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NTFP PROGRAM DEVELOPMENT

INDIGENOUS COMMUNITY FORESTRY WITH A FOCUS ON NON-TIMBER FOREST PRODUCTS: A LITERATURE SYNTHESIS, SUSTAINABILITY ASSESSMENT, AND PROGRAM DEVELOPMENT RECOMMENDATIONS

by

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ABSTRACT

A literature review of indigenous NTFP or community forestry programs and a subsequent "sustainability" assessment were conducted. The goal of this study was to assist the Makah Tribe in identifying what program elements contribute to developing a sustainable indigenous NTFP or community forestry program. Four community forestry programs from Indonesia, Tanzania, Cambodia and Nepal were evaluated utilizing a set of "generic sustainability test criteria". The assessment identified the Indonesian and Tanzanian programs as having better met the sustainability criteria. Based on study results for all four programs, recommendations for developing a sustainable indigenous community forestry program were developed. Sustainable NTFP or community forestry programs appear to center around maintaining or re-establishing traditional indigenous resource management systems and in some instances collaborative management approaches to program development. However, significant differences from political, economic and social aspects exist between the tropical or subtropical programs included in this study and that of indigenous NTFP or community forestry programs situated within the "Western world". Consequently, when reviewing the findings of this study, the Makah Tribe will need to consider their particular political, economic and social characteristics. Factors to be considered range from their industrial based forest management methods, the loss of ownership of some of their traditional land-base, alternative employment opportunities, or available financial assistance for the unemployed and the loss of some of their traditional indigenous knowledge regarding NTFPs.

Keywords: NTFPs, community forestry, indigenous, sustainability criteria, traditional indigenous resource management systems, collaborative management, traditional ecological knowledge.

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LIST OF ACRONYMS

BIA	Bureau of Indian Affairs
BSP	Biodiversity Support Program
CBFI	Community-Based Forestry Initiative
CFR	Code of Federal Regulations
CIDA	Canadian International Development Agency
DFO	District Forest Officers
FAO	Food and Agriculture Organization
FUG	Forest Users Group
ICRAF	International Centre for Research in Agroforestry
LATIN	Indonesian Tropical Institute
NGO	Non Government Organization
NNN	Nepal Non-Timber Forest Product Network
NSCFP	Nepal – Swiss Community Forestry Project
NTFP	Non-Timber Forest Product
NWFP	Non-Wood Forest Product
OP	Operational Plan
SDC	Swiss Agency for Development and Cooperation
TEK	Traditional Ecological Knowledge
US	United States
USA	United States of America
WWF	World Wildlife Fund

CHAPTER 1: INTRODUCTION

1.1 The Makah Community-Based Forestry Initiative

The Makah Reservation consists of a community of approximately 1,356 tribal and non-tribal individuals (United States Census Bureau, 2000). The reservation is located on the northwest tip of the Olympic Peninsula in Washington State (Renker, 2000a). The Strait of Juan de Fuca lies along the northern boundary of the Makah Reservation, and the Pacific Ocean lies along its Western boundary. Neah Bay is the only town located on the reservation. The reservation itself consists of approximately 10,927 hectares (Renker, 2000a) and the primary industries of the Makah include timber harvesting and commercial fishing. The culture of the Makah Tribe is included within the Northwest Coast cultures particularly within the Nootkan subdivision (Renker, 2000b) located on Vancouver Island, British Columbia. Figure 1.1 provides a map of the Makah Reservation.

In 2000, the Makah Tribe established a "Makah Community-Based Forestry Initiative" Five Year Demonstration Project (CBFI) funded by the Ford Foundation. The objective of this project is to ensure that forests remain healthy and productive for future generations through holistic management policies and regulations (Makah Tribal Council, 1999). Such policies and regulations are intended to "promote the restoration, protection, and economic diversification of the forests for optimum environmental, cultural and economic benefit" (Makah Tribal Council, 1999, p. 10).

Three major goals of this project are:

- Developing community-based consensus, resource building and vision planning in fostering a culture of forest resource stewardship;
- Developing sustainable forest resource management practices; and
- Creating sustainable forestry-based livelihoods, focusing primarily on non-timber forest resources/products (Makah Tribal Council, 1999, p. 10).

The Makah CBFI would benefit from learning about indigenous community based forestry programs, practices and projects for NTFPs that are based in other regions of the world. The following study in sponsored by the Makah CBFI to assist them in establishing and achieving the goals of their community-based forestry program.

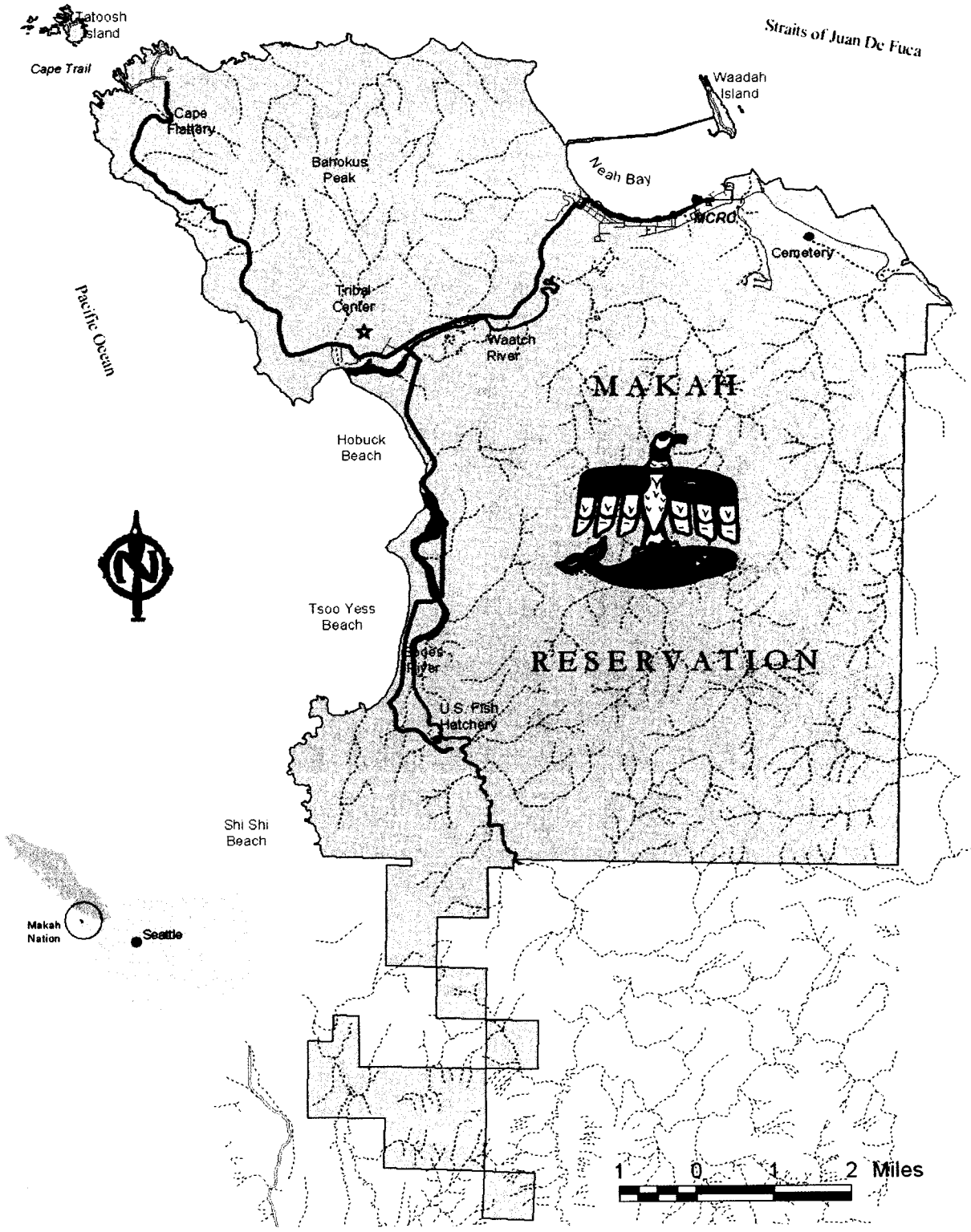

Figure 1.1. Map depicting the boundaries of the Makah Reservation with inset map depicting the location of the Makah Reservation in Washington State (Herda, 2003). *(Reproduced with permission of Dave Herda)*

1.2 Indigenous Peoples and NTFPs

The harvesting of non-timber forest products (NTFPs) in tropical and subtropical ecosystems has received more attention than that of similar practices in boreal and temperate forests (Davidson-Hunt et al, 2001). NTFP harvesting is now receiving more attention in the boreal and temperate forest ecosystems of the world including those of the United States and Canada. However, indigenous peoples of the Western world have historically harvested NTFPs for subsistence and commercial activities and continue to do so today (Marles, 2001). Indigenous peoples have been harvesting fruit, vegetables, beverage plants, medicinal plants and materials for technology and rituals for generations (Marles, 2001). Local indigenous communities both in North America and on a global scale have managed forest resources such as NTFPs for thousands of years (Poffenberger, 1999).

1.3 Purpose of Thesis

The Makah CBFI would benefit from understanding what other indigenous community based forestry programs, practices and projects exist worldwide. Determining to what extent other programs are considered "sustainable", how the communities developed their programs and what successes and challenges they have had, would provide valuable information for this newly establishing program. Learning from other indigenous community-based NTFP programs that exist worldwide would assist the Makah CBFI in attaining their goals as outlined above. However, at the present, no single publication or resource yet exists that documents the NTFP programs of other indigenous communities' (D. Sarff, personal communication, 2002).

A review of Internet-based literature and other forms of relevant literature to identify indigenous NTFP or community forestry programs that exist worldwide was conducted. Four programs were selected for a sustainability assessment based on a generic set of sustainability criteria. The purpose of this Masters Thesis is to identify the two most "sustainable" indigenous NTFP or community forestry programs out of the four programs assessed and answer the following questions for each of them:

A. What sustainability criteria did the program meet and how?
B. What process(es) did the community adopt in order to develop their program?
C. What successes and challenges did the program document?
D. What sustainability "tools" did the program utilize?
E. What factors must be taken into consideration in applying the assessment results to the Makah CBFI?

1.4 Defining the Problem

Local indigenous community based forestry programs for NTFPs exist in many countries around the globe. Information on such programs is currently available through various information sources including the Internet, journals and books. However, this information is extensive and scattered throughout a number of sources (D. Sarff, personal communication, 2002). Information on indigenous community-based forestry initiatives, programs and projects existing globally has not yet been compiled, collated and made readily available as a useable reference for other community based forestry programs. The development of such a reference document would assist the Makah CBFI and other indigenous community forestry initiatives in developing a program that meets its goals as efficiently as possible.

1.4.1 Cause of the Problem

Indigenous peoples worldwide have a long history of sustainable management practices for NTFPs, however, much of this orally based information has disappeared with time (D. Sarff, personal communication, 2002) or has not been made readily accessible by indigenous peoples. European style agricultural and commercial forestry practices were not conducted with environmental conservation in mind due to settlers' beliefs that natural resources were inexhaustible. The introduction of these practices to North America marked the beginning of the disruption of aboriginal plant management systems as well as the disruption of aboriginal culture (D. Sarff, personal communication, 2002). Settlers of European ancestry did not, in general, value indigenous based knowledge (Simpson, 2001-03).

The consequences of this European influence included a disappearance of some of the oral historical cultural information on how indigenous peoples managed the natural ecosystem for plants that are still highly useful to aboriginal peoples and their communities today. In other instances, some indigenous communities were and still are hesitant to share their environmental based knowledge for sustainable land management with "Westerners" (Simpson, 2001-03). In addition, at the present time, some Western scientists are hesitant to incorporate indigenous knowledge with Western-based science for natural resource management (Huntington, 2000). Scientific hesitation is due, in part, to various problems and difficulties associated with integrating what is currently referred to as traditional ecological knowledge (TEK) and Western science.

Globally, interest in indigenous knowledge or TEK has been growing over the past few decades (Simpson, 2001-03; Berkes, 1999). It is currently being identified and considered as a viable and

sustainable method for natural resource management (Berkes, 1999; Turner, 1997). In fact, there are instances where research is being conducted for developing methods for integrating TEK and Western science. Given the growing interest in TEK, historical information regarding indigenous forest management systems is more readily being described and documented.

1.4.2 Implications of the Problem

In developing new programs, an important first step is to learn from similar programs already in existence. With such information, developers of new NTFP or community forestry programs may be able to avoid some problems. As well, learning the successes of other programs will assist a newly developing program in understanding the processes that other communities' followed in order to be successful. Learning from other NTFP or community forestry programs could assist a new program to more efficiently utilize its funding resources and time spent during program development.

CHAPTER 2: LITERATURE REVIEW

A review of literature on the topics of indigenous resource management and TEK suggest that problems related to the collection and collation of information might be attributed to the following:

- Displacement of traditional resource management systems by European practices and suppression of traditional systems of knowledge;
- Reluctance of indigenous peoples to share their orally based indigenous knowledge with "Western" society; and
- Reluctance of scientific researchers to gain and utilize information regarding TEK due to difficulties in integrating TEK with Western science.

2.1 Indigenous Knowledge Suppression by Europeans

Upon their arrival to North America, Europeans were dependent on indigenous peoples in order to survive (Simpson, 2001-03). Indigenous knowledge or TEK that was shared with European settlers assisted them in finding food, shelter and fighting disease, amongst other things. With time, more and more Europeans immigrated to North America (Simpson, 2001-03), establishing various settlements including farms and cities. This establishment of European settlements eventually resulted in land and other resources being taken away from aboriginal people (Turner, 1997) and Europeans eventually eliminated their dependence on indigenous knowledge for survival. Once this occurred, indigenous knowledge was "ignored, devalued and dismissed by dominant society" (Simpson, 2001-03, p. 1). At the same time, many indigenous people adopted European technologies to replace indigenous technologies, leading to a further loss of earlier systems of knowledge.

Since the invasion of the European based "Western" society, indigenous people were subject to persecution if they chose to nurture their indigenous knowledge and culture that they had practiced for centuries (Simpson, 2001-03). This initiated a decline of traditional societies and their indigenous knowledge (Klee, 1980). In some instances, however, indigenous communities did practice and maintain their cultural traditions despite the threat of persecution (Simpson, 2001-03). Regardless, the suppression of indigenous knowledge did lead to a widespread loss of some indigenous knowledge held by aboriginal peoples in North America.

TEK is learned and passed on through oral transfer to each generation existing in an aboriginal community (Turner, 1997). Traditionally, within most indigenous cultures there was an absence of written language. Consequently, indigenous knowledge was rarely recorded in writing. This lack of written documentation of TEK combined with suppression of indigenous knowledge since the colonial period is suspect to having contributed to some of the difficulties in collecting and collating information regarding TEK and indigenous resource management systems.

2.2 Indigenous People's Reluctance to Share Oral Based Knowledge

Indigenous people have often been reluctant, for a number of reasons, to share their knowledge of the environment and traditional management systems. As noted above, during some periods of history, publicly asserting or using such knowledge would have resulted in persecution. However, literature (Berkes, 1999; Simpson, 2001-03) suggests that the reasons are more linked with a misunderstanding by Western culture of the proper use of indigenous knowledge and a

fear by aboriginal communities that intellectual property will be appropriated and used without their consent and without compensation.

First of all, the process for teaching TEK in an aboriginal community is through "firsthand instruction from one generation to the next by means of stories, ceremonial translations and participatory learning" (Turner, 1997, p. 292). Consequently, it is not common for TEK to be written down for documentation by indigenous peoples (Huntington, 2000). This might contribute to the difficulties Western society has concerning the proper use of indigenous knowledge.

Currently TEK that has been documented has not always reflected indigenous knowledge appropriately. Often information is collected and documented by "outsiders" and therefore the interpretation of the information from oral to written can be skewed. Often it is only the ecological component of indigenous knowledge that is written (Simpson, 2001-03). Western researchers do not appear to connect with the spiritual foundations of this knowledge (Simpson, 2001-03).

Indigenous knowledge is considered highly significant to indigenous peoples and there is a "growing sense among these groups that research by outsiders has not served them well over the years" (Berkes, 1999, p. 26). Berkes (1999) also states that:

> Most academics...as outsiders, they tend not to deal with indigenous knowledge as lived knowledge, they lack an ancestry of experiences and they often do not establish meaning by creating relationships (p. 27).

As a consequence, some indigenous peoples or communities may be reluctant to share their knowledge with "Western" based academics for written documentation, making collection and

collation of indigenous resource management systems difficult. Literature suggests that this is due to the fact that their knowledge is improperly documented in some instances and hence, may be improperly utilized for and/or integrated with Western-based resource management decision-making. In addition, the potential misuse of intellectual property of indigenous peoples causes them some concern.

2.3 Western Science Reluctance to Utilize Indigenous Knowledge

Some Western-based scientists have demonstrated reluctance in documenting and utilizing TEK. Over the past several hundred years, Western science has become the more dominant worldwide form of study as opposed to indigenous knowledge approaches to resource management (Berkes, 1999). However, over the past decades Western culture has become interested in indigenous knowledge for resource management (Simpson, 2001-03). "There has been an increasing number of international symposia and workshops, and a rapidly expanding list of books and other publications on the subject" (Berkes, 1999, p. 17). Regardless, there are still some Western scientists who are reluctant to utilize indigenous knowledge for incorporation into scientific research or to be used in addition to scientific research. The reasons for their reluctance may include but not be limited to the following:

- Difficulties in the assembly of large amounts of historical TEK data (Striplen and DeWeerdt, 2002);
- Unidentified methods for applying TEK to Western based resource management;
- Differences in the level at which local indigenous groups are culturally intact;
- Linguistic issues with learning and translating the traditional languages of indigenous people into English form;

- Differences in indigenous versus Western science species classification systems (Hunn, as cited by Berkes, 1999); and
- Issues surrounding the relevance of indigenous knowledge systems where indigenous cultures have been heavily influenced by Western-based society.

In other cases, some Western scientists might be resistant to change and therefore are inflexible to the concept of TEK (Huntington, 2000). Some scientists are resistant specifically to TEK and the changes required by its use. This may be due to the fact that TEK relies on more subtle arguments, questioning the reliability of TEK or expressing concern about "political correctness" replacing scientific rigor (Huntington, 2000). Regardless, as the previous section implies, there are still some scientists who are interested in integrating TEK and Western science. For example, there are ethnobotanists that have shown great interest in and appreciate the value of TEK (Berkes, 1999).

CHAPTER 3: CONDUCT OF RESEARCH STUDY

Thesis research methodologies entailed a review of relevant literature and Internet based resources on indigenous forest management for NTFPs in North America and globally. These included:

- Journal articles;
- Books; and
- Internet sources.

Organizations and associated programs researched on the Internet to identify indigenous NTFP or community forestry programs are listed below. For each organization or program, the location (country) and copyright dates are provided in parenthesis. The website address for each organization or program is included in the "References Cited" section of this report.

- Food and Agriculture Organization (FAO) of the United Nation's
    - Non-Wood Forest Products (NWFP) Program (Italy) (no date given)
- World Wildlife Fund Malaysia (Malaysia) (No date given)
- International Centre for Integrated Mountain Development (Nepal) (No date given)
- Plant Resources of South East Asia Foundation (Indonesia) (2002)
- Himalayan Forest Research Institute
    - Non-Wood Forest Products Division (India) (2002)
- Asia Network for Sustainable Agriculture and Bioresources
    - Nepal Non-Timber Forest Product Network (NNN) (Nepal) (No date given)
- Asian Development Bank (Philippines) (2003)

- Tropical Forest Research Institute
    - Non-Wood Forest Produce Division (India) (No date given)
- World Health Organization for South – East Asia (India) (2003)
- Ford Foundation
    - Asset Building and Community Development (globally based offices) (2003)
- International Plant Genetic Resources Institute (globally based offices) (2002)
- International Network of Forests and Communities. (Canada) (No date given)
- Center for International Forestry Research (Indonesia) (1993 – 2003)
- International Tropical Timber Organization (Japan) (No date given)
- International Union of Forestry Research Organizations (Austria) (2002)
- Centre of Minor Forest Products (India) (No date given)
- Philippine Department of Science and Technology
    - Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (Philippines) (2001).
- The World Bank Group
    - Indigenous Peoples Program (United States) (2003)
- Canadian International Development Agency (CIDA)
    - Indigenous Peoples Partnership Program (Canada) (No date given)
- International Development Research Centre
    - Environment and Natural Resource Management (Canada) (1995-2003)
- International Union for the Conservation of Nature and Natural Resources (Switzerland) (1995-2003)
- World Wildlife Fund (WWF)

- Biodiversity Support Program (BSP) (United States) (No date given)

In addition, a general Internet search using various key words related to indigenous NTFP and community forestry programs was conducted.

The following is a list of book sources that were researched for NTFP or community forestry programs:

- Communities and Forest Management in Southeast Asia (Poffenberger, 1999)
- Cultivating Forests: Alternative Forest Management Practices and Techniques for Community Forestry (Victor and Barash, 2001)

Identified NTFP programs from the above organizations and associated programs, Internet searches and book sources that did not contain enough initial information for a sustainability assessment were researched further through attempts to contact program managers or coordinators by phone or email. However, the success of contacting program managers or coordinators was not high. Therefore based on the research conducted through Internet and book sources, the following Table 3.1 lists the programs and projects that were identified and selected for further research on the Internet for investigation of additional information.

Table. 3.1 Community forestry or NTFP programs and projects, and their sponsors, that were identified and selected for further research of program/project information.

Sponsor	Program or Project
World Wildlife Fund: Biodiversity Support Program	• Abaca Fibre and Rattan from the Forests of Mindanao; Philippines (No date given); • Rattan and Resin from the Tropical Forests of Palawan, Philippines (No date given); • Jelly and Other NTFPs from the Forests of the Kalahan Reserve, Lozon, Philippines (No date given); • Forest Products from the Western Ghats, India (No date given) • Forest Products in the Rain Forest of West Kalimantan, Indonesia (No date given)
Tanga Coastal Zone Conservation and Development Program	• From Protection to Wise Management of Mangroves in Tanzania: A Case Study of Collaborative Management in Tanga (Nurse and Kabamba, 2001)
Swiss Agency for Development and Cooperation (SDC)	• Self-sustained Community Forestry in Nepal: The Case of the Nepal-Swiss Community Forestry Project (Siktel and Treacy, 2001)
German society for technical co-operation	• Churia Forest Development Project (Paudyal, 2001)
Ma-Mook Development Corporation	• Clayoquot Sound Wildfoods (No date given)
The World Bank Group	• Mexico Community Forestry Project (No date given)
None	• Damar Forest Gardens, Krui District, Indonesia (Poffenberger, 1999)
International NGOs, Oxfam and Novib	• Ya Poey Commune, Ratanakiri Province, Cambodia (Poffenberger, 1999)

Based on a final review of the amount of information available to answer the questions asked for this study, the following NTFP programs / projects were chosen for inclusion:

- From Protection to Wise Management of Mangroves in Tanzania: A Case Study of Collaborative Management in Tanga;
- Ya Poey Commune, Ratanakiri Province, Cambodia;
- Damar Forest Gardens, Krui District, Indonesia; and

- Self-sustained Community Forestry in Nepal: The Case of the Nepal-Swiss Community Forestry Project.

These four NTFP / Community Forestry Programs were then assessed according to the following "Generic Sustainability Test Criteria". (Source: Modified from the Bellagio Principles for Assessing Progress Toward Sustainability (Hardi and Zdan, 1997)).

To determine their effectiveness, this list of criterion has undergone simulations by the Graduate Program in Environment and Management, Royal Roads University, Victoria, BC. The author of this thesis report has been involved in these simulations and therefore chose these criteria for this assessment due to familiarity and experience using them as well as reasons related to time constraints in completing this study.

Substance-Based Criteria

1. ***Holistic Thinking***: Does the program encourage holistic thinking that spans people (social, cultural, economic, and political aspects) and ecosystems?
2. ***Positive and Negative Implications:*** Does the program consider the complete range of positive and negative consequences of human activity in a way that reflects the costs and benefits for people and ecosystems in monetary and non-monetary terms?
3. ***Short and Long Term:*** Does it ensure that multiple time horizons are used in planning and decision-making that address both immediate priorities as well as long term implications that extends to analysis to span concerns for future generations?

4. ***Equity and Disparity:*** Does it entrench a concern for equity and disparity (in the distribution of benefits and costs derived from program activity) within the current population and between present and future generations?
5. ***Local to Global:*** Does it encourage the use of spatial framework in planning and decision-making that includes not only local but also far distant impacts on people and ecosystems?
6. ***Anticipatory Thinking and Action:*** Does the program encourage anticipatory and pro-active planning and decision-making that will address emerging issues before they become crises?
7. ***Effectiveness:*** Are goals and objectives designed to apply to both the short term as well as the long term?
8. ***Efficiency:*** Does the program provide a clear way to achieve the greatest output achieved for the least input of resources?
9. ***Practicality:*** Overall, does the program provide a practical approach that builds from existing capacity?

Process Based Criteria

10. ***Process:*** Overall, does the program consider the effectiveness of process as well as the nature of the end result?
11. ***Vision, Goals and Objectives:*** Does the program begin with an effective vision and set of goals and objectives that capture the concept of sustainability and links it to the program mandate?
12. ***Openness; Alternative Values:*** Does the program address the whole issue of encouraging the active participation of all affected communities of interest in its own activities? Does it encourage a respect for the alternative and changing values that exist within society?

13. ***Consensus-seeking:*** Does the program encourage the use of consensus-seeking processes within the community?
14. ***Fairness:*** Does the program reflect a framework of rules that establishes fair process?
15. ***Education and Continuing Learning:*** Does the program reflect a commitment to continuous learning?
16. ***Pride in Excellence:*** Does the program reflect a spirit that draws out the strengths of people within the community, thereby bringing pride to those involved?

Each NTFP or community forestry program or project was rated for each sustainability criterion on a scale from 0 to 4 to determine to what degree the programs/projects met each criterion. Table 3.2 describes the meaning to each scale value.

Table 3.2 Scale values and their meaning for rating sustainability criterion for each NTFP or community forestry program.

Scale Value	Scale Meaning
0	Does not appear to have met the criterion or information not available
1	Slightly met the criterion
2	Met the criterion
3	Strongly met the criterion
4	Very strongly met the criterion

The two programs having the highest values for each of the 16 criteria were described as case studies. Case study descriptions provided a written description of each program that also included:

a) The process the community adopted in order to develop their program;

b) The successes and challenges that the program has entailed and documented; and

c) An inventory of the sustainability tools the community utilized within their program.

In addition, the sustainability criterion that the program or project met and how they were met is provided in Appendix A.

Sustainability criteria assessments for the two programs or projects that did not attain high enough scale values to be considered the most "sustainable" programs or projects are also provided in Appendix A.

All assessments detail what "Generic Sustainability Test Criterion" each program did or did not meet and to what scale value. These will assist the Makah CBFI in learning what strategies do and don't work for achieving sustainability in a community based NTFP program.

CHAPTER 4: RESEARCH STUDY RESULTS

4.1 Study Findings

Appendix A provides detailed sustainability assessment results for each of the four NTFP or community forestry programs included in this study. The following Table 4.1 provides the assigned scale values for each of the sustainability criterion used for assessing the four NTFP or community forestry programs.

Table 4.1. Scale values for each "Generic Sustainability Test Criterion" for each of the four NTFP / community forestry programs / projects assessed.

	PROGRAM or PROJECT			
Criterion Number	Tanga, Tanzania – Collaborative Management	Ya Poey Commune, Ratanakiri Province, Cambodia	Damar Forest Gardens, Krui District, Indonesia	Nepal-Swiss Community Forestry Project
1	4	3	4	2
2	3	2	3	1
3	2	2	4	2
4	4	2	4	3
5	3	2	3	2
6	2	2	3	1
7	3	3	4	2
8	4	3	4	2
9	4	2	4	1
10	3	2	4	2
11	2	2	3	1
12	2	2	3	2
13	3	3	3	1
14	3	3	3	3
15	2	2	4	3
16	4	3	4	1

4.1.1 Case Studies

Based on the sustainability assessment, the two programs found to have best met the sustainability criteria in order are:

- Damar Forest Gardens, Krui District, Indonesia; and
- From Protection to Wise Management of Mangroves in Tanzania: A Case Study of Collaborative Management in Tanga.

These two programs are summarized through case study descriptions as follows.

4.1.1.1 Damar Forest Gardens, Krui District, Indonesia

Information for the following case study is drawn from Poffenberger (1999).

The Damar Forest Gardens of Krui are located on the island of Sumantra along the southern coast. They lie adjacent to a protected tropical forest and to the Indian Ocean on their other side. These forests are co-managed by various Krui communities who utilize their indigenous resource management system. There is no requirement for donor-support. The products of these forests that the Krui communities utilize are extensive and range from forest fruits to resin and from rattan to latex.

NTFPs from these forests provide subsistence needs and monetary benefits to community members in addition to maintaining the ecological structure and function of the forests. In order to maintain the ecological structure and function of these forests, this program has adopted continual experimentation for improved planting and germinating techniques and for improved silvicultural methods.

This indigenous forest management system is structured in such a manner as to resolve disputes among community members, ensure there is equity amongst community members and adopt a sustainable approach to protect forest resources for future generations. The following provides a detailed description regarding this community forestry program.

Non-Timber Forest Products of the Damar Forest Gardens: Community stewards have managed these forests for centuries. The various products harvested from these forests have been utilized for both trade and domestic use. Their structure and composition consists of a complex mix of tree, climber, shrub and herb. Some other products that these forests are utilized for include wood, fiber, spices and medicinal materials. Of special interest, is that the word damar refers to a resin-producing tree, and damar resin is especially important to Krui communities for economic benefits. Damar resin is used for developing products such as linoleum, paints and varnishes. It is a primary trade good of Krui communities, and almost fifty percent of Indonesian damar comes from the Krui forest gardens. In the second half of the 19th century the demand for damar increased in the United States and Europe. Eighty percent of all damar traded on the world market is provided from agro forest reserves in Indonesia.

The first stage of damar production is collection by Krui District community farmers. After collection the damar is sorted and then purchased by "middlemen" who come from the various Krui villages and towns. In each Krui village 10-20 small traders purchase damar from farmers and then take the damar to market.

The Communal Tenure System: Damar forest gardens are family managed. However, whole households do not maintain full property rights. All forested lands are subject to community or hereditary lineage group restrictions. In Krui, these are referred to as "marga" lands. Community members have traditionally held forestlands in common under their hereditary lineage groups. Family descendants can receive damar forests from their families. However in order for an individual to transfer trees or harvest trees they are required to seek and gain approval from the larger extended family. As a consequence of this management system there has not been any forest garden ecosystem fragmentation. Forest resources such as fruits, sap, bamboo, thatching leaves, etc. are held as community property.

As damar markets expanded, demand for the product increased. Chinese merchants utilized damar as early as the third century. By the 1800s, 280 tons of damar was being exported from Sumatra annually. Consequently, more damar trees were planted, particularly on fields that had been fallowed. Acceptance of perennial species planting on "marga" land resulted from the increased demand for damar that created economic pressure. What had always been considered communal forest domains then became subject to a major alteration in land appropriation. However, the traditional communal ownership system was protected on non-planted forests.

Forest Production and Management: Forest management in the damar forest gardens incorporates natural ecosystem succession. The initial species planted in a cleared or fallowed piece of land is upland rice, followed by coffee or pepper. Damar seedlings are not planted until after 3-7 years. Coffee production is enhanced when the damar seedlings are growing. After

approximately 15 years damar tree growth overtakes the fruiting trees. Once damar trees no longer produce resin, they are selectively cut and replaced. Between all the NTFPs harvested from these forests, annual income per hectare of agro forest has been determined to be approximately $1200 to $1800 based on 127 person days of labor.

New Production and Management Systems: Over the past few decades' private timber companies have encroached upon the Krui communities and their traditional resource management systems. Oil palm companies have also become a threat to the damar forest gardens. These companies had the support of local Indonesian governments for economically based reasons. Palm plantations consume vast areas of land. For example, dozens of hectares of Krui damar trees were clearcut by one company in 1996.

In 1994, however, a number of researchers formed an organization called *Tim Krui* for the purpose of helping to protect the damar forest gardens for local communities. This organization consisted of researchers from the Indonesian Tropical Institute (LATIN), the International Centre for Research in Agroforestry (ICRAF), the Ford Foundation, NGOs and Universities. In 1997, due to the efforts of this organization's members, the Indonesian Minister of Forests suggested Krui be utilized as a "test case" for the development of a new community forestry policy, pushing for local control of the damar forests. In 1998, the Krui forests were declared a new "special use zone" by the Indonesian government. This meant that Krui communities would have control over their ancestral damar forest reserves and be able to manage them under their customary institutions and laws.

4.1.1.1.1 Summary of the Program's Successes and Challenges

SUCCESSES: The Krui traditional land management system has achieved a number of successes that include the following:

1. Maintenance of a traditional land tenure system for centuries. The communal property laws of this system allow for family control of forests for household investment and hereditary rights to forest lands. They also allow the land resources to be overseen by the Krui district community members. This tenure system protects and respects cultural values and ensures the function of customary authority;

2. The ability to combine a traditional land management system with newly developed silvicultural technologies and practices. These combined, have led to the protection of endangered species habitat and critical watersheds while also providing economic benefits to Krui families;

3. Damar forest gardens resemble natural forests in both their structure and biodiversity. This is due to the combination of natural ecological processes that are allowed to take place in the damar forest and silvicultural techniques that are practiced by villagers. Both allow for natural successional stages to occur for the establishment of damar forest gardens;

4. This is a profitable community forestry program. There is no external investment required to develop a sustainable and profitable forest management system;

5. This community based forest management system provides additional habitat for a number of wildlife species and wild plant species; and

6. The Indonesian government has recognized the damar forest gardens as "Special Management Areas". This has allowed local Krui communities to now have more strength to their rights and responsibilities to the damar forests.

CHALLENGES: It appears as though the Krui community's main challenge has been the pressure of private logging companies and palm tree corporations on the damar forest. The Krui community does not appear to be one hundred percent certain that the terms of their management agreement with the Indonesian government provides enough security from external corporate entities. This may pose difficulties in protecting their land in the future.

4.1.1.1.2 Summary of Sustainability Assessment Results

The Krui, Indonesia program attained values from 3 (strongly met the criterion) to 4 (very strongly met the criterion). Appendix A provides details of the sustainability assessment that was conducted to determine the "sustainability" of this program. The following provides a general summary of some of the key elements that appear to have encouraged this program's high degree of "sustainability":

- The Krui case study demonstrates the effectiveness of utilizing a traditional indigenous resource management system for achieving a sustainable program. The family unit controls parcels of forest while also protecting habitat for endangered species and community cultural values;

- The wellbeing of future generations is considered with this resource management system. This is apparent in the longevity of this system that has lasted for centuries;

- The Krui system is recognized nationally as a sustainable indigenous management system. This national recognition assists in educating other entities for developing a sustainable community forestry program;
- Customary laws reduce dispute issues amongst families and community members and separate Krui villages;
- New silvicultural techniques are always being experimented for improvements in forest management;
- The Krui management system allows natural successional stages to take place within damar forests over time;
- The Krui utilized natural ecological processes in establishing their damar forest reserves;
- The program is not donor dependent and is profitable without external support;
- The program ensures equity amongst members within the community for decision-making. For example, all Krui families are involved in forest land management decision making;
- The program maintains a vision, goals and objectives that were established centuries ago;
- The program considers and makes decisions that will not harm or that will reduce impact to adjacent ecosystems; and
- Families appear to feel a sense of pride through their "ownership" of the damar forest gardens.

4.1.1.2 From Protection to Wise Management of Mangroves in Tanzania: A Case Study of Collaborative Management in Tanga

Information for the following case study description is drawn from Nurse and Kabamba (2001).

Tanga is located in the Northern region of Tanzania, Africa. This region consists of 87 coastal villages comprised of approximately 40,000 people. Fishing is the primary industry yet farming is also important to the people of Tanga. This case study demonstrates a collaborative management initiative developed between two villages in Tanga and the Tanga Coastal Zone Conservation and Development Program Team (Program). This team consists of a multi-disciplinary team of government staff. They have assisted two communities (Sange and Kipumbuoi) in protecting, utilizing and managing an adjacent mangrove forest reserve.

The traditional resource management methods of Tanga communities ended after an enforced migration occurred where a one party rule socialist government was established. However, democracy opportunities have arisen since. This has allowed the government to develop partnership opportunities for conservation and development with various non-governmental organizations.

In order to protect coastal forests and manage them with this goal in mind, collaborative management systems are becoming a popular method with communities. A collaborative management system requires that forest management systems incorporate the following:

1. Local knowledge;
2. Local experience; and
3. Local preferences.

Initiating a Management System: To manage their natural resources, Kipumbuoi villagers held a community led planning process in collaboration with Program staff members. This led to the establishment of two committees for addressing natural resource management issues. These two committees included:

1. The Lands and Environment Committee for mangrove protection and administration; and
2. The Safety and Security Committee for enforcing fishery and forestry regulation.

This process is what led to the establishment of a partnership between the Kipumbuoi village and the Sange village. It allowed the Sange villagers to jointly claim the right to access and use of these forests. A Lands and Environment Committee was also established for Sange. All committee groups between these two communities work together for coordinating management activities. In addition, an intervillage partnership was created to share forest rights and financial revenues resulting from forest resources.

Forest Resource Use Assessment: The Program team conducted a resource assessment in both villages for:

- Determining the current indigenous resource management system;

- Determining existing indigenous knowledge regarding forest management;
- Determining what resources forest users require; and
- Increasing forest management group capacity.

Steps that the Program took in order to assess "productive capacity" of the mangrove forests included:

- A topographic map providing key geographical features was developed for participatory mapping exercises;
- Focus groups for women, elders and young people, etc., living in the villages, were identified;
- A number of semi-structured interviews were conducted with each focus group. Questions asked related to mangrove resource use;
- An informal survey was conducted to check the results of the semi-structured interviews; and
- Forest users described their traditional management forest blocks to Program staff in order to develop a forest profile.

Assessment Results: A map depicting indigenous use areas was developed for utilization of community led planning. Indigenous use and future management needs of the two villages

guided the development of forest management "blocks" and these were depicted on this map. "Use" zones were developed for the mangrove forest reserve as follows:

- Zone 1: Total forest protection;
- Zone 2: Forests for production purposes controlled, controlled harvesting can occur;
- Zone 3: Degraded areas requiring recovery and rehabilitation. No cutting for various periods of length; and
- Zone 4: Areas designated for various types of development.

The "Users" plan is completely adjustable. Changing forest conditions are demonstrated in new maps and depict the response to changes that are taking place in the forests. Changes might include a change in mangrove status or a change in user demand.

The management system that was developed accommodated for the villagers needs for forest products. In addition, it accommodated for recommendations provided in the National Mangrove Management Plan.

The mangrove forest was divided into forest management blocks. Forest users and Program staff developed silvicultural operations recommendations for each of the blocks. These were based on the following:

- Vegetation type and forest condition found in the forest sub areas;
- The product needs of the users (there are preferred species for most products); and

- The potential of the forest to yield those products on a sustainable basis. The species preference is balanced against forest condition when blocks are nominated for production of desired products (Nurse and Kabamba, 2001, p. 65).

Forest Management Plan Development: The management plan includes a number of sections as follows:

1. Description of the forest including land tenure and management objectives;
2. Roles, responsibilities, authority and accountability of the partner organizations and institutions;
3. Prescriptions for harvesting and distribution of forest products; and
4. Protection arrangements and sanctions (Nurse and Kabamba, 2001, p. 66).

The most effective rotation schedule and methods for NTFP harvesting were determined through silvicultural research and associated demonstration blocks.

Action plans were developed in order to monitor and evaluate the management plan's progress. Three types of action plans were developed as follows:

- A narrative summary for three years;
- A detailed three year action plan of who does what and when, and the various outputs and assumptions; and
- Work plans made and reviewed every six months by the villagers (Nurse and Kabamba, 2001, p. 66).

The narrative summary described the overall objective of the forest management action plan, the purpose of the plan, expected results, indicators for meeting milestones and verifications for identifying the success of the action plan.

Management Plan Implementation: The forest users adopted a two phase approach to management and were as follows:

> Phase 1: Management of the mangroves to fulfill household subsistence needs in building poles, boat-making materials, firewood, medicines, honey and salt making; and
>
> Phase 2: After a period of effective control, there is a need to implement a system of sustainable management for the mangroves, so that wise use can lead to increased income generation for the villagers through the sale of excess products (Nurse and Kabamba, 2001, p. 67).

The two phase approach was developed because the mangrove forests are part of the national reserve forests and villagers felt that the mangrove forests initially needed to have a "functioning, protection oriented system" (p. 67) before production was increased to attain Phase 2.

Implementing this plan required support from government and the Program for the first few years.

It was important to ensure equity amongst villagers and genders and that community self-reliance and community access to the mangrove forests was sustained. Consequently, a monitoring system was developed.

4.1.1.2.1 Summary of the Program's Successes and Challenges

SUCCESSES: The Tanga collaborative management program has achieved a number of successes that include the following:

1. The organizational and institutional structures of the village have undergone many positive changes since implementation of the management plan. Community meetings are regularly scheduled and are setup accordingly;

2. The community developed a management system that actually complements the National Mangrove Management Plan. Therefore the community plan will be more likely to meet the approval of the Director of the Forestry Department; and

3. Capacity building was achieved in that this program was established through a community-led planning process. Two villages successfully formed a partnership for joint forest management. The name KiSa is in recognition of this partnership.

CHALLENGES: The Tanga collaborative management program also had a few challenges that include the following:

1. Program fragility existed as a result of the emerging democratic system causing political instability in Tanzania. Consequently, silvicultural demonstration plots at the KiSa Program were destroyed due to political influence; and

2. The KiSa program is unable to rely on the village government system alone in order to establish a sustainable mangrove forest management program. This is a consequence of the political motivation of the government.

4.1.1.2.2 Summary of Sustainability Assessment Results

The Tanga, Tanzania program attained values from 2 (met the criterion) to 4 (very strongly met the criterion). Appendix A provides the detailed results of the sustainability assessment that was conducted to determine the "sustainability" of this program. The following provides some of the key elements and observations made regarding this program that appear to have encouraged its "sustainability":

- Program considers traditional indigenous natural resource management in forest management planning;
- Community led planning led the path to sustainable forest management;
- Partnerships were formed between villagers and government staff;
- Program promotes the sustainable harvesting of NTFPs;
- Program fulfills both villagers' short and long term subsistence and monetary needs;
- Two villages formed an equitable partnership for managing forests and for sharing the resources from a financial perspective;
- A monitoring program was established to ensure equity amongst households;
- Program promotes community self-reliance so that the program can continue, post government funding;
- Ecological monitoring occurred to ensure ecological structure of forests meets future generations' needs;
- Program builds upon previously established mangrove protection program;

- Production of an Action Plan details objectives, purpose, results and indicators;
- A consensus regarding resource use was assessed amongst villagers ranging in age from youth to village elders; and
- The various "partners'" (villagers, government, etc) roles in the Forest Management Plan are well defined.

4.1.2 Program Summaries for Additional Sustainability Assessments

The two programs or projects that appear to have met the sustainability criteria to a slightly lesser extent are:

- Ya Poey Commune, Ratanakiri Province, Cambodia; and
- Nepal–Swiss Community Forestry Project.

These programs / projects are briefly summarized below.

4.1.2.1 Ya Poey Commune, Ratanakiri Province, Cambodia

Information for the following program summary is drawn from Poffenberger (1999).

This NTFP program was supported by international non-governmental organizations (NGOs), Oxfam and Novib. The goal of this program was to protect the livelihoods of the villagers who utilize the forests for NTFPs and to address existing or potential resource conflicts. The forest conservation area is highly productive and rich in biodiversity. Villagers utilize sixty percent of forest products. It has been determined that the combined value of all NTFPs harvested is approximately $4,000 per hectare.

A pilot project called the Forest Conservation Association has allowed for 5,000 hectares of forest to be managed by six of the local villages. For ethnic villagers the forest is a spiritual place as well as one that provides subsistence needs and monetary benefits. However, since 1993 governments and outsiders have attempted to take control of the forests that villagers rely on for their wellbeing and livelihoods. In response, village elders from Koy Village created a number of forest use regulations including "no clearing of communal forests for swidden, forest burning or felling of large trees" (Poffenberger, 1999, p. 72). To gain support, villagers asked Oxfam and Novib to assist in formalizing the forest rules that they had created.

From this point on, it was determined that Koy villagers shared their forests with 5 other villages. Consequently, village elders from all 5 villages collaborated to develop a common set of forest use rights and rules for the forest management area they shared. They called their collaboration the Forest Conservation Association to address the concerns of each of the six villages and for consequential rule adoption. The villagers determined and mapped the forest boundaries of the 4 separate forests that were shared. These boundaries were established to assist with conservation efforts and NTFP collection purposes.

The Ya Poey Commune, Cambodia program attained values from 2 (met the criterion) to 4 (very strongly met the criterion). This program did not achieve as high of values for some of the criterion as the Indonesian and Tanzanian programs. However, this program could still be considered fairly sustainable because no criterion had met values lower than 2. To gain higher

values, the program's overall vision, goals and objectives could have been more clearly defined. In addition, more substance to the program description in the information source may have also contributed to higher scale values. Therefore it is difficult to absolutely ascertain if the program did not make higher values due to the program itself or due to the information source not providing enough detailed information. Appendix A provides the detailed results of the sustainability assessment that was conducted to determine the "sustainability" level of this program.

4.1.2.2 Nepal – Swiss Community Forestry Project (NSCFP)

The NSCFP is funded by the Swiss Agency for Development and Cooperation (SDC), an agency of the Swiss Ministry of Foreign Affairs. This project takes place within three Nepalese districts and extends from what is considered the middle hills to the border with China. This project was initiated in 1990 (Siktel and Treacy, 2001). The project area covers 5,200 km^2 with 195,000 hectares of forest. Five hundred thousand people inhabit the area.

Two primary goals of this project include:

1. To assist the Nepalese government with the handing over of forests to Forest User Groups (FUGs); and
2. To facilitate FUGs to realize optimal flows of forest produce for subsistence and marketing (Siktel and Treacy, 2001, p. 2).

The role of FUGs is to manage, conserve and develop forest resources and also to harvest forest products for use by villagers (International Network of Forests and Communities, Nepal

Community Forestry Profile, no date given). FUG Charter development and forest management planning or Operational Plan (OP) development are FUG responsibilities for community forests that have been passed over to them by the government. This means that any community forest management issues are FUG responsibility. The NSCFP has assisted in establishing 610 FUGs (Siktel and Treacy, 2001).

The activities of FUGs are monitored and evaluated by the Nepalese government's District Forest Officers (DFOs) (Siktel and Treacy, 2001). This is to ensure that FUGs are conducting forest management in accordance with the FUGs' Charter and that funds are distributed accordingly.

In Nepal's Forestry Act of 1993 a "user group" is defined as an "autonomous and corporate body with perpetual succession, with the freedom to sell surplus products at self-fixed prices" (Siktel and Treacy, 2001, p. 1). The associated and most current five year plan stresses that forests can contribute to FUG income generation after villager's subsistence needs have been provided for. It also stresses that reducing village poverty should be a key goal of natural resource management.

A "multi-partnership approach" has been established between various community based and non-government organizations and the FUGs (Siktel and Treacy 2003). These provide many diverse forms of support services to FUGs including private technicians or what are known as service providers. These are expected to continue once donor support is completed. It is hoped

that the combined support of service providers and DFOs will achieve self-financed community forestry. In addition, capacity building through education is promoted within this project in the form of scholarships and internships for forestry study (Carter et al, 2003).

Challenges to this project include the already established bureaucratic top-down approach to community forestry development and management (Siktel and Treacy, 2001) as opposed to a bottom-up approach that would build upon the values, knowledge and needs of Nepalese villagers.

The NSCFP attained values from 1 (slightly met the criterion) to 3 (strongly met the criterion). Appendix A provides details as to how and to what level this program met each of the 16 sustainability criterion utilized for the sustainability assessment. This project has many aspects that allowed it to achieve adequate sustainability values for most of the criterion. In particular, the project scored very well (value of 3) for the criterion of equity and disparity, fairness and education and continuous learning. This was achieved by considering the needs of poor and disadvantaged villagers and considering their points of view. With regards to fairness, FUGs were given the responsibility of charter and work plan development for their community forestry program and they lead their communities in forest management planning. In doing this they appear to establish a fair process, considering the needs of various stakeholders. Education is also a priority of this project. Scholarships and internships are provided for Nepalese community members wanting to pursue a career in forestry.

This project scored lower values for the criterion of: consideration of positive and negative implications, effectiveness, efficiency, practicality, process and pride in excellence. To achieve better scores for each of the criterion, the project might have addressed the following:

- Ensure that in all instances a bottom-up approach for program development that builds upon local peoples knowledge, needs and desires with regards to natural resource management is adopted;
- Develop strategies that reduce donor dependency that has occurred in some instances;
- Develop indicators to determine the success of the project; and
- Provide a clear community based vision and objectives for the project.

Unfortunately it is difficult to ascertain if this program needs to better address each of the six criterions or if the information sources for this project did not supply enough information to demonstrate how this project met each of the criterions.

CHAPTER 5: SUMMARY / RECOMMENDATIONS

5.1 Study Conclusions

This study assessed four different indigenous NTFP or community forestry programs, extending from indigenous traditional resource management systems that have been ongoing for centuries to those that required donor support in order to re-establish. Each program was developed or maintained under their unique circumstances and each had various sustainable elements to them based on their differing circumstances.

The Damar Forest Gardens located in Krui, Indonesia appears to be the most "sustainable" program in this study. The longevity of this program for centuries has contributed to this program attaining this goal. It has maintained the Krui regions traditional resource management system and tenure system for this long period. Another element is that it has integrated experimental silvicultural techniques while allowing for natural ecological successional stages to take place in the forests. This has allowed these forests to resemble their adjacent natural forests. This program has also been economically successful in marketing various NTFPs, especially the resin from the damar trees which is utilized worldwide for a variety of purposes. This program does not rely on any external funding sources to maintain its success.

The Tanga, Tanzania program also attained a high level of "sustainability". The success of this program is attributed to its collaborative management approach. This approach has assisted in the re-establishment of components of the region's traditional resource management system that had been lost due to political pressures in the past. Some key elements that contribute to this program's success are that it builds upon local knowledge, experience and preferences,

establishes partnerships and adopts a community-led planning process with Elder involvement. It also has clearly defined objectives, indicators and roles and responsibilities for the various partners involved. This program also fulfills community subsistence needs from NTFPs prior to fulfilling monetary needs through NTFP commercial marketing.

The NTFP program of Ya Poey Commune, Cambodia also met many of the sustainability criteria. Although it was not included as a case study description due to the fact that its scale values were not as high as the two programs described above. Of key interest with this program was that village Elders were responsible for its establishment with assistance from two NGOs. The Elders took initiative to create a number of forest use regulations to protect their forests for conservation and NTFP collection purposes. They also formed several partnerships with other villages to co-manage their forests. Elders from six villages partnered to establish a traditional forest management system and associated rule making.

The Nepal-Swiss Community Forestry Project also had many "sustainable" elements to it. However, it appeared to also be lacking in elements for meeting a few of the sustainability criterion used in this assessment. The development of FUGs for local forest management contributed to creating successful components to this program. In some cases, however, a top-down approach to program development in addition to donor-dependency occurred amongst some FUGs. This contributed to difficulties in attaining higher scale values for specific criterion. Developing indicators for measuring this project's success may have also assisted in better meeting some of the criterion.

5.2 Applicability of Study Findings to the Makah CBFI

Significant political, economic and social differences exist between tropical and subtropical "developing" countries such as those utilized for this study and "developed" countries such as Canada and the USA. In many ways the Makah Tribe has been affected by the influence of the "European" or "Western" based society. In contrast, Western society has not had as great an influence on the programs assessed for the purposes of this study. The following discussion describes the political, economic and social characteristics of the Makah Tribe that will need to be considered by the Makah CBFI when reviewing the findings of this study.

5.2.1 Land and Resource Policy and Management

Management of forestlands on the Makah Reservation changed dramatically in 1924 when the first commercial timber logging took place (J. Trettevick, personal communication, 2003). Commercial forestry still dominates current land use on the reservation. The Bureau of Indian Affairs (BIA) was responsible for managing the on-reservation forested land-base until the Tribe entered into self-governance in 1992. Now the Makah Tribal government manages forest operations but industrial forest management practices continue. A primary reason for this is that even though the Tribe has taken back management of the forest resource, the USA Code of Federal Regulations (CFRs) still applies. These CFRs do not necessarily support NTFP harvesting, processing or sale.

Further, the Makah Tribe gave up ownership of a large component of their traditional land base to the United States government during the establishment of their Treaty. However, the Tribe

specifically retained the right to gather forest products in their traditional territory located on private lands. Regardless, the management policy of other governments and co-managers has effectively extinguished the Tribe's right to gather forest products in their traditional territory. Clearcut timber harvesting has negatively impacted much of the land and the amount of NTFPs available to harvest for subsistence needs. In addition, private ownership of the land (a European concept not well understood by tribes during Treaty making times) makes it very difficult for tribal members to exercise their gathering rights in their traditional territory.

5.2.2 Economic Factors

Some economic factors that should be considered by the Makah CBFI include the employment options that are accessible to tribal members and the existing unemployment financial support provided by the Tribe.

The current unemployment rate of the Makah population is 51.4 percent (US Department of Interior Bureau of Indian Affairs, 2001). The majority of the stable and well-paid employment opportunities on the reservation are with the tribal government, various businesses in Neah Bay, the Indian Health Service Clinic and the Neah Bay public school. The primary seasonal employment opportunity is commercial fishing. The high labour return of commercial fishing makes it difficult to attract seasonal workers during periods of sectoral overlaps in the harvesting seasons. However, depending on the scale in which the CBFI would want to develop their program, this may not be an issue in the long term.

Furthermore, the CBFI may be limited in developing a large-scale program due to the size of the land base accessible for harvesting NTFPs. Therefore the investment returns in the NTFP industry may not be as high as other alternatives to the Tribe. Increasing the land base accessible for NTFP harvest may alleviate this.

Another factor influencing employing tribal members for the community forestry program is the financial support offered to unemployed tribal members. The financial support for unemployed tribal members is comparable to the projected initial NTFP harvesting wages making it difficult for the CBFI to gain employment interest. This contrasts with developing countries, where there are no social programs to financially support people and therefore if employment is available, there is more likely to be someone interested in taking the opportunity to work even for a low income. Further, in many developing countries, NTFP wages are comparable to other opportunities for local workers, thus making NTFP harvesting relatively attractive even to other paid income.

5.2.3 Social Factors

The influence of the Western world has caused lifestyle alterations on the Makah Tribe. Tribal members live their lives much like other citizens of the USA. They exist in the work force, live in modern day housing, they purchase items for survival, pleasure and for recreation and they enjoy the amenities of the Western-based culture, amongst other modernized things. In addition, immigrant Makah tribal members who were raised off reservation bring their "Western" based values with them when they move to the reservation. The result of this "Western" influence has

led to the Tribe's reduction of reliance on the forest for survival as compared to the strong reliance their ancestors had with the forest. This reduction in reliance has led to less experience in some tribal members regarding traditional and sustainable harvesting practices for NTFPs. In addition, as time has passed with Western societies' influence on the Tribe, including the influence of protestant religion, some traditional indigenous knowledge has been lost. There is also less connectivity of Elders with younger generations to pass this knowledge along from generation to generation.

5.3 The Makah CBFI Community Survey

A Makah CBFI survey (Steele et al, 2003) of 130 on-reservation residents was conducted during October 2002. Some key findings from this survey include but are not limited to the following:

- There is a strong cultural importance of the forests to the community;
- NTFPs such as medicinals and edibles are very important to the community;
- The community would like to see better management of the forests for both timber and NTFPs and for the sake of future generations;
- Twelve percent of the community "strongly agree", and forty five percent of the community "agree" that the Tribe should encourage non-timber harvesting. Those who "neither agree or disagree" with this statement make up twenty six percent; and
- Community members who "strongly agree" that the Tribal government should have an overall plan for timber and non-timber practices make up forty eight percent. Those who "agree" to this statement make up forty three percent.

These results suggest that although there has been much "Western" society influence on the Makah Tribe from various aspects, some spiritual and emotional connectedness to the forests still exists for some individuals. In addition, some community members still harvest NTFPs for subsistence purposes and many community members express concern for the protection and wise management of on-reservation forests, including the management of NTFPs. Thus although the Tribal government manages on-reservation forests through modernized Western methods, some individuals and families still engage in traditional forestry practices in connection with NTFP harvesting and use.

5.4 Study Recommendations

Based on the findings of this study, the recommendations provided below reflect NTFP / community forestry program elements that appear important for achieving a successful indigenous community forestry program:

1. Integrate, at least to some extent, the traditional indigenous knowledge and resource management practices that are specific to a community's ancestral culture and traditions. TEK is a result of centuries of human contact with the environment (Berkes, 1999) and has become increasingly known as very important to local resource management for biodiversity protection and for providing sustainable living models (Turner, 1997);

2. Adopt a bottom up approach for program planning and development as opposed to a top down approach. Ensure that it is the specific needs, ideas and vision of the people of the community that are utilized and addressed when developing the program. The development of a community forestry program should be "consistent with local

community needs and desires, not just demands of the global market" (Marles, 2001, p. 62);

3. Ensure that representatives from various community "sections" are involved in a community-led planning process for the indigenous program. For example, in the case of the Makah Tribe, representatives may come from each of the primary families and/or members from various age and/or gender categories to ensure equity across all of these facets;

4. Integrate the community's traditional natural resource management policies and regulations into the program. This should encourage NTFP management that promotes harvesting methods and practices that will better ensure NTFP resources will be available for both current and future generations. Also ensure there is community consensus with regards to rule adoption;

5. Allow natural ecological processes to establish within the indigenous NTFP management system. Managing ecological processes is more important than managing products (Davidson-Hunt and Berkes, 1999). Utilizing natural successional stages of forest development provides a practical and efficient method for achieving both economic and environmental sustainability objectives;

6. Ensure that community elders are involved or that they are key to the community-led planning process. As Klee (1980) states, "Key village elders are the true custodians of information relating to past and present forms of traditional conservation practices" (p. 284). Therefore their involvement in the planning stages of program development is highly valuable for maintaining knowledge transfer to the community;

7. On lands managed by multiple parties, adopting a collaborative management approach would assist in meeting all stakeholders objectives. Such a system should incorporate local knowledge, local experience and local preferences in forest management planning;

8. Meet community subsistence needs first before fulfilling the communities monetary based needs. Where surplus products exist after subsistence needs have been met, these "excess" products can be marketed externally;

9. Develop an environmental monitoring program to ensure that sustainable harvesting methods are maintained and to ensure forest species habitat is not exploited;

10. Develop a monitoring program to ensure that the program maintains equity within the community in terms of opportunities for involvement in planning, decision-making and profits;

11. Incorporate value added activates for forest product development, or harvest higher valued NTFPs based on established market needs to gain greater monetary value. These actions would result in less extensive NTFP harvesting. Although adding value to products was not clearly identified in the NTFP programs assessed for this study, it was certainly implied based on the products that villagers were producing for market, such as spices and medicinals. However, it was not clear from the information sources if processing for value added was conducted by the local communities or externally;

12. Develop a set of sustainability criteria that are specific to the traditional resource management practices of the indigenous community at hand as well as to community-based forestry goals and objectives;

13. Be committed to continuous education. For example, this may entail ensuring that the local indigenous oral knowledge is transferred through generations in order for the community to maintain this knowledge for their ancestral resource management objectives; and

14. Identify "indicators" to measure environmental and cultural protection as well as economic viability. Economic viability is essential to the long-term sustainability of a NTFP or community forestry program. To achieve economic viability, a NTFP program needs to develop business and employment opportunities that gain the interest of community members to work in the program. It is important to acknowledge that business and employment opportunities and the types of NTFPs the community will harvest for commercial sale will be dependent on what NTFP markets are available to the community.

5.5 Sustainability Assessment Issues

A number of difficulties were encountered in the conduct of this sustainability assessment. First, it was often difficult to obtain enough information for each program. This made it difficult to determine if a program did not actually meet a specific sustainability criterion because of something actually lacking in a program or because of insufficient information in the source materials. Roberts and Gautam (2003) documented seven case studies to evaluate what determines successes and challenges in community forestry programs. However, they also found a "limited availability of documented information" (p. 1). This resulted in some inconsistencies in depth of information between the case studies they evaluated. In addition, it was difficult to establish and document the "challenges" that programs had faced over time, the costs versus

returns of NTFP marketing and the levels of employment and income attained from marketing NTFPs in comparison to other sources of income such as timber. There appeared to be a lack of this type of information in the literature for each program assessed in this study.

Second, there were some difficulties with the sustainability test criteria. Although these criteria were helpful in providing a general comparison between programs, developing some questions specifically directed towards indigenous community forestry for each of the 16 criterion may have assisted in more precise comparisons between the four NTFP / community forestry programs.

CHAPTER 6: CONCLUSION

In establishing an indigenous community forestry program, two key elements appear to be very important. These are: 1) the integration or re-establishment of traditional indigenous resource management systems, and 2) the development of a collaborative management approach on lands managed by multiple parties. It appears that both elements would contribute to achieving the sustainability goals of the Makah CBFI. Other sustainable elements for NTFP or community forestry programs including those detailed in the study recommendations should be met with the integration of traditional indigenous resource management systems and collaborative management approaches. Examples of other sustainable elements include, but are not limited to: community-led planning involving community elders, adopting a "bottom-up" approach, maintaining community equity, continual education, ecosystem conservation and the development of profitable NTFP businesses for economic viability.

Given the findings of this study, it seems appropriate that an indigenous community might consider re-incorporating components of their traditional indigenous resource management systems into their current environmental management programs. Berkes (1999) found that traditional indigenous resource management systems allow for environmental conservation, cultural or spiritual connection and also economic sustainability for present and future generations. In addition, Klee (1980) stated that traditional cultures:

> ...are well adapted to their environment...they are good conservationists...they are generally small in scale and decentralized, thus allowing for a closer intimacy with their local surroundings...and they rely upon local "income" or renewable resources, not upon "capital" or non-renewable resources (p. 283).

Consequently, it would be hopeful to see the re-establishment of these traditional management systems for NTFP / community forestry programs in various indigenous communities across

North America but keeping in mind that each community has its own unique ancestral culture, existing political, economic and social structure and TEK to build from.

In considering the findings of this study, the Makah CBFI will need to consider their particular political, economic and social structure. From a political standpoint the tribal government currently manages forests according to industrial forest management practices. They have also lost ownership of traditional lands since their Treaty was established. Economically, the CBFI may be faced with the challenges of attracting people for employment, the size of their land-base will affect the level at which the program can grow and hence, the number of employees they can hire and the Tribe's financial support to the unemployed may be comparable to what the CBFI can offer in wages. From a social perspective, some generations or members of the Tribe have lost their knowledge of traditional, sustainable harvesting methods for NTFPs as well as some of the indigenous knowledge associated with it. These situations may affect the degree to which the Tribe can implement the recommendations of this study or conversely it may allow them to evaluate the barriers they would need to overcome to establish the recommendations.

Regardless of post-contact influences on the Tribe, a recent CBFI community survey established that traditional community forestry is still taking place on-reservation by individuals and families. Many members of the Tribe still have spiritual and emotional connectedness with their forests. In addition, there is still traditional forest product gathering taking place for subsistence purposes, and tribal members are concerned about the management of on-reservation NTFPs.

It is hoped that this report will assist the Makah CBFI in applying lessons learned from indigenous NTFP or community forestry programs and projects in other parts of the world to

achieving the objectives of the Makah. More generally, it is hoped that information and recommendations in this report assist other newly forming indigenous NTFP or community forestry programs in establishing a program that helps sustain environmental, cultural and economic well being for current and future generations.

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APPENDIX A

Sustainability Assessments

- Damar Forest Gardens, Krui, Indonesia
- Collaborative Management in Tanga, Tanzania
- Ya Poey Commune, Ratanakiri, Cambodia
- Nepal-Swiss Community Forestry Project

DAMAR GARDEN FORESTS, KRUI, INDONESIA

Substance Based Criteria

#	CRITERION	HOW PROJECT MEETS CRITERION	CRITERION RATING
1	**Holistic Thinking**	Traditional indigenous resource management system that respects cultural values; customary authority systems; allows for family control of forests and hereditary rights and encourages household investment. Provides habitat for endangered flora and fauna, protecting critical watersheds	4
2	**Positive and Negative Implications**	Cultural traditional systems maintained while generating income for families. Program considers the impacts of privatization of traditional land to culture, income and endangered species and works to avoid this scenario	3
3	**Short and Long Term**	Program protects the resources of the damar forests for present in terms of cultural / economic benefits and is structured to protect resources for use by future generations.	4
4	**Equity and Disparity**	Equity: Indigenous management system is structured to maintain a degree of equity within the community. Disparity: Forest resources are protected for future generations. This is apparent in the forest management system utilized as it promotes successional forest dynamics.	4
5	**Local to Global**	Considers the needs of the Krui local community. Krui are nationally recognized as forest stewards. This can be perceived as impacting globally in the form of communication or education regarding sustainable indigenous forest management. Local / National / International research and environmental action organizations have used Krui management information to build government recognition of the rights of traditional forest stewards. Damar resin was in high demand in the USA and Europe in the second half of the 19th century	3
6	**Anticipatory**	Families manage forests under overarching customary laws and the	3

	Thinking and Action	institutions of the people who inhabit Krui area – this reduces dispute issues. The program consists of a dynamic management system because the village managers are always experimenting with new techniques for forest management. Also, the have worked hard for government support to protect their forest from private companies	
7	**Effectiveness**	Successional forest garden systems that the Krui have created demonstrate that the communities' goals and objectives apply to both the short term and the long term. Communal property laws are dynamic and adapt to allow family control. They encourage household investment and hereditary rights. They ensure cultural values are respected. Silvicultural environments are sustainably manipulated to achieve multiple management goals including providing habitat for endangered species, protecting watersheds and generating income for local families.	4
8	**Efficiency**	Both natural ecological processes and selective cutting by community members' influences the successional stages that take place in the forest gardens. The program builds upon traditional management systems that have been utilized for years. Little or no foreign or other outside capital or technological investment is required for the indigenous communities to develop profitable forest management systems.	4
9	**Practicality**	People have learned from the forests. The program builds from the "family unit" and from the goods that the natural forest environment provides and from natural successional forest dynamics.	4

Process Based Criteria

#	CRITERION	HOW PROJECT MEETS CRITERION	CRITERION RATING
10	**Process**	Process ensures equity within village, respect for land and for future generations. Program ensures that the villagers manage their forests in a manner that allows for natural forest succession so that over the years the forest complexity increases.	4
11	**Vision, Goals and Objectives**	In essence there are set vision, goals and objectives. Krui system is structured to: Resolve disputes; 2. Maintain community equity; 3. Protect resources for use by future generations.	3
12	**Openness; Alternative Values**	Program includes all families within communities to manage lands. The damar forest reserves maintain hydrology of upper watersheds, ensuring flooding or drought do not threaten the irrigated rice fields along the coast. Village Managers are continuing to experiment with new techniques and management strategies for sustainable management of damar forests.	3
13	**Consensus-seeking**	The Krui indigenous management system is structured to resolve disputes amongst members from various Krui communities. Communal property laws allow traditional communities to retain oversight over land resources ensuring that cultural values are respected and customary authority systems are allowed to function.	3
14	**Fairness**	Communal property laws are based on families' controls over land amongst communities.	3
15	**Education and Continuing Learning**	Communities continue experimentation with new technologies and management strategies for sustainable silviculture. Also, teaches government planners and scientists the value of traditional agroforestry practices in Indonesia.	4
16	**Pride in**	Community based forestry where families control land and therefore	4

	Excellence	hold pride in the manner in which their lands are managed. Families feel "ownership" of the forest.	

FROM PROTECTION TO WISE MANAGEMENT OF MANGROVES IN TANZANIA: A CASE STUDY OF COLLABORATIVE MANAGEMENT IN TANGA

Substance Based Criteria

#	CRITERION	HOW PROJECT MEETS CRITERION	CRITERION RATING
1	**Holistic Thinking**	Program considers traditional indigenous natural resource management; community villagers work with government staff; program considers sustainable harvesting level appropriate for the various mangrove forests and fulfills subsistence needs (cultural) first and then afterwards, excess products are utilized for community economic gain.	4
2	**Positive and Negative Implications**	Program considers the declining resource base, community exploitation, forest dependent rural communities, the negative consequences of harvesting such as loss of biodiversity and loss of economic gain. Considers human activity in a sustainable harvesting manner to help economically and for cultural heritage protection (traditional natural resource management methods are protected).	3
3	**Short and Long Term**	Underlying theme is sustainability therefore considers current and future generations.	2
4	**Equity and Disparity**	Equity: community based harvesting first fills all household subsistence needs. A monitoring system has been put into place to verify community equity, self reliance and access to mangroves Two villages formed a partnership and agreed to share rights to the forest to divide financial revenues. Disparity: promotes ecological monitoring to ensure resources are available for future generations. Villagers examined the ecological structure of the forest conditions required to meet future needs for specified products. Silviculture research: Demonstration trials for silvicultural treatments focused on villagers perception of resource conditions and projected	4

		needs over four periods of time	
5	**Local to Global**	Criteria are inferred through program goals. Considers complementing the National Mangrove Management Plan.	3
6	**Anticipatory Thinking and Action**	Implementing a system of sustainable management for the mangroves. Implemented human activity monitoring and ecological monitoring for regulation efforts.	2
7	**Effectiveness**	Short term: Fulfill subsistence needs. Long term: Increase community income generation for villagers.	2
8	**Efficiency**	Establishes partnerships between government and villages. Builds upon previous mangrove protection program information. Builds upon traditional forest management practices. Fulfills subsistence needs of community THEN income generation for villagers through the sale of excess products.	4
9	**Practicality**	Action plan details objectives, purpose, results, indicators and a method for verification.	4

Process Based Criteria

#	CRITERION	HOW PROJECT MEETS CRITERION	CRITERION RATING
10	**Process**	Includes community villagers in decision-making and development of program.	3
11	**Vision, Goals and Objectives**	Has a detailed objective and purpose of management plan.	2
12	**Openness; Alternative Values**	Collaborative forest management strategy taken. Local community institutions have support from external agencies.	2
13	**Consensus-seeking**	Program takes a participatory approach for sustainable forest management. A resource use assessment was conducted where interest / focus groups were formed. These groups included women, elders and young people.	3
14	**Fairness**	The Forest Management Plan details key institutional elements that describe each "partners" roles and responsibilities and also there are associated key forest management elements.	3

		There is a detailed three-year action plan of who does what and when and the various outputs and assumptions.	
15	**Education and Continuing Learning**	Continuous ecological monitoring. Silvicultural research and demonstration projects.	2
16	**Pride in Excellence**	Program draws upon indigenous villagers knowledge of the forest and indigenous forest management systems.	4

YA POEY COMMUNE, RATANAKIRI PROVINCE, CAMBODIA

Substance Based Criteria

#	CRITERION	HOW PROJECT MEETS CRITERION	CRITERION RATING
1	**Holistic Thinking**	The goal of the program is to protect villagers' livelihood that requires forest conservation. It considers the economic importance of NTFPs to villagers. It also considers the spiritual benefits of the forest for villagers and encourages "Traditional Use Community Forestry". The program encourages governments at various levels to work together.	3
2	**Positive and Negative Implications**	Considers negative implications of logging practices and privatization on people and ecosystems. Considers positive implications of NTFPs on people.	2
3	**Short and Long Term**	Planning and decision-making by village leaders wanted to ensure management of local forests for generations – that the forests are sustained for future generations.	2
4	**Equity and Disparity**	Equity: Program considers that NTFPs are worth much and are very important to the poorest sectors of society. Disparity: Forest management takes into consideration future generations.	2
5	**Local to Global**	Overall program met this criterion, as it involves protection of environment that is important at the global scale.	2
6	**Anticipatory Thinking and Action**	Elders from 6 different villages make decisions together through the Forest Conservation Association.	2
7	**Effectiveness**	Goals to ensure protection of resources for future generations as well as current generations.	1
8	**Efficiency**	Forest protection and rights to forests of villages achieved through formulation of multivillage associations.	2
9	**Practicality**	Program builds from the knowledge of village elders. When the project was first initiated, NGOs sought to use existing	2

		legislation to enhance land and forest tenure security of highland ethnic minority inhabitants of forest lands.	

Process Based Criteria

#	CRITERION	HOW PROJECT MEETS CRITERION	CRITERION RATING
10	**Process**	Process is more effective through partnerships.	2
11	**Vision, Goals and Objectives**	Overall the program meets this criteria, however, the programs vision, goals and objectives could have been made clearer to readers.	2
12	**Openness; Alternative Values**	Active participation by 6 villages. Program respects concerns for the environment.	2
13	**Consensus-seeking**	Consensus is obtained between 6 villages and a valuation survey demonstrated the communities agreed on the importance of NTFPs to all villagers.	3
14	**Fairness**	Participating communities (6) agreed upon rules for forest protection and use.	3
15	**Education and Continuing Learning**	Perhaps, but required more information from source.	1
16	**Pride in Excellence**	Program appears to meet this criterion in that villagers within communities are working together to protect their traditional use of forest resources and to protect their culture.	3

NEPAL – SWISS COMMUNITY FORESTRY PROJECT

Substance Based Criteria

#	CRITERION	HOW PROJECT MEETS CRITERION	CRITERION RATING
1	**Holistic Thinking**	Program considers the culture of forest user groups (FUGs) and self-financing by FUGs of community forestry. FUGs design / manage procedures for NTFPs and forest ecosystem conservation through sustainable forest management. Community forestry program contributes substantially in bringing social, political and environmental changes to rural areas.	2
2	**Positive and Negative Implications**	Program somewhat meets this criteria. NSCFP has recognized that as a donor they have created communities that are donor-dependent when a goal of the program is to be self-financed.	1
3	**Short and Long Term**	The goal is to create a sustainable community forestry program to address the needs of both present and future generations.	2
4	**Equity and Disparity**	Most newly formed FUGs have created special provisions for disadvantaged groups with providing forest products at subsidized rates or free of cost. Loans have been granted to disadvantaged groups without or with low interest rates. Points of view / interests of lower castes are considered during preparation of constitution and operational plan, etc. Occasionally lower castes are represented in FUG committees. Local people are involved in the development of forest guidelines.	3
5	**Local to Global**	In essence, the program has met these criteria although it is not exactly detailed in the information sources.	2
6	**Anticipatory Thinking and Action**	FUGs are entrusted to manage, conserve, and develop forest resources and utilize forest products – therefore to achieve this, FUGs CF program should meet these criteria. Community created operational plan for forest management.	2

7	**Effectiveness**	Program promotes long-term availability of forest resources. A self-sustained CF is the goal of this initiative, however, donor dependency has resulted in some cases that gets in the way of self-financed CF by FUGs.	1
8	**Efficiency**	Indicators to determine the success of program are not provided within information sources. Therefore it is not clear if these criteria were met.	0
9	**Practicality**	To some extent the program meets this criteria. Local people are involved in decision making for forest management, but it was not clear as to what extent the program built upon traditional knowledge or already existing natural resource management programs.	1

Process Based Criteria

#	CRITERION	HOW PROJECT MEETS CRITERION	CRITERION RATING
10	**Process**	Program involves local community people in decision making for program development, but a top-down management approach still exists, whereas a bottom-up approach would be more effective.	1
11	**Vision, Goals and Objectives**	Goal: project aims at improving living conditions of the people, the long-term availability of resources and at empowering the population. Vision: self-financed program.	2
12	**Openness; Alternative Values**	FUGs are created to develop active community participation. Program appears to address changing values of society.	2
13	**Consensus-seeking**	Program appears to meet these criteria. In some instances, FUGs even include lower caste representative members.	2
14	**Fairness**	FUGs prepare constitution and work plan of the community forests. They plan management of forests and lead their communities. Appears to establish fair process.	3
15	**Education and Continuing Learning**	NSCFP is building local level forest technical human resources by providing scholarships for forestry study and internships to fresh graduates.	3

16	**Pride in Excellence**	Questionable as to whether or not the program achieved these criteria. The program has resulted in donor-dependency for funding in many instances as opposed to the program goal of self-sustained community forestry.	1

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