation (Schreiner 1979). The association used the responses to keep their advertising campaign up to date.

A12.4.3 The media as a social agent!

There are many newspaper articles that shine an unfavorable light on politicians and mining in BC. For instance, Premier Dave Barrett has had his fair share of ridicule and debasement by the press. An article found in The Vancouver Sun (April 4, 1973) by Terry Hammond titled, "How bad is Barrett's bite? Major business weekly pins 'Beware Dog' label on British Columbia in warning to investors" is just one example of the many that criticize Barrett publically. Nick Hills in the Montreal Gazette (April 16, 1974) cites Barrett's response to bad press. He states,

> As socialists, we should not expect anything more. We are an inconvenience to the establishment. The Vancouver Sun will never be satisfied until the temporary aberration of the Grits not being in power for 25 years is over come (p.9).

There is no doubt that Barrett faced significant challenges considering that the Social Credit had held power for 20 years prior to Barrett taking the reins as BC's premier. However, the media that was somewhat loyal to the Social Credit party influenced the negative shaping of his image, thereby contributing to his defeat three years later.

In the Toronto Star (November 26th, 1990), an article by Paul McKay titled "Fighting to preserve Canada's wilderness" discusses the pit falls of the proposed Windy Craggy mining project (see Appendix 8: Case Study Tatshenshini-Alsek). He writes,

> For those with a commercial glint to their gaze, this is mere scenery. The real prize in the corridor is a multi-billion-dollar cache of copper buried inside remote Windy Craggy mountain. To get it out, two flanks of the peak will have to be blasted off and excavated as open-pit mine. …Normally, this would be nothing but sweet music for the avowedly pro-business government of B.C. Premier Bill Vander Zalm. But a counter crescendo has erupted from environmental groups, white-water rafting companies, park planners, recreation councils, commercial fishermen in Alaska and U.S. wildlife agencies…The growing intensity of the Windy Craggy debate has put

> the B.C. government at the centre of another politically explosive, highly polarized conflict (p. A15).

The synergetic polarization shared by mining and politics in BC is unquestionable. In my opinion, they step side by side and face tough criticism, as well as falter from misinformed, easily excitable audiences who take what the media says as being the gospel. The mining industry relies on this symbiotic relationship as the government of BC grants permits and licenses and without them the mining companies would not be able to build mines in BC.

A12.4.4 Listening to the people: The power of the vote!

In 1980, the seven-year uranium moratorium enacted by the Social Credit government exemplifies how public and media pressure can alter a political and industry mandate (see Appendix 8: Case Study The Moratorium on Uranium Exploration and Mining in BC). Premier Bill Bennett (like his father W.A.C Bennett), supported resource development and economic growth in the province. Bill Bennett is cited in The Star-Phoenix newspaper (April 5, 1979) as stating to 200 of Canada's top mining executives that, "…the key to his province's future is a practical, pragmatic and prudent government framework for resource development"(Duggleby 1979, 39). However, after some public pressure Bennett ultimately started an Inquiry (the Bate's Commission) into uranium mining in BC. In the midst of the Inquiry (before publishing its findings) Bennett initiated a moratorium on uranium mining in BC, surprising everyone involved. In the Leader-Post (February 28, 1980) newspaper Bill Bennett is cited as stating, "It is clearly the mood of the people of this province that they are not prepared to live with uranium mining…What uranium resources B.C. has will be left in the ground until the people are prepared to do otherwise"(p.1). The power of the vote is vital, especially near election times.

The NDP and environmental groups campaigned hard for the ban, whereby numerous media sources can be found depicting opposition by these groups, as well as the public. For example, an article found in the Edmonton Journal (December 19, 1979) titled, "Boxcars of lethal uranium could pass through city" (Das 1979, B7). However, notable newspapers such as The Financial Post highlight articles opposing the ban. Reporter Jim Lyon (March 8, 1980) states, "B.C. dumps uranium industry without giving it a chance"(p.2). Others reacted with

concern that the public did not have all the facts, as the Inquiry was not completed, as well as the impact of the moratorium on uranium mining throughout the rest of Canada. Robert Pfister from Midwest Lake uranium is cited in The Leader-Post (February 28, 1980) that the seven-year moratorium will have a negative impact "…simply because it will be a demoralizing influence"(Walker 1980, 37).

The media is a tool that is utilized by all parties; however, it too can have a demoralizing influence on audience opinions and values. A person who once was pro-uranium mining may read the article about 'lethal uranium' travelling through their neighborhood in a boxcar and then change their minds and decide to no longer support uranium mining in BC. I didn't realize 'lethal uranium' could be shipped let alone in a boxcar? In any case, this fabricated, over-sensationalized discourse of 'lethal uranium' had a negative influence on the industry, as well as negated audience permeability to the idea that uranium mining may be an economic option in BC. Is the author of the 'lethal uranium knowledgeable, educated or experienced in uranium mining? The province of Saskatchewan is home to the majority of Canada's uranium mines and supplies uranium and its various products to utilities around the world. Why can uranium be seemingly safely mined in Saskatchewan, but not in BC?

A12.4.5 Priming: The scapegoat!

The media's response to Bill 31 (during an election year) blamed the NDP government for the mining industry's problems. The media helped to generate and reinforce a negative image that the party had created a troubled economy, had an alleged budget deficit and spent excessively on welfare programs (Payne 1973). The NDP became the media's intended subject, while diverging away from the mining industry and all its problems. The polarization of the parties was reinforced and the NDP lost the subsequent election.

A12.5 Conclusion

The interplay between the press and policy makers is best said by Cohen (1963) when he states, "The "mirror" that the press holds up "by which its readers can see the world" is not fashioned exclusively by the initiatives of the press, nor is it the product solely of the criteria of judgment that mark the news-gathering and editorial processes"(Cohen 1963, 133). It is

the actions of the politicians and the mining industry, which make the newsgathering and editorial processes; however, it is also the many acts of bias (e.g., partisanship, cynicism, etc.) by which the media draws attention to how the reader should see the world. In regards to the mining industry, the media either supports or is against the industry; however, what is vital here is that the media is the vehicle in which all parties (e.g., politicians, NGO's, corporations) communicate their values and opinions. These actions and behaviors influence the audience (in particular the voters), thereby persuading a fundamental shift in their overall values. This in turn affects the long-term mining policy in BC.

APPENDIX 13 Financial metrics and elaboration

In order to help the reader understand the metrics used in this thesis, some background will be presented explaining the metrics used and why they are important in evaluating projects and their sponsors.

Market Capitalization (MC) is the current share price (or share price of a certain date) multiplied by the number of shares outstanding (see Section 7.3). It is the current market value of the company, or in the case of exploration and development companies, the expected future value of the assets, or the perceived value by the market of the company. It provides a very simple proxy with respect to the financial capacity the company has to build its project. A high MC to Capex[299] suggests that a company is relatively large in terms of financial resources relative to the expected capital outlay at hand. A very low MC to Capex suggests the company has limited financial strength and therefore may not be sufficiently capitalized to finance their project. In other words, if the Capex is excessively large with respect to the MC, then the market is indicating the company will have difficulty funding construction. The MC to Capex ratio is in some respects a precursor or preliminary view of the ability of the company to meet a common debt to equity ratio as discussed below.

The **Debt Equity Ratio** of around 40:60 is a common rule of thumb used in project financing (Langelaar 2013).[300] It suggests that projects can be financed with a 60% equity contribution and a subsequent debt component of 40%. A higher ratio may not be attainable for a single asset company as the increased debt increases the financial risk (interest payments tend to remain fixed versus a sudden drop in revenue from a collapsing commodity price). This risk may ultimately jeopardize the future economic viability of the project should the company fail to meet its debt obligations. Assuming a debt to equity ratio of 40:60 and then looking at how much additional equity or dilution a company must incur to achieve the 60 percent equity, we can quickly ascertain the likelihood of success. If the additional equity required to reach the threshold starts to exceed 50 percent of the existing equity, then a financing becomes increasingly difficult and increasingly unlikely. Not impossible, but highly unlikely.

299 Capex is the capital costs of a project.

300 Ratio = Debt/Equity.

The **Net Present Value** (NPV) is used to understand the profitability of a project and is the sum of all future discounted cash flows. The **Discount Rate** (DCR) is used to discount future cash flows to the present value and is a measure of risk or desired return. It is the rate of return an investor would expect to receive on some other investment of equal risk. The DCR used in Table 11 is 8 percent, as that is a commonly published figure (Langelaar 2013). It is beyond the scope of this thesis to analyze DCR's.

The **Internal Rate of Return** (IRR) on a mine project is the rate of return that makes NPV equal to zero or the rate whereby the investment made in a project breaks even. Although a 10% IRR would suggest a robust project, a general rule of thumb used in the mining financial community is that the IRR of any published study beyond a scoping study level should exceed 20 percent (Langelaar 2013). Typically, a 20 percent desktop study IRR will be reduced to a more realistic 5-10% by the time the project is actually in operation (Langelaar 2013). The Profitability Index (PI) is a benefit-cost ratio whereby NPV is divided by the initial capital cost. If the ratio is greater than one, the investment project should be considered for a construction decision.

APPENDIX 14 The formal structure of the provincial government

A14.1 Introduction

The formal structure of the provincial government in BC involves the legislature, the lieutenant governor, the legislative assembly, the premier and the cabinet (see Figure 16). The following highlights their role, as well as influences on BC's political process.

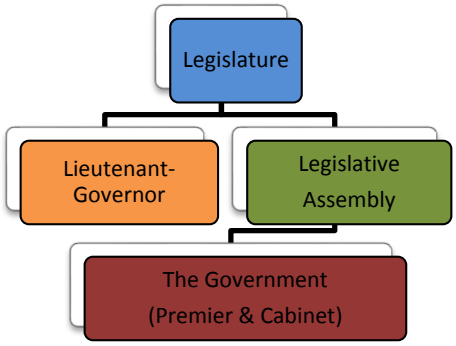


Figure 16 BC's provincial government

A14.2 Legislature

The provincial government of BC is a single legislative chamber consisting of a Lieutenant Governor and 85 members of the legislative assembly who are elected to a four-year term.

A14.3 The Lieutenant Governor or Lieutenant Governor in Council

The lieutenant governor is a representative for the Crown. Their duties are to:

- Head the Council;
- Sign off on all legislation in order for it to become law, as well as sign all official proclamations and all Orders-In-Council;
- Considers the 'formal offer' to make a person premier of the province; and,
- Choose the premier from assembly if none of the party leaders acquired a majority (Morley 1996; Ruff 1996; Morley et al 1983).

A14.4 The Legislative Assembly

Today's BC legislative assembly contains 85 members that consist of a premier and the provincial cabinet.

A14.5 The Premier

The premier is the elected party leader who holds power over various appointments and positions in regards to the party's make-up, as well as monitors cabinet ministers' policy initiatives, sets the cabinet agenda and organizes the legislative and law-making process (Morley 1996). Despite all of this, the premier possesses very little independent authority, as authority to govern is held by the Lieutenant Governor in Council.

Once elected, the premier appoints the cabinet of deputy ministers and those selected must be elected (or close to being elected) members of the legislative assembly (MLA's). MLA's are elected from each electorate district that best represent the views of the constituents in the legislative assembly (Morley 1996). Of the 85 members, premier Christy Clarke's ministry contains 19 selected cabinet ministers.[301] Because of BC's vastly distinct territory, the premier must select a diverse range of MLA's from all over the province in order to ensure proper provincial representation (Morley 1996). Also, the premier must select followers who won't desert the party or its leader, thereby minimizing the risk of losing the party's majority in the assembly.

A14.6 The Cabinet (Ministers)

The cabinet is made up of cabinet ministers elected by the premier. The ministers' duties include:

- Invoke laws made by the legislature;
- Simplify legislation into regulations and set the assembly agenda, as well as produce bills and resolutions to raise and spend money;
- Control public service and the activities of the public sector, as well as those in private sector dependent on public policy;
- The cabinet also determines most of the key public sector appointments. For instance, they appoint senior civil servants, members of boards, and commissioners of inquiry (Morley 1996, 151-156).

However, according to Morley (1996) the cabinet's most significant role is acting as a controller in the flow of information. He writes,

> Perhaps most important, the cabinet, by controlling the flow of information to the public, including the government MLA's not in cabinet, is able to extract support for

301 For additional information on Christy Clark's cabinet see the following website: http://www.gov.bc.ca.

> its proposals from the whole government caucus because those not in cabinet are never well-informed enough to effectively combat ministers in argument (p.150).

Through this control, the cabinet is adept to sway the caucus[302] into radical shifts in public policy (Morley 1996). The cabinet is able "…to direct the votes of a majority of the MLAs, to shape the public policy-making process, and to fill in legislative details by passing subordinate legislation as orders-in-council"(Morley 1996, 151).

302 A caucus is a group of people with shared concerns within a political party or larger organization.

APPENDIX 15 PEST analysis and metrics

PEST ANALYSIS & METRICS			ACTORS									
PEST	**Factors**	**Metrics**	**WAC Bennett Social Credit 1952-1972**	**Dave Barrett NDP 1972-1975**	**Bill Bennett Social Credit 1975-1986**	**Bill Vander Zalm Social Credit 1986-1991**	**Mike Harcourt NDP 1991-1996**	**Glen Clark NDP 1996-1999**	**Other NDP 1999-2001**	**Gordon Campbell Liberal 2001-2011**	**Christy Clark Liberal 2011+**	**Thesis Reference**
1. Political	**1.1 Provincial Government Mandate.**	*1. Political party has an extensive anti-development mandate in place.* *2. Political party has an moderate anti-development mandate in place.* *3. Political party has an somewhat anti-development mandate in place.* *4. Political party has an moderate pro-development mandate in place.* *5. Political party has an extensive pro-development mandate in place.*	**5**	**1**	**4**	**3**	**1**	**2**	**2**	**3**	**4**	Sections: 2.9, 4.1, 4.13, 7.9, 12.1, 12.2, 12.5, 14.5, 15.2.1, 16.3, 17.1, 13.4.1, 2.7, 14.2, 16.2, 16.3.1, 17.1.2,
	1.2 Anti-Mining Legislation and Policies.	*1. Extensive anti-mining policies are in place by the current government.* *2. Anti-mining policies are moderately developed by the current government.* *3. Anti-mining policies are somewhat developed by the current government.* *4. Anti-mining policies are slightly developed by the current government.* *5. Anti-mining policies are not developed by the current government.*	**5**	**1**	**5**	**4**	**1**	**2**	**2**	**3**	**3**	Sections: 9.5, 11.6, 13.3, 14.2, 15.2, 15.3
	1.3 Political Years in Office	*1. 0-4-years* *2. 4-8 years* *3. 8-12 years* *4. 12-16 years* *5. 16+ years*	**5**	**1**	**3**	**2**	**2**	**1**	**1**	**3**	**1**	Sections: 9.5, 11.6, 13.3, 14.2, 15.2, 15.3, 16.2, 16.3
	New Recognizable Mineral Discoveries	*Actual number of discoveries made.*	**12**	**0**	**3**	**4**	**1**	**0**	**0**	**0**	**0**	
	New Recognizable Mines put into Production	*Actual number of mines put in production.*	**7**	**0**	**1**	**0**	**1**	**3**	**0**	**0**	**1**	

APPENDIX 15 PEST metrics cont'd

PEST ANALYSIS & METRICS			ACTORS									
PEST	**Factors**	**Metrics**	**WAC Bennett Social Credit 1952-1972**	**Dave Barrett NDP 1972-1975**	**Bill Bennett Social Credit 1975-1986**	**Bill Vander Zalm Social Credit 1986-1991**	**Mike Harcourt NDP 1991-1996**	**Glen Clark NDP 1996-1999**	**Other NDP 1999-2001**	**Gordon Campbell Liberal 2001-2011**	**Christy Clark Liberal 2011+**	**Thesis Reference**
2. Economic	**2.1 Cu Price (International).**	*Mean US(98)$/t* *1. $0-$1500* *2. $1501-$3000* *3. $3001-$4500* *4. $4501-$6000* *5. 6001+*	**3**	**4**	**3**	**3**	**2**	**2**	**2**	**3**	**5**	Section: 3.1, 7.4-7.7, 18.2, 18.3.
	2.2 Oil Price (International).	*Mean US(98)$/barrel* *1. $41+* *2. $40-$31* *3. $30-$21* *4. $20-$11* *5. $10-$0*	**4**	**3**	**1**	**3**	**4**	**4**	**3**	**1**	**1**	Section: 18.2, 18.3
	2.3 Exploration Expenditures (British Columbia)	*Sum C(98)$ million/t* *1. $0-$300* *2. $301-$600* *3. $601-$900* *4. $901-$1200* *5. 1201+*	**2**	**1**	**4**	**4**	**2**	**2**	**1**	**5**	**5**	Section 4.2-4.12.
	New Recognizable Mineral Discoveries	*Actual number of discoveries made.*	**12**	**0**	**3**	**4**	**1**	**0**	**0**	**0**	**0**	
	New Recognizable Mines put into Production	*Actual number of mines put in production.*	**7**	**0**	**1**	**0**	**1**	**3**	**0**	**0**	**1**	

APPENDIX 15 PEST metrics cont'd

PEST ANALYSIS & METRICS			ACTORS									
PEST	**Factors**	**Metrics**	**WAC Bennett Social Credit 1952-1972**	**Dave Barrett NDP 1972-1975**	**Bill Bennett Social Credit 1975-1986**	**Bill Vander Zalm Social Credit 1986-1991**	**Mike Harcourt NDP 1991-1996**	**Glen Clark NDP 1996-1999**	**Other NDP 1999-2001**	**Gordon Campbell Liberal 2001-2011**	**Christy Clark Liberal 2011+**	**Thesis Reference**
3. Social	**3.1 Labor Movement**	*1. Actions (protests, strikes, unions) by labor and unions are extensive.* *2. Actions (protests, strikes, unions) by labor and unions are moderate.* *3. Actions (protests, strikes, unions) by labor and unions are somewhat moderate.* *4. Actions (protests, strikes, unions) by labor and unions are slightly moderate.* *5. Actions (protests, strikes, unions) by labor and unions are minor.*	**1**	**2**	**2**	**1**	**1**	**2**	**2**	**3**	**3**	Sections:11.6, 12.2, 12.3, 12.4, 12.5, 13.2, 13.3, 14.2, 14.3, 14.4, 15.2, 15.3, 16.2, 16.3.
	3.2 Environmental Movement	*1. Society is extremely concerned about the environment.* *2. Society is moderately concerned about the environment.* *3. Society is somewhat concerned about the environment.* *4. Society is slightly concerned about the environment.* *5. Society is not at all concerned about the environment.*	**5**	**4**	**3**	**2**	**1**	**1**	**1**	**1**	**1**	Sections: 3.4, 4.4, 6.8-6.10, 11.6, 12.1-12.6, 13.3.1, 14.2, 14.3, 14.4, 15.2, 15.3, 16.2, 16.3, 17.1.2, 17.1.3.
	3.3 First Nations Movement	*1. Society is extremely concerned about the First Nations movement.* *2. Society is moderately concerned about the First Nations movement.* *3.Society is somewhat concerned about the First Nations movement.* *4. Society is slightly concerned about the First Nations movement.* *5. Society is not at all concerned about the First Nations movement.*	**5**	**5**	**4**	**3**	**3**	**2**	**2**	**1**	**1**	Sections: 6.11, 13.2.2, 13.3.2, 14.3.2, 14.4.1, 15.2.1, 15.2.2, 15.3.2, 16.2.4, 16.3.2, 17.1.1
	New Recognizable Mineral Discoveries	*Actual number of discoveries made.*	**12**	**0**	**3**	**4**	**1**	**0**	**0**	**0**	**0**	
	New Recognizable Mines put into Production	*Actual number of mines put in production.*	**7**	**0**	**1**	**0**	**1**	**3**	**0**	**0**	**1**	

APPENDIX 15 PEST metrics cont'd

PEST ANALYSIS & METRICS			ACTORS									
PEST	**Factors**	**Metrics**	**WAC Bennett Social Credit 1952-1972**	**Dave Barrett NDP 1972-1975**	**Bill Bennett Social Credit 1975-1986**	**Bill Vander Zalm Social Credit 1986-1991**	**Mike Harcourt NDP 1991-1996**	**Glen Clark NDP 1996-1999**	**Other NDP 1999-2001**	**Gordon Campbell Liberal 2001-2011**	**Christy Clark Liberal 2011+**	**Thesis Reference**
4. Technological	**4.1 Voluntary Initiatives, Equator Principles, etc.**	*1. Extensive voluntary initiatives are in place (>10 initiatives).* *2. A moderate number of voluntary initiatives are in place (6-10 initiatives).* *3. A somewhat moderate number of voluntary initiatives are in place (4-6 initiatives).* *4. A small number of voluntary initiatives are in place (1-4 initiatives).* *5. No voluntary initiatives are in place (0 initiatives).*	**5**	**5**	**5**	**5**	**4**	**3**	**2**	**1**	**1**	Sections: 4.2-4.12, 14.3.1, 15.2, 15.2.1, 16.2, 16.2.2. 16.2.3.
	4.2 Environmental Legislation and Policies, NI 43-101, etc.	*1. Extensive policies with respect to the environment are in place.* *2. Policies with respect to the environment are moderately developed.* *3. Policies with respect to the environment are somewhat developed.* *4. Policies with respect to the environment are slightly developed.* *5. Policies with respect to the environment are poorly developed.*	**5**	**4**	**3**	**2**	**1**	**1**	**1**	**1**	**1**	Sections: 3.4, 4.4, 6.8-6.10, 11.6, 12.1-12.6, 13.3.1, 14.2, 14.3, 14.4, 15.2, 15.3, 16.2, 16.3, 17.1.2, 17.1.3.
	4.3 Key Technological Innovations and Estimated Average Operating Costs (US(2009)$/tonne ore) for the Western World (Schodde 2010b).	*Average US (2009)$/tonne ore* *1. $41+* *2. $40-$31* *3. $30-$21* *4. $20-$11* *5. $10-$0*	**1**	**1**	**2**	**3**	**3**	**3**	**4**	**4**	**4**	Sections: 3.3, 4.4, 4.7, 6.4-6.7, 7.4, 9.5-9.8, 9.12.
	New Recognizable Mineral Discoveries	*Actual number of discoveries made.*	**12**	**0**	**3**	**4**	**1**	**0**	**0**	**0**	**0**	
	New Recognizable Mines put into Production	*Actual number of mines put in production.*	**7**	**0**	**1**	**0**	**1**	**3**	**0**	**0**	**1**	
	PEST Score		**65**	**32**	**43**	**39**	**27**	**28**	**23**	**29**	**31**	

APPENDIX 15 PEST metrics cont'd

Exploration Expenditures C$ million	WAC Bennett	Dave Barrett	Bil Bennett	Vander Zalm	Mike Harcourt	Glen Clark	Other	Gordon Campbell	Christy Clark
Years	21	4	12	6	6	4	3	11	2
SD	$ 16.79	$ 3.22	$ 47.30	$ 55.90	$ 25.93	$ 36.53	$ 6.11	$ 199.62	$ 62.93
Mean	$ 16.89	$ 38.25	$ 93.93	$ 168.77	$ 90.43	$ 78.98	$ 35.43	$ 271.60	$ 689.60
Coefficent of Variation	99%	8%	50%	33%	29%	46%	17%	73%	9%
Real Cu Price ($98/t)									
SD	$ 614.54	$ 603.57	$ 928.59	$ 637.14	$ 335.82	$ 445.07	$ 144.22	$ 1,917.10	$ 923.48
Mean	$ 4,132.86	$ 4,787.50	$ 3,398.33	$ 3,085.00	$ 2,728.33	$ 2,067.50	$ 1,680.00	$ 3,943.64	$ 7,143.00
Coefficent of Variation	15%	13%	27%	21%	12%	22%	9%	49%	13%
Real Oil Price (US$98/Barrel)									
SD	$ 1.34	$ 3.22	$ 15.95	$ 3.32	$ 15.00	$ 3.76	$ 4.69	$ 17.46	$ 0.00
Mean	$ 10.02	$ 23.80	$ 49.29	$ 24.33	$ 20.44	$ 17.83	$ 22.41	$ 47.22	$ 80.67
Coefficent of Variation	13%	14%	32%	14%	73%	21%	21%	37%	0%
Sum EE	354.60	153.00	1127.10	1012.60	542.60	315.90	106.30	2987.60	1379.20

Correlation	Exploration Expenditures/Cu price	Oil price/Cu price	Exploration Expenditure /Oil Price
All	0.51	0.34	0.77
1981-Onwards	0.96	0.79	0.82
1952-1980	-0.09	0.04	0.78
1952-1991	0.60	-0.23	0.57
1952-1986	-0.36	-0.24	0.83
WAC Bennett	0.48	-0.22	-0.86
Dave Barrett	-0.38	0.43	-0.76
Bill Bennett	-0.29	0.35	0.66
Vander Zalm	0.88	0.08	0.32
Mike Harcourt	0.20	-0.03	0.63
Glen Clark	0.98	0.78	0.69
Other	0.34	0.67	-0.47
Gordon Campbell	0.95	0.94	0.97
Christy Clark	1.00	-1	-1.00