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ABSTRACT

The government of Costa Rica has adopted Environmental Assessment (EA) as one of its most important strategic tools for pursuing the goals of sustainable development. EA is a systematic procedure that documents and evaluates the effects likely to arise from the decision to implement a project or activity. Costa Rica’s ability to achieve sustainable development rests, in part, on the effectiveness of its EA system. However, little research has examined the performance of the Costa Rican EA system.

This thesis addresses this research need and examines the effectiveness of EA in Costa Rica by conducting a normative and strategic evaluation of national EA provisions and their application to three proposed coastal zone tourism development projects in the north Pacific of the country. Normative and strategic evaluation frameworks were developed from ideal conceptual EA literature, and consist of 136 evaluative criteria, posed in the form of questions, structured around 16 fundamental EA principles. The evaluations were conducted by applying the criteria to the EA provisions outlined in national law and regulations, and the EA documentation from the three case studies. The evaluations were supported by a number of interviews with Costa Rican EA experts and practitioners.

Results indicate that although the Costa Rican EA system has a strong legislative and regulatory basis, the EA provisions are not always applied effectively. Major weaknesses identified include a weak and poorly funded administrative structure, limited and inadequate guidance on EA methods and techniques, a failure by proponents to fulfill EA requirements, and insufficient public participation. A series of recommendations and potential solutions for the shortcomings identified in the Costa Rican EA system are prescribed in the concluding chapter, and a discussion on directions for future research is presented.

Keywords: Environmental Assessment, Environmental Impact Assessment, Costa Rica, environmental policy.
DEDICATION

This thesis is dedicated to my family, Nicolas, Lorna, Elena and my partner and co-conspirator Andrea Borel. During the last two years, all four have made difficult and courageous decisions that will forever change their lives. Yet, they have maintained a remarkably positive outlook on life and have shown an incredible amount of patience and strength, which have deeply touched me. Andrea, in particular, your love, encouragement, wonderful sense of humour, and intellectual and emotional support have been invaluable throughout the writing of this thesis and during the last five years. I cannot express enough gratitude to you for making my life more complete, exciting and purposeful.
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LIST OF ABBREVIATIONS

ADB    Asian Development Bank
BCIE   Central American Bank of Economic Integration
CACM   Central American Common Market
CEAC   Canadian Environmental Advisory Council
CEARC  Canadian Environmental Assessment Research Council
CEDARENA Environmental and Natural Resources Law Center (Costa Rica)
CEQ    Council on Environmental Quality (US)
dEIS   draft Environmental Impact Statement
EA     Environmental Assessment
ECODES Costa Rican National Conservation Strategy for Sustainable Development
EIA    Environmental Impact Assessment
FEAP   Preliminary Environmental Assessment Form
FETER  Form for the Elaboration of the Terms of Reference
ICT    Costa Rican Tourism Institute
INDERENA Institute for Natural Resources (Costa Rica)
ISEA   International Summit on Environmental Assessment
IUCN   International Union for the Conservation of Nature and Natural Resources
LOA    Organic Law of the Environment (Costa Rica)
MIEM   Ministry of Industry, Energy and Mines (Costa Rica)
MIRENEM Ministry of Natural Resources, Energy and Mines (Costa Rica)
MINAE  Ministry of Environment and Energy (Costa Rica)
NEPA   National Environmental Policy Act (US)
NGOs   Non-governmental organizations
OECD   Organisation for Economic Co-operation and Development
PPPs   policies, programs and plans
SEA    Strategic Environmental Assessment
ToR    Terms of Reference
SETENA National Technical Environmental Secretariat (Costa Rica)
UCR    University of Costa Rica
UN     United Nations
UNCED  United Nations Conference on Environment and Development
UNDP   United Nations Development Program
UNEP   United Nations Environment Program
WCED   World Commission on Environment and Development
WWF    World Wide Fund for Nature
CHAPTER I
INTRODUCTION

1.1 INTRODUCTION

Environmental Assessment (EA) and sustainable development can contribute to resolving important resource, social and economic problems that plague many communities in the developing world. EA is a systematic procedure that documents and evaluates the likely effects on the biophysical, socio-economic and cultural components of the environment that may arise from the decision to enact legislation, policies, plans or projects (Wathern, 1988; Wood, 1995; Sadler, 1996). Sustainable development recognizes that economic growth and environmental protection need to be viewed as compatible and essential components of one indispensable process, rather than as conflicting objectives (WCED, 1987; IUCN et al., 1991; Smith, 1993). These concepts embrace principles of supporting appropriate economic development, ecological integrity, participatory decision making and inter- and intra-generational equity (Sadler and Jacobs 1990a; 1990b; Redclift, 1992; Zazueta, 1995). Although EA and sustainable development could address important environmental and social issues, such as reducing poverty and providing food and potable water (Redclift and Goodman, 1991; Singh and Strickland, 1993; Desai, 1998), the governments of many developing countries continue to believe that environmental protection will retard economic growth (Curi, 1983; Horberry, 1984; Lim, 1985). However, there is a general absence of studies that detail the practice of EA in those few developing countries that have implemented EA systems. This thesis addresses this research need by describing and evaluating the effectiveness of Costa Rica’s EA provisions and practice.

There is a reasonable level of agreement that EA can serve a litmus test for the sustainability of development and resource management decisions and actions (O’Riordan, 1986; WCED, 1987; Hill, 1988; Rees, 1988; CEAC, 1988; Meredith, 1992; Morgan et al. 1992; Smith, 1993; Sadler, 1994; Gilpin, 1995; Bisset, 1996; Barrow, 1997; Lawrence, 1997a). Although sustainable development has dominated the global
development discourse since the mid-1980s (Auty and Brown, 1997; Dryzek, 1997; Desai, 1998), it has not been exempt from criticism and has been subject to numerous interpretations (Redclift, 1987; O’Riordan, 1988; Pearce et al., 1990; Shearman, 1990; Lélé, 1991, Paehlke, 1995; Torgerson, 1995; Wackernagel and Rees, 1996; Verburg and Wiegel, 1997). This has been primarily the result of difficulties in translating its rhetoric into developmental or resource management strategies that result in discernible positive social, ecological and economic outcomes directly attributable to the concept. In other words, governments and development agencies are still unclear on whether particular development initiatives contribute or detract from sustainable development (Bisset, 1996). Despite these problems, EA is believed as one way to effectively promote the goals of sustainable development. For example, at an international level, the 1992 United Nations Conference on Environment and Development (UNCED—the Rio “Earth Summit”) recommended the:

further development and promotion of the widest possible use of environmental impact assessment...by Governments and, where appropriate, international organizations as an essential element in development planning and for assessing the effects of potentially harmful activities on the environment (Bisset, 1996: 5).

More recently, during the 1997 Earth Summit+5, EA was recognized under the Programme for the Further Implementation of Agenda 21 (UN, 1997) as one of the most important national tools for implementing Agenda 21 and its principles for sustainable development.

Even though advances have been made in EA legislation, policies, procedures and methodologies since its inception 30 years ago, there is still a general sense among experts and practitioners that EA has not met its full potential in practice (MacLaren, 1987; Bartlett, 1989; Gardner, 1990, 1992; Stedman and Hill, 1992; ISEA. 1994: Lawrence, 1994; IUCN, 1996). In other words, EAs have not always resulted in environmentally responsible and socially equitable development. The result of this concern, originally manifested in the mid-1970s and onwards (e.g. Burchell and Listokin, 1975; Ashby, 1976; Schindler, 1976; Andrews, 1978; Fairfax, 1978; Fairfax and Ingram, 1981; Sadler, 1986; MacLaren, 1987; M. Clark and Herington, 1988; Caldwell, 1989). has been a proliferation of research and case studies on EA performance, and on how to
improve the effectiveness of EA practice (Wood, 1995). However, the majority of these studies have addressed EA in developed countries (e.g. Beanlands and Duinker, 1983; 1984; Glasson et al., 1994; Sadler, 1996) and EA practice in these countries is reasonably well documented. Less is known of the overall status of EA in developing countries (Verocai-Moreira, 1988; Biswas, 1992a; EIA Centre, 1993; Wood, 1995; Bisset, 1996). and according to Biswas (1992b) and Sadler (1996), this is one area of research that warrants more attention.

During the 1960s and 1970s, a steady decline in environmental quality was observed in many parts of the developing world (Lim, 1985). In response, efforts such as the 1972 United Nations Conference on the Human Environment held in Stockholm, Sweden, were organized to advocate the importance of incorporating environmental considerations in the development process, particularly of developing countries (Ofori, 1991). Despite these efforts, often the resources required by developing countries to meet basic human needs now and in the future are inadequate or compromised for more immediate pressures (Elliot, 1994). According to Porter and Brown (1996), governments in developing countries generally disregard the environment and many proposed solutions because they are preoccupied with economic growth, fear the costs of environmental protection, and have a general distrust of the policies from developed countries. The introduction of EA in developing countries has also been hindered by the same notions, particularly the view that EA is anti-development (Wood, 1995), that it causes undue delays and significantly raises the costs of development (Curi, 1983), and that it serves as a guise for the imperialistic interests of the developed world and is meant to thwart the development of poor countries (Fowler and Dias De Aguiar, 1993). As a result, by the early 1990s only 19 countries of the 121 Sovereign Third World Countries had established formal EA systems (Ebisemiju, 1993).

Nonetheless, concern over the environmental consequences of economic development in developing countries has become a central feature of the rhetoric and thinking of development studies during the last 15 years; more so with the advent of the sustainable development discourse (Adams, 1990). Consequently, developing countries are under considerable pressure to implement environmental measures that protect and manage natural resources so as to ensure their long-term viability (Juhasz, 1993; Smith
and van der Wanseen; 1995). Some of this pressure has come from within the countries themselves. However, most of it has emanated from external sources such as the World Bank and the United Nations Development Program (UNDP). Therefore, EA is increasingly being introduced in developing countries, but most frequently in the form of a top-down environmental requirement imposed by development aid agencies and/or banks (Horberry, 1985; Verocai-Moreira, 1988; Coates and Coates, 1989; Wood, 1995; World Bank, 1996; Bojórquez-Tapia and García, 1998).

According to Wood (1995), this external demand for the implementation of EA in developing countries versus internal demands in developed countries, is the most conspicuous difference between EA practice in the developed and developing world. In other words, despite the limited application of EA in developing countries in comparison to the developed world, both developed and developing countries have adopted broadly similar EA principles, procedures and practices (EIA Centre, 1993). Yet, EA practice in the developing world continues to be criticized for lagging behind EA in the developed world (Wandesforde-Smith et al., 1985; Wood, 1995). In Rayner's (1993: 678) pessimistic view:

> [f]or the Third World... [EA] remains, at best, a Band-Aid™ to mitigate the worst consequences of rapid industrial development because it is wealth, not legislation, that leads to indigenous demands for clean energy, stable populations, and stewardship of the land and water.

While there are numerous examples of EAs being undertaken successfully in developing countries (e.g. see Biswas, 1987; Biswas and Geping, 1987; Biswas and Agarwala, 1992). it is generally true that EA performance in these countries has been weak (Wood, 1995). Many authors attribute this weakness to the fact that most developing countries have adopted, either willingly or unwillingly, EA systems based on Western European or North American models (Olokesusi, 1992; Sankoh, 1996) that have “stronger linkages to Western science and policy than with the socioeconomic and institutional conditions in their own nations” (Appiah-Opoku and Mulamoottil, 1997: 159). Therefore, it is not a matter of EA principles, procedures or practices that distinguish EA in developed and developing countries, but rather a series of varying contextual characteristics that are relevant to EA practice and can affect the effectiveness of EA performance (EIA Centre, 1993; Appiah-Opoku, 1994a; 1994b).
For example, the Environmental Impact Assessment (EIA) Centre (1993) at the University of Manchester has identified eight broad contextual characteristics that often distinguish EA practice between developing and developed countries. First, most developing countries are located in tropical or near tropical areas, thus exhibiting different environmental conditions and often rendering the environmental models and quality standards of temperate developed countries inapplicable. Second, developing countries generally have technologies of different scale and vintage to those used in the developed world. Third, the levels of significance attached to particular impacts may vary considerably between developed and developing countries. Fourth, the institutional and regulatory structures of developing countries are usually weak in comparison to developed countries. Fifth, as mentioned above, EA adoption and implementation in most developing countries has usually been driven by external funding instead of indigenous demand. Sixth, most developing countries exhibit different public participation and consultation mechanisms, if any, in comparison to the developed world. Seventh, decision making is usually different in developing countries as foreign aid agencies often have considerable power and influence in national governments. Finally, arrangements for monitoring to ensure compliance with established environmental conditions are usually weak or non-existent in developing countries.

Many developing countries also suffer from: (1) a shortage of qualified persons who understand the EA process and can work in an interdisciplinary fashion; (2) inadequate, insufficient and unreliable baseline data; (3) environmental departments with low status and power; (4) poor inter-agency co-ordination; (5) inadequate information dissemination mechanisms; and (6) a lack of willingness by proponents to internalize EA requirements in planning and decision making (Sudara, 1984; Adams, 1990; Bisset, 1992; Thanh and Tam, 1992; Ebisemiju, 1993; EIA Centre, 1993; McCormick, 1993; Wang, 1998). In addition, an important EA related problem in developing countries has been the dearth of studies on the effectiveness of EA practice, although there are a few exceptions (e.g. Ning et al., 1988; Kakonge, 1994 and 1997; Tongcumpou and Harvey, 1994).

Although problems with EA practice are not restricted to the developing world and are encountered in developed countries, the magnitude of shortcomings have usually been greater in the former than in the latter (Adams, 1990). This poses a serious problem
for developing countries, particularly in their pursuit of sustainable development. As the economies of these countries remain tied, at least in the short-term, primarily to agriculture and resource-based production, their prosperity will depend to a large extent on their ability to manage their environment and natural resources (Annis, 1992). Therefore, if EA is to be used as a tool for sustainable development, greater efforts will need to be devoted to strengthening EA practice in the developing world if real progress towards sustainable development is to be made (Wood, 1995).

1.2 EA IN COSTA RICA

Costa Rica has been historically heralded as a truly unique country in comparison to the rest of the developing world due to its commitment to peace, democracy (Ameringer, 1982; Bird; 1984; Wilson, 1998) and, more recently, environmental protection and sustainable development (Budowski, 1991; Lovejoy, 1997). Costa Rica’s pursuit of the goals of sustainable development dates back to 1988 when former Costa Rican president and Nobel Peace Prize recipient, Dr. Oscar Arias Sanchez, initiated the formation of the Ministry of Natural Resources, Energy and Mines (MIRENEM), nowadays known as the Ministry of Environment and Energy (MINAE), and requested the development of the Costa Rican National Conservation Strategy for Sustainable Development (ECODES), an effort that culminated in 1990 (Fournier, 1988; Ramirez-Solera and Maldonado-Ulloa, 1988; Quesada-Mateo, 1990; Quesada-Mateo and Sólis-Rivera, 1990). The ECODES constituted the first formal attempt by the Costa Rican government to incorporate sustainability criteria in the country’s development policies (Costa Rica, 1997a).

In 1990, the incoming government of President Rafael Angel Calderon Fournier found the ECODES to be too ambitious and quietly dropped it (O’Brien, 1997). However, despite this retreat, environmental rights were strengthened in 1994 with the introduction of article 50 of the Political Constitution of the Republic of Costa Rica, which stated:

The State will secure the well being of the inhabitants of the country, organizing and stimulating production and the most adequate distribution of wealth. All persons have the right to a healthy and ecologically balanced environment. Through this, it is legitimate to denounce acts that infringe on
this right and to demand the reparation of any damages caused. The State will guarantee, defend and preserve this right. The law will determine the responsibilities and corresponding sanctions (Costa Rica, 1996).

Even though article 50 does not specify what is meant by a “healthy and ecologically balanced environment”, it gives Costa Ricans the ability and the constitutional right to fight against poorly planned public and private development initiatives. Article 50 also spurred the reexamination of proposals for the creation of an integrated EA law by Aguilar-Rojas (1991; 1992) and Trejos-Salas (1994).

In November 1995, an integrated EA system was instituted in national law through the ratification of the Organic Law of the Environment (LOA) (Costa Rica, 1995). Prior to this, EAs had been carried out in Costa Rica for large mining activities, electricity generating schemes, large tourism developments and road constructions, but these had been more of an exception than the norm, as calls for EA were scattered among numerous executive decrees that were seldom heeded (Araya, 1996). Two year later, in November 1997, the Costa Rican Legislative Assembly further approved a set of specific procedures for carrying out and reviewing EAs known as the National Technical Environmental Secretariat (SETENA) Regulations (Costa Rica, 1997b).

Relative to the developed world, the EA system in Costa Rica is in its infancy. Since the passage of the LOA and the SETENA Regulations, two views of the Costa Rican EA system have emerged. Mateo (1997) found that some practitioners and experts believe the EA system is weak and advocate restructuring current EA provisions, while others maintain that the EA system, although imperfect, should be left temporarily untouched and allowed to mature. However, without a systematic evaluation of the EA system, it is difficult to prescribe, what, if any improvements are needed. In response to this dilemma, Mateo (1997) evaluated the effectiveness of the Costa Rican EA system as outlined in the LOA and the unratified SETENA Regulations. Weaknesses identified in that study included:

- a restricted definition of the term ‘environment’ that ignored social and cultural impacts;
- a failure to promote sustainability beyond a national scale;
- a failure to require the consideration of alternatives;
- an under-staffed and under-funded SETENA; and
• a failure to specify structural and length requirements for EISs.

While valuable, this study did not assess actual EA practice in Costa Rica.

As Costa Rica, like many other developing countries, moves into the next millennium, its economy will continue to depend to a large extent on the export of agricultural products, primarily bananas and coffee. However, since 1993 Costa Rican tourism has surpassed agricultural trade as the leading source of revenue, bringing into the national economy a total of $500 million US dollars in 1998 alone (Nolen, 1999). Although tourism in Costa Rica is highly diverse, since the 1980s a large proportion of tourists have been drawn to Costa Rica due to the country's natural beauty, diversity of flora, fauna and landscape, and its well-developed park system (Chant, 1992; Mowforth and Munt, 1998; Nolan, 1999). As a result, Costa Rica has promoted itself and has become one of the leading destinations in the world for people in search of the “ecotourist” experience (Budowski, 1990; Rovinski, 1991; Chant, 1992; Mora, 1998; Mowforth and Munt, 1998; Weaver, 1998; Nolan, 1999). However, Mowforth and Munt (1998: 310) have found that in recent years, international admiration of the Costa Rican government’s shunning of large-scale, mass tourism has begun to fade as numerous contracts have been signed with international consortia to build tourist condominia offering the ‘four Ss’ [i.e. sun, sea, sand and sex] of mass tourism but also claiming to be environmentally sensitive and offering nature as part of the attraction.

One well known example is the Gulf of Papagayo Tourism Project, located on Culebra Bay, Guanacaste in the North-Pacific coast of Costa Rica (Ecodesarrollo Papagayo, 1994; Mowforth and Munt, 1998; Weaver, 1998). The project is planned to consist of numerous resorts and hotels with a total of 19,932 rooms, 1,144 homes, a shopping centre, several marinas, and golf courses (Executing Office of the Papagayo Project, 1998; Mowforth and Munt, 1998; Porras-Morales, 1998). To date, not all plans for development have been carried out, yet it is likely only a matter of time before current and future governments realize their completion (Delgado, 1998; Herrera, 1998).

Thus far, only three EAs have been carried out and reached resolution by the SETENA for development initiatives in the Papagayo project. This thesis takes the stand that an evaluation of the effectiveness of the EA processes of these three case studies would adequately reflect current practice and performance of EA in Costa Rica. Most
importantly, recommendations for strengthening the Costa Rican EA system could be outlined, ultimately helping the country on their path towards sustainable development.

1.3 RESEARCH GOALS AND OBJECTIVES

The purpose of this study is to evaluate at a normative level the effectiveness of the Costa Rican EA system, and to evaluate at a strategic level the effectiveness and consistency of EA practice in three coastal zone development projects in Culebra Bay, Costa Rica. Specific research objectives include:

1) to describe the Costa Rican EA system;
2) to develop a normative and strategic EA effectiveness evaluation framework based on conceptual EA literature and the Costa Rican EA system;
3) to evaluate the effectiveness of the Costa Rican EA system and the three Culebra Bay coastal zone development projects using the normative and strategic evaluation models; and
4) to prescribe possible recommendations for strengthening the Costa Rican EA system.

This dissertation is organized in the following manner. Chapter II addresses the issue of EA effectiveness, reviews four common EA effectiveness evaluative approaches, and establishes through a literature review the basis for the evaluative frameworks presented in Chapter III. In Chapter III, the research methods utilized to conduct the research and analyze the results are outlined, and the research area and three case studies are described. The chapter concludes by presenting the normative and strategic evaluation framework. Chapter IV presents the context of the study and reviews the Costa Rican path towards sustainable development, describes the regulatory history of EA practice in Costa Rica, and describes the Costa Rican EA system by reviewing the LOA and SETENA Regulations. In Chapter V, the research findings and a subsequent discussion are presented. In Chapter VI, a number of recommendations for strengthening the Costa Rican EA system are presented, as well as a post-script to the study. The chapter concludes by outlining future research areas.
CHAPTER II

LITERATURE REVIEW

2.1 INTRODUCTION

During the 1990s, the issue of EA effectiveness has emerged as one of the dominant themes addressed by EA practitioners and researchers. This has been a direct result of the recognition of EA as a means for planning and ensuring that development and resource management initiatives are carried out in accordance with the objectives of sustainable development (Sadler and Jacobs, 1990a; Gibson, 1993; Sadler, 1996). In addition, the rapid expansion of EA theory and practice throughout the world over the last thirty years has left an extensive track record upon which the effectiveness of EA can be evaluated (Spaling et al., 1993). The vast majority of this record accounts for EA practice in developed countries, but the developing world is increasingly adopting EA systems (e.g. see IUCN, 1996). Consequently, research with an evaluative focus is “resulting in timely lessons for building on [EA] experience to date” (Spaling et al., 1993: 64), and most importantly is re-directing EA theory and practice towards sustainable forms of planning and development in both the developed and developing world.

To date, numerous studies (e.g. Beanlands and Duinker, 1983; 1984; Hollick, 1986; Gibson, 1993; Wood, 1995; Hickie and Wade, 1998) have evaluated EA theory and practice, and four particular evaluative approaches can be identified from the EA literature. According to Spaling et al. (1993) these can be categorized as: (1) goals achievement, (2) conceptual framework, (3) methodology, and (4) process evaluative approaches. In this chapter, the concept of EA is briefly addressed, followed by an examination of the relative merits of the four evaluative approaches. A discussion on how to select an evaluative approach is then presented, along with a review of what is deemed ideal EA theory and practice. Finally, a method for approaching EA evaluative research is outlined. This discussion not only establishes the basis for the development of the evaluative framework used in this study but also for the evaluation itself.
2.2 THE CONCEPT OF EA

Due to its widespread use, the concept of EA has been subject to numerous definitions and interpretations. However, it is generally agreed that the basic purpose of an EA is to introduce the systematic consideration of environmental issues into all decision-making stages of development initiatives, as well as to protect, as much as possible, the environment from damage (Bisset, 1996). An EA is initiated with the consideration of alternative means for achieving an objective, followed by the design of a project or activity (Wood, 1995). A screening stage is then carried out to determine whether an EIA is required and what level of analysis it must undergo (Lohani et al., 1997). It is important to note that an EIA is defined as the process of identifying, predicting, evaluating, and mitigating the biophysical, social, and other relevant effects of proposed projects and physical activities prior to major decisions and commitments being made (Sadler, 1996: 13).

Therefore, the EIA represents only a component of the EA, and in using a taxonomic analogy, the EA is comparable to the Genus while the EIA represents the species (Araya, 1996). Following the screening stage, the goals and boundaries of the study are determined through an activity commonly known as scoping. The formal EIA process follows, requiring the preparation of an Environmental Impact Statement (EIS) that should include baseline studies of the area where the project or activity will be carried out, the identification and prediction of potential impacts and the magnitude of these, an evaluation of the significance of the impacts, and an outline of monitoring and mitigation plans (Whitney and Maclaren, 1985; Wathern, 1988; Therivel and Morris, 1995a; Wood, 1995; Barrow, 1997; Lohani et al., 1997). Once the EIA is complete and the adequacy of the EIS has been checked, the findings are reviewed and a decision is made as whether to accept or reject the proposed project or activity. If accepted, monitoring activities should commence immediately, as well as mitigation measures if and when necessary. At all stages, the public should be consulted and allowed to voice their concerns regarding the development of a project or initiation of an activity (Wood, 1995). All steps in the EA are iterative, allowing for feedback at all stages (Figure 2.1).
Figure 2.1 The Ideal Environmental Assessment Process

Source: Adapted from Whitney and Maclaren (1985), Smith (1993) and Wood (1995)
All EAs should exhibit what Sadler (1990: 9; 1996 as cited in IUCN, 1996) has coined as the three “r’s” of good practice: (1) rigorous analysis; (2) responsive consultation; and (3) responsible administration. In other words, EAs should: (1) use a solid base of processes and procedures to provide relevant, balanced, credible and consequential information that aid, rather than confuse, decision makers; (2) provide incentives for public involvement; and (3) function under a well-founded legislative basis with appropriate institutional frameworks and procedural controls in order to meet accepted standards of good practice (Sadler, 1996). In addition, the EAs should be problem and decision oriented, and have follow-up and feedback capabilities. If these components are present, then EAs should be able to influence the design and approval of a project, avoid or mitigate environmental impacts, and promote environmentally-sound development (Sadler, 1996 as cited in IUCN, 1996; Barrow, 1997).

In practice, it has been difficult to meet these ideals. EAs have been criticized for being too technical, insensitive to public concerns, and having a marginal influence on public and private planning and decision-making processes (Robinson, 1992: 1993; Glasson et al., 1994; Bisset, 1996; Barrow, 1997). Nevertheless, the spread of EA from its origins in the United States to the rest of the world is a clear indication that EA continues to be perceived as effective (Caldwell, 1989). In Cheremisinoff and Morresi's (1977) view, EA is one of the most significant pieces of environmental legislation in terms of improving the quality of human life. Furthermore, the importance of EA cannot be understated, since it is the “only tool whose use is required by law [in most countries where it is practiced] and whose results are publicly available. No other tool has this status, nor is any likely to achieve it in the near future” (Bisset, 1996: 1). This statement warrants the question, how does one determine the effectiveness of an EA?

2.3 EA EFFECTIVENESS EVALUATION APPROACHES

During the last 30 years, many countries and jurisdictions have evaluated the effectiveness of the performance of their EA systems (Wood, 1995; Bisset, 1996; Sadler, 1996). In general, four approaches have been utilized (Spaling et al., 1993):

- evaluation of goals achievement;
- evaluation of the conceptual framework of EA;
• evaluation of EA methodology; and
• evaluation of EA process.

Most EA effectiveness studies have limited their analysis by using one, and seldom, two of these approaches. As a result, most studies have only produced partial evaluations of EA effectiveness. In the following sections, the merits of the four evaluative approaches are examined. Since EA processes in developed and developing countries are fairly similar, reference to both experiences is made. This discussion establishes a basis for the development of an evaluative framework used to assess the Costa Rican EA system and the three coastal zone development project EAs.

Studies that evaluate the goals achievement of an EA focus on the outcomes that are attributable to EA. In other words, these evaluations assess if an EA meets a series of pre-determined goals or objectives. According to Spaling et al. (1993), this evaluative approach functions under the premise that EA effectiveness is measurable and verifiable. However, this approach is rarely used due to difficulties in isolating effects that are solely attributable to the EA process (Lee et al., 1994).

The effectiveness of the conceptual framework of EA is determined by assessing the links of EA practice to a particular philosophical or ideological perspective (Spaling et al., 1993). In these evaluative studies, the EA is not only seen as an important analytical tool, but is also considered an important “mechanism for expressing a particular perspective on human-environment interactions” (Spaling et al., 1993: 68). Numerous studies have evaluated the conceptual framework of EA (Cornford et al., 1985; Marshall et al., 1985; O’Riordan, 1986; Sadler, 1986 and 1990; Hill, 1988; Rees. 1988; Smith, 1993; Lawrence, 1997a and 1997b), and most of these examine the links between EA and the notion of sustainable development (Spaling et al., 1993). In general, sustainable development is seen as providing EA with “a clearer set of goals. a framework for the understanding and assessment of human activities and environments. and a broad range of related instruments for action” (Lawrence, 1997a: 32).

Methodology evaluative studies either assess the scientific and technical integrity of an EA by examining the adequacy of EISs or by examining the ability of EAs to meet a series of specified tasks (Spaling et al., 1993). There is a third group of methodology studies that evaluate the merits of the different methods used to conduct EAs, such as ad
hoc approaches, checklists, matrices, networks, overlays, modeling procedures, evaluation techniques and adaptive methods (e.g. Sondheim, 1978; Nichols and Hyman, 1982; Shopley and Fuggle, 1984; Whitney and Maclaren, 1985; Hyman and Stiftel, 1988). The latter focus falls outside the scope of this particular study.

Methodology evaluative studies will generally begin by evaluating how well screening and scoping activities have been carried out (refer to Figure 2.1) (Whitney and Maclaren, 1985). The adequacy of the background preparation is then evaluated (Rosenberg et al., 1981), which requires the examination of research and data collection and assembly mechanisms (Lee, 1982 and 1983; Beanlands and Duinker, 1983; 1984). In addition, descriptions of the proposed project/activity, the surrounding environment and interactions between these are examined (Lee, 1982 and 1983; Conover et al. 1985a: 1985b; Wright and Greene, 1987). The scientific and technical soundness of the EIA and EIS are then determined (Ross, 1987) ensuring that impact identification and predictions are as accurate as possible. The impact significance stage is then evaluated (Lee, 1982 and 1983; Whitney and Maclaren, 1985), at which point the facilitation of public participation opportunities are also evaluated (Rosenberg et al., 1981; Nichols and Hyman, 1982). Finally, monitoring and mitigation activities are examined to determine if they adequately address the predicted impacts (Rosenberg et al., 1981; Beanlands and Duinker, 1983; 1984; Whitney and Maclaren, 1985). In general, these types of evaluations view the EA and EIA process as a scientific experiment (e.g. Rosenberg et al., 1981; Beanlands and Duinker, 1983; 1984; Whitney and Maclaren, 1985) and expect the EIA process to be consistent, fair and subject to higher standards of scientific rigour (Whitney and Maclaren, 1985; Ross, 1987).

Studies that examine the effectiveness of the EA process are the most common form of evaluation (e.g. King and Nelson, 1983; Elkin and Smith, 1988; Needham and Swerdlafger, 1988; Weston, 1991; OECD, 1996). These studies focus on the administrative, decision making and implementation components of EAs, based on the belief that EA effectiveness is related to its policy, legislative and institutional design (Spaling et al., 1993). The best-known EA process effectiveness evaluative frameworks were developed by Gibson (1993), Wood (1995), Doyle and Sadler (1996), Sadler (1996) and more recently, Hickie and Wade (1998). All the studies build on each other and
outline very similar process evaluation criteria. In general, the studies examine the
legislative basis of an EA system, the integration of the EA system into planning and
decision-making structures, and procedural compliance (Gibson, 1993; Spaling et al.,
1993; Wood, 1995; Sadler, 1996). In addition they seek to determine if the EA process is: (1) open; (2) comprehensive; (3) accountable; (4) fair; (5) consistent; (6) flexible; (7)
efficient; and (8) if it considers short and long-term implications (CEAC, 1988).

2.4 CHOOSING AN EVALUATIVE APPROACH

There is no single correct approach for identifying which evaluative approach is
the most appropriate. However, Lee et al. (1994) and Sadler (1996) have identified a
series of principles that should be taken into account when choosing an evaluative
approach and when evaluating an EA system. First, it is important to identify the purpose
of the evaluative study. For example, the purpose may be to evaluate procedural
compliance, the adequacy of EISs, the merits of the techniques utilized in the EA, the
influence of the EA on decision making, the cost-effectiveness of the EA, the
contribution of the EA to the objectives of sustainability, and/or a combination of several
or all of the above (Ortolano, 1993 as cited in Lee et al., 1994; Sadler, 1996).

Second, it is important to determine the degree of detail by which the EA will be
evaluated. Lee et al. (1994: 163) identifies two broad evaluative approaches. The detailed
disaggregate approach “involves (a) separately evaluating performance at each stage of
the EA process and, then (b) analyzing interdependencies between performances at
different stages of the process”, while the holistic aggregate approach “involves
assessing the overall outcomes, positive and negative, resulting from the application of
the EA process as a whole.” The disaggregate approach would be more useful in
evaluating the conceptual framework, process and methodology of EA while the
aggregate approach would be appropriate for analyzing the goals achievement of the EA.
The third consideration that needs to be addressed when determining which evaluative
approach to use is the availability of information (Lee et al., 1994). In order to better
identify which approach(es) is most appropriate, the following section reviews best
practices for each component or activity in an ideal EA system.
2.5 IDEAL EA THEORY AND PRACTICE

The following discussion outlines what has been deemed best EA practice according to the literature, and serves as the structure for the evaluative framework used to evaluate the effectiveness of the Costa Rican EA system and the three case studies. It is important to note once again, that both developed and developing countries usually adopt similar EA principles, procedures and practices. Therefore, criteria used to determine the effectiveness of EAs in developed countries can be used to determine the effectiveness of EAs in a developing country. A number of EA principles have been added to the ones discussed in Section 2.2 and shown in Figure 2.1. The discussion is presented in the following order:

- the legal basis and administrative structure of EA system;
- the coverage of EA systems;
- the consideration of alternatives;
- screening;
- scoping;
- EIS preparation and presentation;
- prediction;
- significance assessment;
- EIS review;
- evaluation and final decision making;
- monitoring and post-auditing of actions;
- mitigation and compensation;
- public participation and consultation;
- monitoring of EA systems;
- costs and benefits of EA; and
- procedural consistency.

2.5.1 The Legal Basis and Administrative Structures of EA systems

Caldwell (1989: 11) has found that where EA “does not legally predetermine or force an administrative decision, it is not generally regarded as threatening” and can be significantly weakened or avoided altogether. Therefore, if the intention of EA is to serve
as an action-forcing mechanism in regards to the consideration of environmental factors in planning and decision making, then EAs need to be established in law (Caldwell, 1982; Gibson, 1993). In addition, if EAs are to make a significant contribution towards the goals of sustainable development, the EA provisions need to clearly specify that the EA system is dedicated to this overall objective (Gibson, 1993; Smith, 1993; Lawrence, 1997a).

EA provisions need to be unambiguous in application and clearly differentiated from other legal provisions (Wood, 1995). The danger that EA systems may be rigorous and effective at a normative level, but non-enforceable and ineffective at an operational level is a serious concern for EA experts and practitioners (Lohani et al., 1997). EAs should also be based on clear and specific legal provisions, and all steps of the process and their time limits, must be legally enforceable through a judicial system if necessary (Gibson, 1993; Wood, 1995). This also means that governments need to make financial provisions to support an EA system in order to demonstrate their political commitment to EA. If the provisions for EAs are not clear, and if a system for imposing sanctions on those who fail to adhere to EA provisions is not established, there is the danger that EA objectives will be compromised for other immediate pressures (Gibson, 1993). However, Wood (1995) argues that EA systems established in law may be too rigid and inflexible to new situations. This raises the issue of discretion in decision making. Although discretion in decision making may seem to counter the objectives of EA, some degree of flexibility is required in light of varying situations and particular circumstances (Hollick, 1986; Wood, 1995). Therefore, Wood (1995) has proposed that each step in an EA should be specified clearly and unambiguously in law, while the finer points should be detailed in regulations, as this will permit opportunities to make necessary changes without having to reform primary legislation.

In addition, EA systems should have separate administrative agencies that manage the EA process and monitor for compliance, as strong political pressures may result in the avoidance of an EA or in the subversion of the process (Hollick, 1986). For example, in the US and Canada, the authorities responsible for the EA systems are often also the proponents and/or advocates of an activity of project (Gibson, 1993), potentially compromising the validity of EA decision-making processes. Therefore, EA systems will
be more effective if the decision-making power is independent of the proponents (Gibson, 1993).

2.5.2 The Coverage of EA Systems

The underlying, fundamental goal of EA is to minimize the damage on the environment that may result from the decision to implement a project or an activity (Hollick, 1986). Therefore, it is imperative that all initiatives or activities, either public or private, that may have the potential to harm the environment, be subject to an EA (Hollick, 1986; Wood, 1995). There are instances where this requirement may need to be overridden, such as in matters of national security (Wood, 1995), however, in all other cases EAs need to be implemented and enforced.

It is also important that EAs cover all stages in the project cycle and that the EA begin at the planning stages of a project, prior to the initiation of activity and before irrevocable decisions are made (Sadar, 1995). This will ensure that environmental factors are introduced and considered early in the project planning stages and throughout the entire project (Hollick, 1986). Overall, EA systems should consider the environmental effects and impacts at the exploratory, construction, operational, modification and decommissioning stages of a project or activity (Meredith, 1991 and 1995; ADB. 1993; Wood, 1995; Lohani et al., 1997).

If an EA system is to be effective it also requires the assessment of all relevant environmental effects and impacts. This requires the examination of the terms "environment," "effects," and "impacts." In the case of the term "environment," little attention was paid to the implications of its use during the 1960s and early 1970s, as it was generally assumed to represent only the biophysical surroundings (Holtz, 1990). However, since the mid-1970s this perspective has been gradually changing and now embraces economic, social, and cultural considerations. As such, the term "environment" should encompass physical, social, cultural, economic, health and aesthetic factors, as well as their interactions (Rau, 1980; CEAC, 1988; Gibson, 1993; Greer-Wooten, 1997).

The terms "effect" and "impact" are often used interchangeably in the EA literature. However, they represent two different aspects of the outcomes of an action or project (Preston and Bedford, 1988). The term "effect" refers to a change produced by some agency or cause (Conover et al., 1985a) and can be ascertained through scientific
analyses and empirical evidence. Wathern (1988) believes an effect can be determined by comparing the outcome of an action with the situation that would have occurred if the action had not been initiated. An “impact” is determined by the relative importance assigned to a particular effect by an analyst or the public (Preston and Bedford, 1988; Stakhiv, 1988). Therefore, an effect is a measure of magnitude, while an impact is a measure of magnitude combined with a measure of importance (Lawrence, 1994). EAs should account for both environmental effects and impacts.

2.5.3 The Consideration of Alternatives

The consideration of alternatives is considered to be a “central issue for any form of policy analysis, for it not only affects the scope and emphasis of the analysis itself, but also determines the relationship of the analysis to the ensuing decision process” (Andrews, 1988: 88). If EAs are to establish an effective framework for decision making, then the process needs to move away from the consideration of single options, which only allow the justification, mitigation or refusal of an activity, to the comparison of alternative courses of action. It is important that only those alternatives that meet the needs and purposes of the proposed development be considered, and that other alternative presented be excluded from analysis (Schmidt, 1993).

In order to be effective, EA systems should require by law the consideration, by the proponent, of alternative actions, sites, scheduling and project designs (Burchell and Listokin, 1975; Rau, 1980; Tomlinson, 1984; Hollick, 1986; Gibson, 1993; Gilpin, 1995; Wood, 1995). Without this requirement, the ability of decision makers and the public to determine whether or not an action should proceed and, if so, under what conditions, is limited (Hollick, 1986). This consideration of alternatives needs to be well documented, published and done before, not after, a decision has been made (Gilpin, 1995). In addition, the no-action alternative should be a viable option in cases where the potential negative effects and impacts of project or activity far outweigh the benefits (Clark, 1984; Schmidt, 1993; Wood, 1995). Finally, the public should be allowed to provide input during this stage, as they may be able to define more viable alternatives to an action or project.
2.5.4 Screening

It is generally agreed that all proposed development activities that have the potential to cause changes in the environment should be subject to the EA process (Wathern, 1988). However, not all proposed activities pose significant threats to the environment due to variations in the extent, frequency, magnitude and duration of effects and impacts and, as such, might not warrant a full EIA. These variations in project characteristics and the nature of the environment, in which the proposed development is to be implemented, determine if a project or action may have significant consequences (Biswas and Geping, 1987).

"Screening" was developed to help decision makers examine and determine the environmental significance of proposed activities, and decide what level of environmental review is required (Therivel and Morris, 1995a; Wood, 1995; Lohani et al., 1997). In the US, the Council on Environmental Quality (CEQ) established a set of ten criteria, posed in the form of questions, to assess the significance of projects. In brief, the criteria determine if a potential impact (1) is considered beneficial or detrimental; (2) affects human health, unique geographic areas, protected sites and endangered species; (3) is considered controversial due to uncertain, unknown or unique risks; (4) has potential cumulative impacts; and/or (5) contravenes existing legislation (Wood, 1995). EA systems should require by law that all actions that have potentially significant environmental consequences be subject to the full EIA process (Tomlinson, 1984; Biswas and Geping, 1987). Often, the best source of information will be the project proponent and, as such, the proponent should be required to submit documentation to assist the screening process (Wood, 1995).

Screening criteria that either specify the actions or the thresholds at which a full EIA is required need to be clearly specified in published documents and made available to the public so that they can provide input prior to the final screening decision (Wood, 1995). Actions that are found to have no significant impacts should still be subject to some other form of EA, such as a declaration of environmental responsibility, in order to safeguard the environment from unforeseen and unexpected impacts. Those actions that may harm the environment will require a full EIA and should proceed to the scoping stage (see Section 2.5.5). Finally, a publicly accountable body should make the final
screening decision, and a justification for their decision should be published in order to allow the public to review the decision and make an appeal if necessary (Wood, 1995). Public scrutiny is necessary because to some degree, value judgements will need to be made at this stage (Tomlinson, 1984).

2.5.5 Scoping

Often the effects and impacts of a proposed development may be deemed trivial by the proponents and/or EA experts and practitioners, or may have no significance to future decisions (Wathern, 1988) and should be screened out (Wood, 1995). Only those potential outcomes of a proposed development that are considered significant need to be examined. Therefore, once the decision to conduct a full EIA is made during the screening process, the spatial, temporal, technical and jurisdictional boundaries of the study need to be established (Whitney and Maclaren, 1985; Sadar, 1995). This process, known as "scoping," is intended to focus the EIA on the issues that warrant further study and analysis (Gilpin, 1995; Wood, 1995), but can also be useful in detailing data requirements, methods and techniques to be employed, timelines and how the results will be presented (Bisset, 1987). The scoping stage not only determines which issues need to be studied, but also assigns priority to issues and potential impacts that need to be addressed (Storey, 1991; Sadar, 1995). The ultimate goal of the scoping stage is to establish the Terms of Reference (ToR) for an EIA (Tomlinson, 1984; Lohani et al., 1997). As such, EA systems should require by law, the scoping of the environmental impacts of proposed actions early in the EA process, and the production of guidelines (e.g. ToR) to carry out the EIA (Wood, 1995). Often, governments will have established guidelines on effects and impacts that need to be assessed (irrespective of their development context) but these should always be complemented by action-specific scoping guidelines (Wood, 1995).

During the scoping stage, it is also important to bring together all interested parties who may be affected by the proposed development (e.g. environmental organizations, business groups, government officials, technical experts and affected citizens), in order to ensure that all appropriate and significant issues are considered (Caldwell, 1982; Pease and Smardon, 1984; Mangun, 1989). A publicly accountable body, whose actions are open to public scrutiny, however, should make final scoping
decisions. The final decisions need to be published and made available to the public for review and appeals if necessary. Similar to the screening stage, the basis of selection of significant issues will be determined by the value appropriated to each issue by the different relevant groups (Beanlands and Duinker, 1983; Whitney and Maclaren, 1985). Whitney and Maclaren (1985) believe that these issues can be separated into two major groupings: (1) publicly valued environmental components (PVEC); and (2) scientifically relevant environmental components (SREC). It is important that EA systems provide published guidance on these scoping procedures and methods in order to identify the significant effects and impacts that need to be examined in the EIA (Wood, 1995).

2.5.6 EIS Preparation and Presentation

The EIS was developed as a result of the passage of the NEPA in 1969 and is considered to be the foundation of EA (Cheremisinoff and Morresi, 1977). According to Caldwell (1982: 1), the purpose of the EIS is to certify that the environmental implications of an action have been considered, and most importantly to serve as a “mandatory, action-forcing reorientation of planning and decisionmaking [sic].” Therefore, it is imperative that an EA system require the presentation and communication of information from the EA, through an EIS or a report of similar format (Barrow, 1997).

There are no standard guidelines on how to format an EIS. However, it is generally agreed that EISs need to present baseline surveys, descriptions of the proposed project and affected surrounding environments, predicted potential impacts, indicate the significance of these impacts, outline mitigation measures and provide a non-technical summary, all in a language that affords a basis for policy decisions and is comprehensible to the general public (Barbaro and Cross, 1973; Cheremisinoff and Morresi, 1977; Orloff, 1978; Bendix, 1984; Elkin and Smith, 1988; Caldwell, 1989; Wood, 1995; Lohani et al., 1997). Curtis (1982) believes that explanations of technical terms and expressions, as well as sources of data and information also need to be included in the EIS. In addition, guidelines that outline the maximum length of EISs, as well as establish typography requirements such as type size, design and page layout factors, line length, headings, highlighting, spacing, margins, page size, orientation, binding and the reproduction of material, need to be developed and made available to the proponents and the public (Gallagher and Jacobson, 1993).
Also, if the EIS is to effectively convey information to decision makers, it needs to be objective and unbiased (Hollick, 1986; Gilpin, 1995; Barrow, 1997). According to Hollick (1986: 164):

Bias or distortion can take a number of forms, for example failing to mention or playing down certain impacts, failing to consider all phases of a project, leaving out or failing to collect certain information, making overoptimistic predictions of the effectiveness of mitigation measures, and using personal value judgments of the significance of factors or impacts. Identifying and reducing biases can be a difficult task. However, mechanisms that have the potential to reduce bias do exist. For example, the establishment of project steering committees and the use of registered consultants might help to keep the EISs impartial (Hollick, 1984; Wood, 1995).

It is generally agreed that an interdisciplinary team, versus a multidisciplinary team, should carry out the EIA and prepare the EIS. The latter represents a group of professionals who carry out their work with little, if any, attempts to co-ordinate or interchange information, while the former will exchange information and communicate on a regular basis, in order to meet the goals of their study (Burdge and Opryszek, 1983; Canter, 1991). According to Erickson (1979), a team can be considered “interdisciplinary” if the results of the team are conceptually different from the collective results that would have been generated if team members would have pursued their studies independently. Interdisciplinary teams are necessary because, as mentioned above, the term environment encompasses numerous components and no individual can effectively study them all (Sadar, 1995). Effective interdisciplinary teams will be comprised of a team leader and members which suit the scope of the EIA, are experts in their respective fields and have developed solid interpersonal skills (Burdge and Opryszek, 1983; Canter, 1991). In addition, team members should have what is known as a “policy orientation” (see Clark, 1992), i.e. team members should have knowledge of how the EA system functions and recognize the implications of the information they generate on decision making.

2.5.7 Prediction

One of the fundamental goals of the EIA is to predict the nature, extent, duration and magnitude of changes in the environment (i.e. human, animals, plants) that may be
caused by the implementation of a project or activity before they actually occur (Beanlands and Duinker, 1983; 1984; Valiela, 1984; Wathern, 1984; Bisset, 1987; Lohani et al., 1997). A prediction is defined as “a statement specifying, without direct measurement, the past, present or future condition of a particular system component, given certain characteristics of the system, with a likelihood greater than that expected by chance” (Duinker and Baskerville, 1986: 274). The information provided by predictions (also commonly known as forecasts) is critical for determining the significance of impacts, prescribing mitigation measures and establishing monitoring programs. However, the issue of prediction in EAs has historically been riddled with problems (see Duinker and Baskerville (1986) for a review).

The most critical of these difficulties, is the substantial degree of uncertainty in effects and impact predictions (Bishop, 1974; Valiela, 1984; Cornford et al., 1985; De Jongh, 1988). For example, effects and impacts will vary spatially, temporally and in size (e.g. trivial to cataclysmic) (Culhane et al., 1987; Wathern, 1988; Lichfield, 1992). They may have positive or negative, immediate, short-term, long-term or multigenerational consequences (Mitchell and Turkheim, 1977; Gibson, 1993; Jacobs et al., 1993; Lawrence, 1994). The spatial effects and impacts may be on-site or off-site. In addition, the characteristics of the effects and impacts will vary. These may be direct or indirect (also known as primary, secondary, tertiary etc.), individual, additive, synergistic, cumulative, neutral or residual (Burchell and Listokin, 1975; Mitchell and Turkheim. 1977; Rau, 1980; Hollick, 1986; Cocklin et al., 1992a and 1992b; Gibson, 1993; Jacobs et al., 1993; Lawrence, 1994; Sadar, 1995; Therivel and Morris, 1995b; Barrow, 1997).

EA predictions need to address these variations in effects and impacts, if they exist, and attempt to reduce uncertainty as much as possible. In addition, the predictions must address potential changes in the biophysical, socio-economic, cultural, health and aesthetic components of the environment.

Predictions may be based on a series of sources including speculations, professional judgements, case-study experience, experimental evidence, as well as simulation and statistical modeling, among others (Beanlands and Duinker, 1984). It is important that the assumptions and rationales behind the predictions be explicitly outlined in EA documentation. Many techniques and methods have been developed to
predict and evaluate the potential effects and impacts of development activities. The techniques aid in the prediction of the future state of the environment, while the methods collate, arrange, present and/or interpret the information (Bisset, 1988; Barrow, 1997). Usually a number of techniques will be used in the EIA (see Lohani et al., 1997 for a review), while only one method is commonly employed. Methods typically used in EAs included overlay mapping techniques, network and system diagrams, as well as checklists and interaction matrices. These are not discussed here but the relative merits of these and others are evaluated in McHarg (1969), Dickert (1974b), Canter (1983), Atkins (1984), Bisset (1984, 1987 and 1988), Wathern (1984), Hyman and Stiftel (1988), Smith (1993) and Barrow (1997).

Overall, the usefulness of EA methods in predicting and evaluating effects and impacts will vary. However, Whitney and Maclaren (1985) and Culhane et al. (1987) have identified a series of criteria that can help to determine the effectiveness of predictions. According to these authors, effective predictions will: (1) identify potentially affected populations or resources; (2) recognize system interactions (e.g. direct and indirect effects and impacts); (3) address the dynamic nature of environmental and social conditions by presenting potential impacts in the form of a time series; (4) consider the probabilistic nature of future events; (5) acknowledge and attempt to resolve issues of uncertainty; (6) try to quantify towards higher levels of prediction measurements (i.e. from nominal, ordinal and interval to ratio measurements); (7) capture the variability of phenomena through space and time; and (8) predict changes to baseline conditions if the activity or project were not implemented. Guidance on prediction methods and techniques should be made available to those in charge of carrying out the EIA.

2.5.8 Significance Assessment

Significance assessment is considered to be one of the most difficult issues addressed in EA (Fortlage, 1990; Thompson, 1990; Wood, 1995). This activity determines the value attached to changes forecast in the prediction stage, by examining the individual importance of an effect and their relative significance to other effects (Atkins, 1984; Whitney and Maclaren, 1985). It entails asking the question of whether or not an effect is "significant." The term itself has numerous definitions such as
meaningful”, “important”, “notable” or “something outside of acceptable limits”; all highly subjective terms (Gilpin, 1995). As stated by Beanlands (1988: 35):

Any consideration of the significance of environmental effects [and impacts] must acknowledge that environmental impact assessment is inherently an anthropocentric concept. It is centred on the effects of human activities and ultimately involves a value judgement by society concerning the significance of importance of these effects.

As such, significance assessment depends upon the magnitude and scope of an effect, in relation to the values held by individuals or society (Cornford et al., 1985). If the role of EA is to enable decisions that enhance environmental quality, value judgements are inescapable (Burchell and Listokin, 1975; Sadar, 1995).

Significance assessment can be determined by addressing factors of social, scientific and ecological importance, as well as by comparing effects with established environmental standards or examining for significant statistical variability (Beanlands and Duinker, 1983; 1984; Sadar, 1995). Whitney and Maclaren (1985) suggest that significance assessments will be effective if the following factors are taken into consideration: without-project comparisons; the stability and resilience of environmental components; cumulative effects; the duration of impacts; both scientific and public perceived risk; relative magnitude; and quality standards and criteria. In addition, Masera and Colombo (1992) state that the frequency and geographical extent of effects and impacts need to be considered, as well as their reversibility or recoverability and the possibility of mitigation.

Effective EA systems will require that the opinions and/or expertise of the assessment team, local planning authority (if one exists), environmental bodies, groups of experts and the public, be considered (Fortlage, 1990; Glasson, 1995; Wood, 1995). Opinions as to what constitutes a significant impact may vary, so those involved in this activity must attempt to reach consensus on the types and magnitudes of environmental effects that are considered acceptable or unacceptable (Fortlage, 1990). Once the impacts and significance of the impacts has been determined, the results should be published. The document will need to indicate explicitly what factors where considered, and most importantly provide rationales of why certain effects and impacts were determined as
being significant or not (Remy, 1975). In addition, guidance on carrying out significance assessment should be provided by the EA system.

### 2.5.9 EIS Review

The review of the EIS is viewed as one of the most critical stages in the EA process because it provides an invaluable check on the quality of the report before final decision making, and allows decision makers to recognize whether the project benefits outweigh the costs (Kanerva, 1978; Elkin and Smith, 1988; Wood, 1995). Although the importance of this stage is well recognized in the EA literature, little guidance on how to carry out the review is provided. Nevertheless, it is generally agreed that this activity should provide the reviewers, which includes the proponents, preparers, general public, experts and administrative agency personnel, with a reasonable and justifiable analysis of the environmental impacts of a proposed project, and with an opportunity to comment on the accuracy and completeness of the EIS (Orloff, 1978; Erickson, 1979; Elkin and Smith, 1988; Wood, 1995). In addition, the EIS review should allow the reviewer to determine if any part of the EIS requires additional information, work or strengthening (Elkin and Smith, 1988). If this is the case, the reviewers should be given the legal right to demand the extra information or changes.

Therefore, EA systems should require by law that EISs be readily available to those interested in the review process, including the public. In some jurisdictions, such as the US, a draft EIS (dEIS) is presented before the final EIS (Erickson, 1979). This allows the incorporation of the comments made by the reviewers, and any additional information deemed necessary, into the final EIS before it is submitted to the decision makers (Erickson, 1979; Wood, 1995). If this course of action is favoured, then changes made to the dEIS should be published and made available to the public. However, this process of re-reviewing dEISs or EISs has the potential of becoming a never-ending, iterative cycle. Therefore, guidance on review procedures and timetables should be clearly outlined and specified in law, in order to expedite the process (Wood, 1995). Finally, it is generally agreed that an independent review body with appropriate expertise should also review the EIS before final submission. Similar to the EIS preparation stage (see Section 2.5.6), the review body that will also make final decisions should be comprised of an interdisciplinary team, with appropriate expertise, in order to reduce bias in decision
making (Jones, 1984; Wood, 1995). In addition, Wood (1995) has found that if an independent body of experts reviews EISs, the documents improve over time, since the opinions of the review bodies are usually very influential and made public.

2.5.10 Evaluation and Final Decision Making

As previously discussed, the objective of EA is to ensure that environmental considerations are introduced in the evaluation and decision-making stages of the EA process; the point at which the future of a project or activity is determined. All proposed projects have to go through this authorization process, otherwise an appropriate permit cannot, and should not, be issued (Bisset, 1996).

During the evaluation stage, the potential positive and negative environmental effects and impacts of a proposed project are considered and decision makers will make a final judgement as to whether, or not, a project or activity is allowed to proceed (Whitney and Maclaren, 1985; Smith, 1993). It is imperative that evaluation and final decision making be based on the findings presented in the EIS, and that no final judgement be passed until the documents have been reviewed (Wood, 1995). Ideally, decision makers will consider the costs and benefits of several alternatives, and the one that proves to have the least net impact (i.e. total negative impacts minus the total positive impacts) will be chosen if deemed acceptable (Whitney and Maclaren, 1985). If only one option is available, then decision makers will have to determine if the potential benefits of the proposed project outweigh the costs. In instances were the benefits are greater than the costs, the project should be allowed to proceed (Whitney and Maclaren, 1985).

During the evaluation, decision makers will be faced with both quantitative and qualitative data (Hollick, 1981; Masera and Colombo, 1992; Barrow, 1997). As such, the selection of the preferred course of action will, to some extent, be dependent on value judgements and factors that cannot be quantified (Hollick, 1986). Decision makers will need to address a number of issues that arise during the EA evaluation and final decision-making stages, including (Whitney and Maclaren, 1985): aggregation versus disaggregation of alternatives (if possible) and impacts; level(s) of measurement (nominal, ordinal, interval or ratio); weighting of environmental components and the objectives of relevant groups; the use, or not, of common measurement units (monetary.
energy, environmental quality indices and/or utility); the ease of understanding; and public involvement.

In addition, decision makers will need to make a series of trade-offs in the information base "between simplification and the complexity of reality; between the urgency of the decision and the need for further information; between facts and values; between forecasts and evaluations; and between certainty and uncertainty" (Wood, 1995: 182). Although not all of these issues will be relevant in every EA, if present, decision makers will need to address them in their final decisions. Published guidance on these factors should be available to decision makers.

Finally, it is important that the final decision be made by a body or agency other than the proponent (Wood, 1995). This agency should have the legal right to refuse, impose conditions or demand modifications, but must also be required to justify and publish their rationale for either accepting or refusing a project or activity (Clark, 1976; Jones, 1984; Wood, 1995). In addition, the conditions of approval need to be published in order to allow the public to review them, voice their concerns prior to, and after, the final decision-making stages, and appeal a decision if necessary (Masera and Colombo, 1992; Wood, 1995).

2.5.11 Monitoring and Post-Auditing of Actions

EAs have often been used as a mechanism for obtaining development permits, instead of serving as a tool for achieving sound environmental management and protection (Bisset and Tomlinson, 1988; Dipper et al., 1998). This has been the result of the emphasis placed on the pre-decision stages of EA, often to the neglect of post-implementation EA activities such as monitoring and auditing (Bisset and Tomlinson, 1983; Rigby, 1985; Sadler, 1988; Bailey, 1997). In many cases, the granting or refusal of development permits is seen as the end-point of the EA process (Bailey, 1997; Dipper et al., 1998). As such, monitoring and auditing remain poorly established in EA systems, although their importance has been well recognized since the early 1970s (O'Riordan, 1971; Sors, 1984; Rigby, 1985; Munro et al., 1986; Davies and Sadler, 1990; Wood, 1995; Lohani et al., 1997). Without these activities, the accuracy of impact predictions, as well as the techniques and methods used to determine these, is unknown (Bisset and
Tomlinson, 1983). Furthermore, without monitoring there is no means for checking if proponents are complying with approval conditions.

Monitoring is the systematic process of collecting and organizing relevant information regarding development impacts in order to improve decision making by informing the public, or by functioning as a feedback tool for project management, program evaluation and policy development (Bankes and Thompson, 1980; Carley and Bustelo, 1984; Maddock, 1993; Dipper et al., 1998). Although numerous types of monitoring exist (e.g. see Carley and Bustelo, 1984; Sors, 1984), there are three types that are relevant to EA (Davies and Sadler, 1990): baseline monitoring, effects/impact monitoring, and compliance or implementation monitoring.

Baseline monitoring (also known as baseline studies) refers to the measurements of environmental variables taken in the pre-disturbance stages of project planning (Duinker, 1985). These studies examine existing environmental conditions, the range of variation and processes of change (Munro, 1987; Davies and Sadler, 1990). Effects/impact monitoring activities measure environmental effects and impacts that arise as a result of project construction, operation and decommissioning (Clark et al., 1987; Davies and Sadler, 1990; Masera and Colombo, 1992; Wood, 1995). These activities are useful in identifying harmful trends before it is too late to prevent or mitigate them. Compliance or implementation monitoring checks that the action has been implemented and is functioning in accordance with approval conditions, and that mitigation measures correspond with those required (Wood, 1995).

All monitoring activities should produce findings that are relevant and useful in decision making (Maddock, 1993) and these should be published and available for public review (Hollick, 1986; Bisset, 1996). In addition, guidance on monitoring activities should be available, which also establish time limits, in order to ensure that the process is efficient (Wood, 1995).

Auditing, a term borrowed from accounting, seeks to compare the effects and impacts predicted prior to the implementation of an activity (and presented in the EIS), with those that actually occurred during the development and operation of the activity (Bisset and Tomlinson, 1988; Wood, 1995; Dipper et al., 1998). The terms auditing and monitoring are often used interchangeably and confusingly in the literature (e.g. Clark et
al., 1987), however, the two terms do represent different activities. According to Munro et al. (1986:4) and Munro (1987: 8), audits should reveal the accuracy of EIAs as forecasts of the environmental consequences of a project; the effectiveness of recommended procedures for mitigation of the adverse effects of projects; the utility of recommended regimes and techniques for monitoring and surveillance; and the effectiveness of procedures for environmental management of projects.

EA audits, also known as post-audits, are very important because effects and impact predictions are not always accurate and predictive techniques often have unknown error margins (Bisset and Tomlinson, 1988). As such, post-audits are important activities that allow EA practitioners to learn from past experience and apply the lessons learned to future practice (Dipper et al., 1998). EA post-audits should be required by law and proponents should be required to take ameliorative action if necessary (Wood, 1995). During both monitoring and post-auditing activities, the public should be allowed to present any observations they feel may be relevant to these two activities. In addition, monitoring and post-auditing activities need to be flexible in order to deal with novel impacts and unique situations.

2.5.12 Mitigation and Compensation

All project-induced impacts cannot be identified due to uncertainty in effects and impact prediction (Bisset and Tomlinson, 1983; Sadler, 1988). As a result, impact mitigation and compensation measures have been introduced, primarily in countries with advanced EA systems. Mitigation measures are ways of preventing, remedying, reducing, suppressing, subduing or eliminating the expected and unexpected negative impacts of development activities by design, process, material substitution, construction, location or scheduling principles (Burchell and Listokin, 1975; Whitney and Maclaren, 1985; Masera and Colombo, 1992; Sadar, 1995). Ideally, mitigation measures should enhance environmental quality (Sadar, 1995) and according to Fortlage (1990: 51) there are four types of mitigating measures: (1) those which are intended to control adverse effects, such as filtering emissions; (2) those which are intended to scale down effects, such as concealing buildings by screen planting; (3) those which are restoration measures such as replacing lost open space or woodland; and (4) those which are compensatory (planning gains), such as providing new recreational facilities. In addition, mitigation measures may
also include avoiding an impact altogether by not taking an action or parts of an action, as well as by limiting and/or reducing the degree or magnitude of an action by preservation or maintenance operations during the life of an action (Canter, 1984).

While mitigation measures are concerned with impacts that may be ameliorated, compensatory measures are concerned with residual impacts; those that remain after mitigation measures have been implemented and exhausted (Sadar, 1995). According to Masera and Colombo (1992: 67), compensations can be economic (i.e. indemnities for damage, harm and injuries to economic and social assets, and in general for effects on health); social (e.g. reforestation, approaches to highways); and/or sanitary (any compensation for probable health troubles that might occur in accidents or critical conditions).

EA systems should require by law that mitigation and compensation measures be considered and implemented, if necessary, at all EA stages, and this should be apparent in both EA documentation and project actions (Wood, 1995). Most importantly, details for carrying out these activities should correspond with effects and impacts identified and presented in the EIA and EIS respectively, and follow approved environmental management objectives (Ortolano et al., 1987; CEARC, 1988). In addition, published guidance on mitigation and compensation measures should be available (Wood, 1995).

2.5.13 Public Participation and Consultation

Prior to the 1970s, the realm of environmental decision making was the sole domain of the technocrat (Kuhn, 1997). In the early 1970s, however, the doors to public input in the EA process were opened through the implementation of the US NEPA and now, public participation activities are carried out in EA systems world-wide (Webler and Renn, 1995). Public participation and consultation are activities that seek to consult, involve, inform and empower those affected by a decision, by providing them with opportunities to have input in decision making (Smith, 1993; Prystupa et al., 1997). These forms of public involvement are capable of generating useful information on the values and priorities of interest groups and the general populace (Grima, 1977; 1985). In addition, they help to gauge project acceptability, or lack thereof, function as a test of process accountability, build trust among participants in the EA process, and can result in
comfortable decision making for decision makers (Grima, 1985; Sadler, 1986; Sadar, 1995). The effective use of public participation and consultation will usually result in greater popular acceptance of proposed actions, as public involvement will make the assessment process and subsequent decision more transparent and credible (Clark, 1983; Hyman and Stiftel, 1988; Pellizzoni, 1992; Renn et al., 1995).

Despite the fact that public participation and consultation mechanisms often face difficulties in deciding whom should participate, when should participation and consultation take place and how should it function (Grima, 1977; Delli Priscoli and Homenuck, 1986; Pellizzoni, 1992; Cames, 1993), it is imperative that EA systems provide the public with opportunities and the legal right to participate in decision making (Smith, 1984). Requirements for effective public participation and consultation will vary among jurisdictions, yet there are a series of activities that are believed to ensure more effective practice. For example, it is important that those who may be directly or indirectly affected by a project, be informed of impending decisions early in the planning process (Clark, 1983; Boothroyd, 1990), so that they can play a part in the formulation of alternatives (Parkin, 1993). Once this is accomplished, the public needs to be offered a meaningful opportunity to comment and provide input at all stages of the EA, and appeal decisions if necessary (Hollick, 1986; Boothroyd, 1990; Wood, 1995). This requires that they be given adequate time to review the documents and, if necessary, prepare a case to appeal a project or activity (Grima, 1977). However, the public review period should not be so long that it delays other EA stages and the potential implementation of projects or activities (Sadler, 1988).

If the public is to provide input, they must also have access to EISs and EA documents of all planning and project stages, and these must be obtainable at a reasonable cost (Wood, 1995). If necessary, intervenor funding, as well as assistance in reviewing EA documents should be provided to groups with limited power and funds (Sadler, 1990; Wood, 1995). EA documents and EISs should be written in a sufficiently clear and comprehensive manner that the general public can understand (Wood, 1988).

Once the public has provided their input, their comments and concerns needs to be addressed by planners and decision makers, and the consideration of these needs to be
demonstrated in published and accessible EA documents (Wood, 1995; Boothroyd, 1990). This will ensure that any input provided is not neglected, distorted or misinterpreted (Orloff, 1978; Hollick, 1986). Finally, EA systems should provide guidance on the different approaches used for establishing public participation and consultation mechanisms, particularly at different EA stages and in varying situations (see Sadar, 1995: 38-39 and Wood, 1995: 228-29).

2.5.14 Monitoring of EA Systems

The scope of interest on monitoring and follow-up studies has broadened to also include evaluations of administrative and management procedures (Sadler, 1988). Without some form of feedback, agencies in charge of managing EA systems will not be able to determine and/or address any potential weaknesses. Therefore, EA systems should be monitored and, if necessary, modified or amended to strengthen the system.

According to Wood (1995), effective EA system administrative and management procedures will maintain a record of the number and action-type of EISs, as well as other supporting EA documentation, such a screening and scoping reports. In addition, records of the financial and time costs of the EIS should be maintained. These should all be available to the public. Finally, effective EA systems will allow for lessons learned to be incorporated into the system (Wood, 1995).

2.5.15 Costs and Benefits of EA

The costs of an EA have always been a major point of contention between project or activity proponents and EA practitioners (Caldwell, 1978; Clark, 1984; Turnbull, 1988; Wood, 1988b). When EAs were first introduced, the intention was to internalize the process into the budgets of all projects and activities that had the potential to harm the environment (Caldwell, 1978). EAs were not to be treated or regarded as an appendage, and instead the costs were to be calculated as part of planning (Caldwell, 1989). Unfortunately, this has not always been the case and determining the costs of EAs is very difficult, as they cannot be easily distinguished from other costs incurred in the project approval process (Wood, 1995; Barrow, 1997). Nevertheless, Hart (1984) has identified the principle elements of EA costs as being: direct costs such as document preparation, review, circulation, and administration of law; indirect costs such as delay costs in terms
of inflation and opportunity costs and uncertainty costs, related to uncertainty of success and risk of failure; and mitigation costs, which may increase or decrease according to the types of impacts.

Although EAs can be expensive, this usually only occurs in areas where little is known about social and environmental conditions, requiring the establishment of information databases, or when projects have to make major design changes as a result of the EA (Clark, 1983; 1984; Barrow, 1997). However, savings from the avoidance of deleterious impacts usually outweigh the costs of an EA in the long term, and as EA procedures and techniques become well established, the costs are expected to further decrease (Clark, 1983; 1984; Wood, 1988a). For example, savings may be accrued through improved project design and siting which may reduce or eliminate the need for expensive mitigation measures, such as pollution control equipment or compensation measures (Caldwell, 1982; Clark, 1983; 1984). In addition, Caldwell (1982) has found that the benefits of EA far outweigh the costs of litigation intended to correct or stop environmentally insensitive or destructive agencies. Overall, Barrow (1997) believes that an effective EA should cost less than the problems it prevented. The costs of EA vary between jurisdictions, however, estimates suggest that they range between 0.1% to 2% of total project costs (Clark, 1983; Hollick, 1986; Wood, 1995). It also generally agreed nowadays that the proponent, in following the “polluter pays” principle, should incur costs of the EA process.

Closely related to the question of cost is the issue of delays (Wood, 1995). EAs can cause delays in project processing. However, studies have found that these are usually reasonable and wholly justified (Zigman, 1978). For example, in evaluating 100 approved EISs in the US, Sewell and Korrick (1984) found that the EA process imposed little or no significant time penalty. Nevertheless, if delays are considered to be an important cost element, agreeing on an action-specific timetable between the proponent and decision makers can help to overcome this problem (Wood, 1995). It is very important that the deadlines be met and maintained if the EA is to function efficiently. Also, if the EA is well integrated in the planning process, lengthy processes such as data collection should begin early enough to not delay project processing (Hollick, 1986).
Overall, the financial costs and time requirements of an EA should be acceptable to all involved in the EA process and should be outweighed by discernible environmental benefits (Wood, 1995). Benefits provided by the EA should include: (1) an avoidance and reduction in environmental damage or the abandonment or restructuring of unacceptable actions; (2) protection and/or improvement to the environment; (3) improvements in environmental and resources management practices; and (4) the distribution of benefits to both proponents and the population at large (Hollick, 1986; Caldwell, 1989; Wood, 1995). It is important to note that benefits from EAs “tend to be long-term, diffuse and widespread whereas the costs tend to be immediate or short-term and are often borne by specific proponents and organizations” (Bisset, 1996: 12).

2.5.16 Procedural Consistency

Although the substantive issues of EA and/or EIA stages (i.e. the issues addressed above) are excellent indicators of the effectiveness of a system, consistent procedural compliance with established EA provisions is another indicator of the effectiveness of an EA system. For example, the substantive aspects of scoping activities may be effectively implemented in a series of EIAs. However, if not all proposed developments requiring a full EIA implement scoping measures, then the EA system is inconsistently and ineffectively implementing this particular stage. This issue of procedural consistency has not been explicitly addressed in EA literature and, therefore, it is advanced in this study as an EA effectiveness indicator.

2.6 APPROACHING EA EVALUATIVE RESEARCH

When evaluating the effectiveness of EA system, it is important to approach the evaluation with the intention of problem solving and not faultfinding (Sadler, 1996). Sadler (1996) has outlined a series of evaluation principles that are meant to help evaluators maintain this approach throughout their studies. First, problems must be placed in their true perspective. In other words, the evaluative process has to be sensitive to: (1) the spatial order at which environmental impacts are measured; the (2) limitations imposed on predictions by the disciplines that contribute to EA; and (3) the policy and institutional constraints under which an EA system functions.
Second, it is important to recognize that judgements about EA effectiveness are relative as perspectives may vary according to the role a particular individual or group plays within an EA. In the *Final Report* of the *International Summit on Environmental Assessment* (ISEA, 1994), EA is envisioned as consisting of three groups: (1) decision makers, (2) managers and practitioners, and (3) members of the public. These groups will usually hold different, and often conflicting, perspectives and expectations regarding the role of EA and its effectiveness. In addition, perspectives on EA effectiveness may vary according to what Sadler (1996) has termed "proponent" and "opponent" lines. Proponents of a project or activity may see EA as a hurdle, while the opponents of the project or activity may see EA as means for reducing environmental damage.

Third, it is important to specify evaluative criteria in order to define the level and focus of the review. Fourth, evaluations need to assess the relevance of the EA in decision making. Sadler (1996) claims that to evaluate relevance, the quality of information products (i.e. the EIS) and degree of influence that the EA has on decision-making processes need to be examined. Fifth, the evaluation needs to examine if enabling conditions for effective performance are present, such as appropriate institutional controls and adequate operational practice (i.e. the three “r’s” of EA). The penultimate principle requires that the evaluation determine if the EA process delivers benefits (e.g. avoidance, reduction and mitigation of environmental impacts) cost effectively, and the final principles calls for the use of “robust, generic methodologies that can be applied widely and/or allow for comparison” (Sadler, 1996: 45). By addressing these issues, Sadler (1996) believes EA effectiveness evaluations will serve the purpose of process development, ultimately helping to improve quality control by ameliorating EA practice and management.

**2.5 SUMMARY**

Effective EAs should follow a logical, structured approach that identifies potential impacts and ways to mitigate these, accounts for public concerns, organizes the information in a report format that aids decision making, and implements monitoring and mitigation activities. During the last thirty years, numerous studies have evaluated the effectiveness of EAs, and in particular four evaluative approaches have been used: (1)
goals achievement, (2) conceptual framework, (3) methodology, and (4) process evaluative approaches. However, the use of these evaluative approaches, independently, has resulted in studies that provide a limited outlook on the effectiveness of an EA system. This suggests that, in some cases, a mix of these four evaluative approaches may be required to provide relevant insights into EA practice. This discussion establishes the basis for the evaluative framework (presented in Chapter III) used in this study. The chapter concludes by presenting a brief discussion on how EA effectiveness evaluative research needs to be approached.
CHAPTER III

METHODS

3.1 THE EVALUATION AND MULTIPLE CASE STUDY APPROACH

Evaluations are necessary as they provide proof of the effectiveness of an institution, policy program, project or activity and justify society’s continued support for any of these (Suchman, 1967). Evaluations seek to determine what variables account for the success, or lack thereof, of a policy, program project or activity (Mitchell, 1989). Suchman (1967: 31-32), describes the intent of evaluative research as:

the determination (whether based on opinions, records, subjective or objective data) of the results (whether desirable or undesirable; transient or permanent; immediate or delayed) attained by some activity (whether a program, or part of a program...an ongoing or one-shot approach) designed to accomplish some valued goal or objective (whether ultimate, intermediate, or immediate, effort or performance, long or short range).

Evaluative research is seen as a means for understanding the outcomes of a particular activity or initiative and determining if it has met its intended goal or objective. Munro (1987:7) expands on this definition by stating that:

[evaluation is primarily aimed at questions of effectiveness...It looks at all of the results of a program or project and compares them to policy goals. In this sense, evaluation develops a causal analysis of program effectiveness. Its purpose is to find out what happened and why, and to provide the basis of judging the desirability of the results. If well done, it should delineate changes which would make results more in harmony with policy goals.

As such, evaluations not only generate a better understanding of how a program or project works, but also provide an opportunity for resolving or avoiding any weaknesses that are identified (Mitchell, 1989). Therefore, evaluations function under the belief that the difficult decisions made today, will be better informed if information on past performance is available (Mayne, 1992). This is one of the fundamental goals of EA effectiveness research, to improve EA performance in order to make EAs more relevant in planning and decision-making processes. Ultimately, “[w]ithout feedback, environmental assessment remains a static, linear, exercise rather than a dynamic,
iterative process” that could significantly contribute to planning and decision-making processes (Sadler, 1990:7).

In this particular study, an evaluation of three case studies is conducted. The single case study approach in social research has often been criticized as having limited value due to the lack of baseline data and the absence of control groups to conduct comparisons (Mitchell, 1979; 1989). However, other social researchers believe that the case study research design is an excellent tool for studying a phenomenon not readily distinguishable from its context, such as in program or project evaluations (Yin, 1993). and for evaluating rare, unique and revelatory cases (Yin, 1994). Those researchers that support the case study approach (Mitchell, 1979; 1989; Orum et al., 1991; Yin, 1993 and 1994) also agree that multiple case studies are considered to be more compelling and provide a stronger basis with which to illustrate research findings (Salter, 1967, cited in Mitchell, 1989; Yin, 1994).

As was expressed earlier in the thesis, there is limited research on the effectiveness of EA in developing countries. In Costa Rica, for example, no previous studies have addressed the effectiveness of the operational aspects of EA practice. In addition, the few studies that have evaluated EA effectiveness in developing countries have generally focused on one of two case studies from which generalization have been drawn about the effectiveness of the EA system of a particular region or country (e.g. Ning et al., 1988; Kakonge, 1994; Tongcumpou and Harvey, 1994; Kakonge, 1997). Therefore, this study is not only unique in that it examines the effectiveness of EA theory and practice in a developing country, but it is also a revelatory study that explores three case studies of EA practice in Costa Rica. Furthermore, the theory and practice of EA are not easily distinguished from the context they function within and are instead strongly influenced by it.

3.2 THE RESEARCH AREA AND THE THREE CASE STUDIES

The Gulf of Papagayo Tourism Project, located in the Province of Guanacaste, Costa Rica was selected as the area for the case studies (Figure 3.1). The three coastal zone tourism development projects selected for detailed study are:
Figure 3.1 The Gulf of Papagayo Tourism Project

Source: Based on Map of Costa Rica: Lambert Projection: Section Northern Carrillo
EIA for the Coastal Zone Project of Monte del Barco Beach;
EIA for Monte del Barco Tourism Project; and
EIA for Iguanita Beach Tourism Project.
Each is described below.

3.2.1. The Gulf of Papagayo Tourism Project

Plans for the development of The Gulf of Papagayo Tourism Project (referred to as the Papagayo Project from now onwards) began in 1972 when a Spanish firm, TECNIBERIA, was commissioned by the Central American Bank of Economic Integration (BCIE) to analyze the tourism potential of Central America. That study determined that Culebra Bay, located in the north-Pacific coast of Costa Rica on the Gulf of Papagayo, had the best conditions for establishing an international, mass tourism pole. TECNIBERIA used a set of criteria, along with a weighting scheme to give a score to all sites being evaluated. Out of a total of 100 points possible, Culebra Bay scored 98 points (ICT, 1998). Numerous documents were reviewed to determine the precise criteria and techniques used by TECNIBERIA to obtain this score. Unfortunately, no details were found except for a single newspaper reference (Anonymous, 1985) that stated that Culebra Bay received a high mark due to its exotic and beautiful landscape.

Following a number of feasibility studies conducted in the early 1970s (Law 5847), the government of Costa Rica appointed a General Coordinator from the Costa Rican Tourism Institute (ICT) to manage the Papagayo Project, and approved Law 6370 to begin the acquisition of all lands necessary to complete the project. During the early 1980s, plans for the Papagayo Project were refined and in 1982, the Regulating Law for the Development and Execution of Gulf of Papagayo Tourism Project (Law 6758) was approved. A Directing Council was established, as well as an Executing Office, both bound to the ICT, but with a significant amount of autonomy to run the project.

Despite attempts to convince numerous companies to invest in the Papagayo Project, few advancements were made between 1982 and 1989 (Vega, 1986; Aguiluz, 1989). In the early 1990s, several contracts were finally made with a number of investor groups and companies to build a series of hotels and resorts. However, in December of 1993 the Costa Rican Ombudsman Office denounced the Papagayo Project as being
illegal as it was found to disobey the national Coastal Zone Law (Law 6043), was felling trees illegally, and had destroyed important Chorotega Amerindians archeological sites (Lopez, 1993). In addition, a road and camping site had been constructed, and large tracts of land had been cleared without permission from the government (Murillo and Arteaga, 1993). The Papagayo Project was ordered to stop all activities until an investigation was completed.

In July of 1994, the University of Costa Rica’s (UCR) Foundation for Research (FUNDEVI) presented an analysis of environmental impacts that supported the findings of the Costa Rican Ombudsman Office and the Papagayo Project was not allowed to proceed (Pastor, 1994). However, in March of 1995, the courts revoked their original decision on the grounds that closing the Papagayo Project could do more harm to the country’s development path, and construction activities resumed. In July of 1995, a new Master Plan for the Papagayo Project was drafted and approved by the ICT (Mora, 1995). Since that time, the Papagayo Project has advanced slowly, yet several new contracts have been made with both national and international companies to develop a number of resorts within the project’s 17 beaches.

The Papagayo Project has been described as an environmentally responsible project that serves as an “excellent example of what is to be understood as sustainable development” (Pacheco, 1994: 11; 1995: 7). Other observers, such a tourism entrepreneur Michael Kaye, believe that the Papagayo Project runs counter to the Costa Rican government’s position as a promoter of ecotourism and as a guardian of the country’s environment (Papili, 1993). Nevertheless, the ICT has committed to implementing a project that follows the principles of sustainable development. In other words, the Papagayo Project should result in environmentally responsible and socially equitable economic development. All proposed developments are now required to conduct an EA and present an EIS to the SETENA, a practice that began in late 1994 and is now required according to the LOA, instituted in November of 1995. Although the ICT has signed a total of 18 contracts with national and international companies to develop tourism resorts, only three EAs have been carried out and reached resolution by the SETENA as of August 1998 (ICT, 1998). These three EAs, all located in Culebra Bay, serve as the case studies for this thesis and are discussed in the following sections.
3.2.2 Coastal Zone Project of Monte del Barco Beach

The Coastal Zone Project of Monte del Barco Beach (Figure 3.2) was proposed by the Mexican group Monte del Barco Investments PLC. The construction plans included a residential zone with 543 parcels of land (61.4 hectares), two hotels (9.6 hectares), Condominiums (10.7 hectares), 21 residential villas (2.3 hectares), a beach club (1.7 hectares), a professional 18-hole golf course and a smaller 5 hole practice golf course (66.8 hectares). In addition, the proponents of the project planned to build a number of recreational parks (13.4 hectares), playgrounds (0.8 hectares), an artificial lake (6.8 hectares), as well as a system of roads covering a total of 20.6 hectares. It is important to note that a large proportion of the proposed development plans fall outside of the area delineated as part of the Papagayo Project (Figure 3.2). However, the proposed project is still considered to be part of the Papagayo Project because areas of the proposed development would be carried out within the strict limits of the Papagayo Project.

The EIA was carried out by two consulting firms, Oikos Consultants and Consultec, and was submitted to the SETENA on January 24, 1997. Following the revision of the EA and subsequent annex, the SETENA rejected the EIA and asked Monte del Barco Investments PLC to stop all activities in March 1997. In response, Monte del Barco PLC decided to carry out another EIA under a different project name, Monte del Barco Tourism Project. This project is discussed in the following section.

3.2.3 Monte del Barco Tourism Project

Monte del Barco Investments PLC made few changes to the originals construction plans and submitted under the name of Monte del Barco Tourism Project. The size of the artificial lake was expanded from 6.8 to 6.9 hectares and the size of the golf course was reduced from 66.8 to 66.6 hectares. Plans for the two proposed hotels and condominiums were changed to three hotels and three parcels of land for building condominiums, but the total dimensions of the two were kept the same (total of 20.3 hectares). In addition, the total distance of roads were specified, totaling six kilometers of primary roads (9 meters wide) and six kilometers of secondary roads (7 meters wide).
Figure 3.2 Case Study Sites

Source: Based on Map of Costa Rica: Lambert Projection: Section Northern Carrillo
The EIA was prepared by Consultec, using three new sub-consultants, and was submitted to the SETENA on June 3, 1997. Following the revision of the EIA, and subsequent annexes, the SETENA approved the Monte del Barco Tourism Project EIA, allowing the proponents to finally implement their project. Despite having received approval to build their tourist resort, Monte del Barco Investments PLC had not constructed any hotels or condominiums by April 1998 (Executing Office of the Papagayo Project, 1998).

3.2.4 Iguanita Beach Tourism Project

MEDIATECK PLC, of Italian ownership, proposed the Iguanita Beach Tourism Project (Figure 3.2). The construction plans include a large parking area, a plaza with five stores, two restaurants, a movie theatre, and numerous other services. In addition, plans to construct a concert theater and discotheque were presented, as well as a clubhouse, a recreation zone, a 400-room hotel and a condominium with 40 rooms.

The EIA was carried out by Consultec and was submitted to the SETENA on July 28, 1998. After revising the EIA and subsequent annex, the SETENA approved the Iguanita Beach Tourism Project on February 17, 1998. As of April 1998, however, Mediateck PLC has still not constructed the hotel or condominiums (Executing Office of the Papagayo Project, 1998).

3.3 DATA COLLECTION AND SOURCES

Four primary sources of data were required to conduct this study. First, in order to develop the EA system evaluative framework, an extensive literature review of EA effectiveness and EA best practice was conducted. The results of that review are presented in Chapter II, Section 2.5 and the ensuing 16 subsections.

The second major sources of data were the EISs, their annexes, and files of EA documentation and correspondence between the SETENA and the proponents (Table 3.1 and Appendix A) of the three coastal zone development projects described in this chapter. These materials are available at the SETENA's office and can only be reviewed under the supervision of a SETENA member. This practice is carried out in order to avoid the theft of pages from the EISs and other EA documentation, which according to several
Table 3.1 EA Legislation, Resolutions, EISs and Annexes

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<tr>
<th>EA Legislation and Resolutions</th>
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<tr>
<td>SETENA Regulations</td>
<td>Costa Rica, 1997b</td>
</tr>
<tr>
<td>Modifications to Articles 19 and 20 of SETENA Regulations</td>
<td>Costa Rica, 1997c</td>
</tr>
<tr>
<td>EIA Basic Guidelines</td>
<td>SETENA, 1995</td>
</tr>
<tr>
<td>SETENA Resolution No. 144-97 (Coastal Zone Project of Monte del Barco Beach)</td>
<td>SETENA, 1997a</td>
</tr>
<tr>
<td>SETENA Resolution No. 469-97 (Monte del Barco Tourism Project)</td>
<td>SETENA, 1997b</td>
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<tr>
<td>SETENA Resolution No. 640-97 (Iguanita Beach Tourism Project)</td>
<td>SETENA, 1997c</td>
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<th>EISs and Annexes</th>
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<tr>
<td>EIA for the Coastal Zone Project of Monte del Barco Beach</td>
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<td>Annex to EIA: Coastal Zone Project of Monte del Barco Beach</td>
<td>See Appendix A</td>
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<tr>
<td>Executive Summary: EIA for the Coastal Zone Project of Monte del Barco Beach</td>
<td>See Appendix A</td>
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<td>EIA for Monte del Barco Tourism Project</td>
<td>See Appendix A</td>
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<td>EIA for Iguanita Beach Tourism Project</td>
<td>See Appendix A</td>
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<tr>
<td>Annex to EIA: Iguanita Beach Tourism Project</td>
<td>See Appendix A</td>
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SETENA members has happened numerous times in the past. Due to the busy schedules of the SETENA members, however, access to the EISs and EA documentation was limited. In addition, the field research period of early May to early September 1998 began a few weeks following the change of national government, which also resulted in changes of numerous SETENA members. Arranging meetings with members of the secretariat was very difficult as these officials were getting acquainted with their roles within the SETENA and had limited time to participate in this study. After three months of waiting for permission to access the EA documents, a formal written request to photocopy the necessary EISs and EA documents was made to the interim Minister of the Environment and Energy, Attorney Carlos Manuel Rodriguez (currently Vice-Minister of the Environment and Energy). In late July of 1998, by special permission from the interim
minister, the EISs were photocopied for personal use, along with all correspondence between the SETENA, the consultants, and members of Monte del Barco Investments PLC and Mediateck PLC.

The third source of data was the Costa Rican National Library System, used to locate information related to EA legislation in Costa Rica, as well as information regarding the Papagayo Project. Finally, the previous three sources of data were supplemented by informal interviews with members of the SETENA, former members of the SETENA, and members from the Executing Office of the Papagayo Project. General interview questions asked to members of the SETENA and the former member of the SETENA are presented in Appendix B.

A total of eight interviews were completed with members of the SETENA including the General Secretary, members of the Technical Assessment Unit, Preliminary Environmental Assessment Unit, Environmental Monitoring and Follow-up Unit, Information and Planning Unit, and Administrative Unit. The former legal assessor to the SETENA was also interviewed. The current legal assessor declined the invitation to participate in the study. Respondents were questioned about the internal procedures of each unit and were asked general questions about EA practice in Costa Rica. The interviews with SETENA and former SETENA members covered individuals from all the units that comprise the secretariat.

One member from the Executing Office of the Papagayo Project was also interviewed. The respondent was asked questions concerning the background of the Papagayo Project, as well as its current status and the future of the project. In addition, specific questions regarding the three case studies were asked. However, the respondent was unfamiliar with the details of the three proposed projects.

Members of Oikos Consultants and Consultec, who carried out the EIAs, could either not be located or expected to be remunerated if interviewed. This payment was not feasible. However, the consultants' views were obtained, in part, by the correspondence between themselves and the SETENA. Overall, this mix of information sources provided an adequate base to support the study.
3.4 THE EVALUATION FRAMEWORK

The evaluation framework used in this study (Table 3.2) was developed by amalgamating criteria from the four evaluative approaches discussed in Chapter II, Section 2.3 and its 16 subsections, into a single holistic evaluative framework. The disaggregate approach was favoured and, as a result, the EA system was broken down into 16 separate principles (see Chapter II, Section 2.5). Based on what is considered best EA theory and practice according to the EA literature, a set of normative and strategic evaluative criteria for each one of the 16 EA principles was developed and posed in the form of questions. The normative and strategic evaluation criteria are separated in the evaluative framework. This evaluation style resembles the works of Whitney and Maclaren (1985), Hollick (1986), Wood (1995) and Hickie and Wade (1998).

In order to evaluate the effectiveness of the Costa Rican EA system at a normative level, the LOA and SETENA Regulations (discussed in Chapter IV) were examined in order to determine if the stipulated provisions adhere to the criteria outlined under the relevant (from the 16 principles) EA principles. In order to evaluate the effectiveness of the EA system at a strategic level, the three EISs were examined, along with all relevant EA documentation and correspondence between the project proponents, the consultants and the SETENA. Similarly, the EISs and other EA documentation were evaluated by determining their adherence to the criteria outlined under the relevant (from the 16 principles) EA principles. All evaluative criteria warrant a yes/no response, but an additional discussion is presented (see Chapter V).

It is important to note that not all 16 principles outline normative and strategic evaluative criteria, as some of the principles are applicable to either the Costa Rican EA system or three project EISs. For example, when evaluating the effectiveness of legal and administrative structures, only the Costa Rican EA system can be evaluated while the three EISs cannot, as the criteria are not applicable. It is also important to note that the number of evaluation criteria per principle will vary, yet this number does not serve as an indicator of the importance of each principle. In other words, principles with more criteria do not necessarily translate into more important principles.
Table 3.2: The Evaluation Framework and Constituent Criteria

**Principle 1: The legal and administrative structures of the EA system**

*Normative Evaluative Criteria*

1. Is the EA system established in law and is each step in the EA process, based on clear and specific legal provisions?
2. Are the EA system legal provisions unambiguous in application?
3. Are the EA requirements clearly differentiated from other legal provisions?
4. Is there a degree of discretion in the EA provisions that permits the EA system to be changed, if deemed necessary, without having to resort to primary legislation?
5. Is each step in the EA process enforceable through the courts and are those who do not adhere to them subject to sanctions?
6. Does a clear outline of time limits exist for the EA system as a whole?
7. Does the EA system have an administrative agency that manages the system and is the decision-making power independent from the proponent?
8. Is the administrative agency in charge of the EA well funded and staffed, are its members well trained on EA principles and practice, and does it receive the necessary governmental support to carry out its activities?

**Principle 2: Coverage of the EA system**

*Normative Evaluative Criteria*

1. Does the EA system require the assessment of all significant public and private actions that may pose a threat to the environment?
2. Are the EA provisions applied in practice to all the actions covered in principle?
3. Does the EA system require the assessment of all relevant environmental effects and impacts?
4. Does the EA system require the assessment of all relevant environmental effects and impacts at the exploration, construction, operation, modification and decommissioning stages of actions?
5. Does the EA system recognize and require the assessment of impacts on the physical, social, cultural, economic, health and aesthetic factors of the environment?

**Principle 3: The consideration of alternatives**

*Normative Evaluative Criteria*

1. Does the EA system require by law the consideration of alternative courses of action, sites, scheduling and project designs?
2. Must evidence of the consideration, by the proponent, of the environmental effects and impacts of reasonable alternative actions be demonstrated in the EA process and is it apparent in EA documentation?
3. Is the no-action alternative a viable option in the EA system?
4. Must the public be consulted and allowed to voice their concerns regarding the most adequate alternative?
Continued from pg. 50

**Strategic Evaluative Criteria**

1. Did the three EISs present proof of the consideration of alternative actions, sites, scheduling plans and project designs?
2. Was proof of the consideration of the no-action alternative present in EA documentation?
3. Was the public allowed to contribute to decisions as to the most adequate alternative?

**Principle 4: Screening**

**Normative Evaluative Criteria**

1. Must screening of actions for environmental significance take place in the EA system?
2. Must the proponent submit documentation to assist in screening activities?
3. Is there a clear specification of the type of actions that should be subject to an EA, and do clear criteria/thresholds to assess the significance of actions exist?
4. Does a publicly accountable body make the final screening decision?
5. Are screening decisions justified in EA documentation?
6. Do different types of EA exist for different types of actions in the EA system?
7. Is there a right of appeal against screening decisions?

**Strategic Evaluative Criteria**

1. Were the three proposed coastal zone development project screened to determine their environmental viability?
2. Did the proponents submit documentation to assist the screening activities?
3. Were the screening decisions justified in EA documentation and made available to the public?

**Principle 5: Scoping**

**Normative Evaluative Criteria**

1. Must scoping of the publicly valued and scientifically relevant environmental impacts of proposed actions take place?
2. Must scoping result in the development of ToR to carry out EIAs?
3. Must action-specific scoping guidelines be prepared?
4. Must the public be consulted and allowed to participate during the scoping stage?
5. Does published guidance on scoping procedures and methods exist?
6. Is there a right of appeal against scoping decisions?

**Strategic Evaluative Criteria**

1. Were scoping activities implemented and used to determine the ToR for the EIAs of the three proposed coastal zone development projects?
2. Did scoping activities result in the identification of a general set of impacts that must be addressed?
3. Were irrelevant impacts identified and screened out in the EA system, and only important ones considered?
**Principle 6: Preparation and Presentation of the EIS**

**Normative Evaluative Criteria**

1. Is the presentation of an EIS required before any actions are initiated?
2. Must EISs meet prescribed form requirements and do checks to prevent the submission of inadequate and unbiased EISs exist?
3. Must the EIS present baseline surveys, describe actions and environments affected, forecast impacts, indicate significance of effects, outline monitoring and mitigation plans, and does it contain a non-technical summary?
4. Must the EIS be presented in a clear, concise and comprehensible manner?
5. Does published guidance on EIS preparation and presentation (e.g. typography) exist and is it readily available to those interested?
6. Does accreditation of EA consultants exist, and if so, must only these consultants carry out the EIAs?
7. Must an inter-disciplinary team of consultants carry out the EA?

**Strategic Evaluative Criteria**

1. Did the three proposed coastal zone development projects submit an EIS prior to initiating activities and did the EISs meet prescribed content and form requirements?
2. Do the EISs present baseline surveys, describe the proposed action and affected environments, present impact predictions, indicate their significance, outline monitoring and mitigation plans and contain a non-technical summary?
3. Is sufficient data presented in the EIS to allow the decision maker to visualize the project, site and local environment, and are legible and comprehensible maps and/or photographs presented?
4. Are the EIS clear, concise and presented in a comprehensible manner?
5. Are the consultants who carried out the EIA accredited by the SETENA, and did an interdisciplinary team complete the EISs?

**Principle 7: The Prediction of Effects and Impacts**

**Normative Evaluative Criteria**

1. Must predictions of potential environmental impacts be presented in the EISs or EA documentation?
2. Must the nature, extent, duration and magnitude of changes in the environment be considered in the predictions?
3. Must the predictions address variations in effects and impacts?
4. Must the predictions address potential changes in all aspects of the environment?
5. Must appropriate methods and techniques be used to formulate the predictions?
6. Must the assumptions and rationales for predictions be outlined in EA documentation?
7. Must the predictions identify affected population and resources, address systems interactions and the dynamic and probabilistic nature of impacts, as well as capture variability through space and time?
8. Must the predictions be sufficiently clear so that monitoring activities can be carried out without complications?
<table>
<thead>
<tr>
<th>Strategic Evaluative Criteria</th>
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<tbody>
<tr>
<td>(1) Were the nature, extent, duration and magnitude of changes in the environment considered in the predictions of the three coastal zone development projects?</td>
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<tr>
<td>(2) Did the predictions address variations in effects and impacts?</td>
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<td>(3) Did the predictions address potential changes in all aspects of the environment?</td>
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<td>(4) Were appropriate methods and techniques used to formulate predictions?</td>
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<td>(5) Were the assumptions and rationales for the predictions outlined in the EISs?</td>
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<tr>
<td>(6) Did the predictions identify affected populations and resources, address systems interactions and the dynamic and probabilistic nature of impacts, as well as capture variability through space and time?</td>
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<tr>
<td>(7) Were the predictions presented sufficiently clear that monitoring activities will be carried out without complications?</td>
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**Principle 8: Significance Assessment**

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<th>Normative Evaluation Criteria</th>
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<tbody>
<tr>
<td>(1) Does the EA system require the assessment of the significance of environmental effects?</td>
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<tr>
<td>(2) Must the significance assessment stage address factors of social, scientific and ecological importance?</td>
</tr>
<tr>
<td>(3) Are criteria used to determine the significance of effects clearly outlined in EA provisions?</td>
</tr>
<tr>
<td>(4) Is consultation and participation required in the significance assessment stage?</td>
</tr>
<tr>
<td>(5) Must evidence of the rationale and justification for determining the significance of effects and impacts be evident in the EIS or other documentation?</td>
</tr>
<tr>
<td>(6) Is published guidance on how to carry out significance assessment readily available?</td>
</tr>
</tbody>
</table>

**Strategic Evaluative Criteria**

| (1) Were the significance of impacts assessed in the EIA? |
| (2) Were factors of social, scientific and ecological importance addressed in the significance assessment? |
| (3) Was the public consulted to determine the significance of impacts? |
| (4) Is evidence of the rationale and justification for determining impact significance presented in the EISs? |

**Principle 9: EIS Review**

<table>
<thead>
<tr>
<th>Normative Evaluative Criteria</th>
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<tbody>
<tr>
<td>(1) Must EISs be reviewed?</td>
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<tr>
<td>(2) Must EISs be publicly reviewed and the proponents respond to the issues raised?</td>
</tr>
<tr>
<td>(3) Do checks to determine the objectivity and adequacy of EISs exist?</td>
</tr>
<tr>
<td>(4) Must the review be carried out by an independent body with appropriate expertise?</td>
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<tr>
<td>(5) Must the findings of the EIS review be published?</td>
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<tr>
<td>(6) Can the proponent be asked for additional information following the review?</td>
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<tr>
<td>(7) Does published guidance on EIS review procedures and methods exist?</td>
</tr>
</tbody>
</table>
Continued from pg. 53

**Strategic Evaluative Criteria**

1. Were the three EISs publicly reviewed and did the proponents respond to issues raised?
2. Were checks on the objectivity and adequacy of the three EISs conducted?
3. Did an independent body with appropriate expertise review the EISs?
4. Were the findings of the EIS review published?
5. Were the proponents asked for additional information?

**Principle 10: Evaluation and final decision-making**

**Normative Evaluative Criteria**

1. Must the evaluation and final decision be based on findings presented in the EIS?
2. Must the final decision be issued before the initiation of an action?
3. Must potential negative and positive environmental effects and impact be considered in final decision making?
4. Is published guidance on evaluation readily available?
5. Must final evaluation and decision making be carried out by an agency other than the proponent?
6. Must the conditions of approval or rejection be published, opened to public scrutiny and subjected to an appeal if necessary?

**Strategic Evaluative Criteria**

1. Was the evaluation and final decision based on the findings presented in the EIS?
2. Were both negative and positive environmental effects and impact considered in final decision-making?
3. Was the evaluation and final decision carried out by an agency other than the proponent?
4. Were the conditions of approval published and made readily available?

**Principle 11: Monitoring and post-auditing of actions**

**Normative Evaluative Criteria**

1. Must baseline, effects/impacts and compliance monitoring be undertaken in the EA system?
2. Is post-auditing required in order to compare impacts with the predictions in the EIS?
3. Does published guidance on monitoring and post-auditing exist?
4. Must monitoring and auditing results be published?
5. Is the public included in monitoring and auditing activities?
6. Is the monitoring and post-auditing system flexible enough to deal with novel impacts and unique situations?

**Strategic Evaluative Criteria**

1. Are monitoring and post-auditing plans outlined in the EISs or EA documentation?
2. Do monitoring plans coincide with predicted effects and impacts?
**Continued from pg. 55**

### Principle 12: Mitigation and compensation

**Normative Evaluative Criteria**

1. Must the mitigation of action impacts be considered at the various stages of the EA?
2. Must clear evidence of the mitigation of environmental impacts be apparent in the action designs and in EA documentation?
3. Is compensation an option and do people have equal access to compensation if deemed necessary?
4. Must details of mitigation/compensation activities be outlined in the EIS?
5. Does published guidance on mitigation and modification exist?

**Strategic Evaluative Criteria**

1. Is clear evidence of mitigation of environmental impacts apparent in action designs and the EISs?
2. Were mitigation/compensation activities identified in the EIS and were these satisfactory?

### Principle 13: Public participation and consultation

**Normative Evaluative Criteria**

1. Must consultation and participation take place at all stages of the EA process?
2. Must communities or individuals affected by a proposed project be informed of impending decisions to potentially implement an action?
3. Are copies of EA documents and EISs made public at each stage of the EA process?
4. Can copies of EA documents be obtained/purchased at a reasonable price?
5. Is public participation encouraged and is funding provided to those who require it?
6. Does published guidance on consultation and participation exist?
7. Must the results of consultation and participation be published?
8. Do rights of appeal exist at the various stages of the EIA process?

**Strategic Evaluative Criteria**

1. Were participation and consultation opportunities provided during the EA and is this demonstrated in the EIS or EA documentation?
2. Were copies of EA documentation and the EIS made available at all stages of the EA process?
3. Was participation and consultation encouraged?
4. Were the results of participation and consultation published in the EIS or EA documentation?

### Principle 14: Monitoring of EA systems

**Normative Evaluative Criteria**

1. Must the EA system be monitored and, if necessary, be amended to incorporate feedback from experience?
2. Is a record of EA reports or documents kept and made public?
3. Are records of the financial costs of the EIA kept and made public?
4. Is information on the time required to conduct an EIA collected and made public?
Continued from pg. 55

(5) Are the lessons from specific EAs fed back into the EA system?
(6) Have reviews of the EA system been carried out and changes been made?

**Principle 15: Costs and benefits of the EA**

*Strategic Evaluative Criteria*

1. Are the financial costs and time requirements of the EA system acceptable to those involved and are they believed to be outweighed by discernible environmental benefits?
2. Do the times required to complete the various stages of the EA process exceed those specified?
3. Do the participants in the EA process believe that it has altered the behaviour of proponents, consultants, consultees, the public and the decision-making authorities?
4. Do the participants in the EA process believe that the environmental quality and acceptability of decisions are improved by it?
5. Does empirical evidence exist that the EA process has significantly altered the outcome of decisions?

**Principle 16: Procedural consistency**

*Strategic Evaluative Criterion*

1. Are EA requirements, activities and principles applied consistently in all projects and activities?
CHAPTER IV

CONTEXT

4.1 COSTA RICA'S PATH TOWARDS SUSTAINABLE DEVELOPMENT

Costa Rica, located on the southern end of the Central American isthmus, has developed a worldwide reputation as a leader in conservation (Umaña and Brandon, 1992), and as a country with a strong commitment to the goals of sustainable development (Lovejoy, 1997; O'Brien, 1998). Although small in size, with a total territory of 51,000 km², Costa Rica contains a great diversity of ecosystems, including dry-land forests, tropical cloud forests, beaches, coral reefs, mangroves and sub-alpine paramo. It is estimated that five percent of the world's terrestrial plants and animals are found within the national territory (Quesada-Mateo, 1990).

However, Costa Rica’s abundant lands, waters and resources have been under considerable pressure over the last three decades due to the country’s development process (IUCN, 1974; Radulovich, 1988; Weinberg, 1992; O’Brien, 1998). During the 1970s. Costa Rica had the fastest rate of deforestation in the world caused by the country’s reliance on agro-exports (primarily bananas) to support the economy (Ramirez and Maldonado, 1988; Lehmann, 1992; O’Brien, 1998). During the late 1970s, the collapse of Central American Common Market (CACM), due to political turmoil in Nicaragua and El Salvador, closed Costa Rica’s major market, causing the country to fall into one of the highest per capita debts in the world (Leonard, 1987; Kendrick, 1988; Molina and Palmer, 1997; Wilson, 1998). In response to the economic crisis, the government of former President Luis Alberto Monge promoted during the early 1980s the use of the country’s environment and natural resource base as a way to pay itself out of the crisis (Hartshorn et al., 1982). Throughout the rest of the 1980s, the country’s economy recuperated with a five percent growth in the gross domestic product, an increase in salaries and a reduction in unemployment (Quesada-Mateo, 1990). This trend has continued throughout the 1990s, but much of the country’s growth has occurred at the expense of the environment (Quesada-Mateo, 1990; O’Brien, 1998).
This shortcoming has been the result, in part, of Costa Rica’s historically weak institutional and regulatory structures for environmental protection. Despite having created a separate ministry to deal with environmental issues in 1988 and despite making a commitment to the goals of sustainable development in 1992, the Costa Rican government has usually bestowed limited power to this public institution. For example, the current government of President Miguel Angel Rodriguez eliminated the position of Minister of the Environment and Energy, and assigned those duties to the country’s Vice-President, Elizabeth Odio.

In addition, public resistance to poorly planned developments has been deficient until recently. Prior to the 1992 Rio Summit, public participation in Costa Rican policy planning and decision making was practically non-existent. Since, the public has found a forum for discussion with the government through the numerous non-governmental organizations (NGOs) that have been established to deal with environmental problems in the country. However, these NGOs have usually been small, fragmented, over-reliant on fluctuating foreign finance (O’Brien, 1997) and, therefore, vulnerable to co-optation. More recently, in 1997 the Regional Environmental Councils, which are groups of public participants in charge of analyzing, discussing, denouncing, and controlling activities, programs and projects which might harm the environment, were created through the LOA (Article 7), but these groups have mostly focused their efforts on forestry issues (Costa Rica, 1997).

Nevertheless, the Costa Rican government has subscribed, in principle, to the goals of sustainable development, and has made it a critical element in national policy making. Since 1992, the government has espoused a national development plan that advocates: (1) the improvement of social conditions and a move towards a more socially equitable society, (2) the integration of Costa Rica’s economy in the global market, (3) the implementation of environmentally responsible development, and (4) the establishment of a more open and participatory democracy (Costa Rica, 1997a).

By the next millennium, Costa Rica’s population, currently 3.6 million people, is expected to exceed 3.8 million people. These growing numbers will undoubtedly continue to place significant pressures on the country’s environment and natural resources base, posing a serious challenge to the Costa Rica’s pursuit of sustainable
development. Not only does the state need to ensure that it implements a socially equitable economic development model, but it also needs to ensure that the legislative and regulatory base that addresses environmental issues is well established and functioning. Consequently, the Costa Rican EA system needs to be evaluated in order to determine if EA activities are helping the country on its path towards sustainable development.

4.2 A HISTORY OF ENVIRONMENTAL REGULATION IN COSTA RICA

The furor of the global environmental movement of the early 1970s did not go unnoticed in Costa Rica. For example, in 1974 the First Conference on Renewable Natural Resources was held in San Jose, and in 1975 the International Symposium on the Ecology of Conservation and Development of the Central American Isthmus took place. However, attempts in 1976 to create an Institute for Natural Resources (INDERENA) with the purpose of protecting and conserving Costa Rica’s natural resources, and attempts to approve a “Law for the Protection of the Environment” in the early 1980s, failed. Therefore, demands for environmental control and responsibility were seldom heeded and environmental legislation was dispersed throughout numerous laws and executive decrees. In the ECODES, Quesada-Mateo (1990) identified a number of other limitations affecting the environmental legislative and regulatory base in Costa Rica. Two of the major limitations identified included the:

- absence of a constitutional norm that contemplates the protection of natural resources, the reduction of pollution, and the responsibility by all to care for the environment; and
- absence of an integrated environmental code or law that unifies all environmental norms.

As was mentioned in Chapter I, Article 50 of the Political Constitution of the Republic of Costa Rica was eventually reformed in 1994, introducing the requirement to protect the environment, by the State and all citizens, as a constitutional duty. In 1995, an integrated environmental law, known as the Organic Law of the Environment (LOA) was introduced, establishing the provisions governing the use, administration, protection, improvement and management of Costa Rica’s environment and natural resources
Through the LOA, EA provisions were finally given the status of law. However, EAs have been carried out in Costa Rica since the early 1980s.

4.3 THE HISTORY AND EVOLUTION OF EA IN COSTA RICA

EAs were first introduced in Costa Rica through Law 6797, the Mining Code, approved by the Legislative Assembly in 1982. The Mining Code states in Article 6, that in order to issue licenses for mining activities, a study that evaluates the potential environmental and social impacts of the action must be carried out. Despite this requirement, few EAs were carried out and no guidance was provided as to how to conduct one.

In response to this shortcoming, the Costa Rican Ministry of Industry, Energy and Mines (MIEM) (later changed to the MIRENEM) created in 1984 the National Commission for the Evaluation of Environmental Impact Declarations through Executive Decree No. 15289-MIEM. Their responsibilities included the provision of guidance on how to carry out EIAs and they were also expected to review the EISs. One month later, however, Executive Decree No. 15289-MIEM was repealed and Executive Decree No. 15441-MIEM was passed. The commission’s name was altered to the Governmental Commission for the Control and Evaluation of Environmental Impact Assessment for Mining Activities and the structure of its membership was also slightly changed, but essentially their role remained the same. From 1984 to 1990, this commission functioned without a clear set of guidelines and any attempts to impose sanctions on those who did not meet the law usually failed.

In October of 1990, the regulations for the organization and functioning of the commission were finally approved and passed by the Costa Rican Legislative Assembly. It was at this point that the commission finally demanded that project or activity proponents adhere to EA requirements and imposed sanctions on those who failed to do so. The original intention of the commission had been to review the EISs of mining activities, but according to Araya (1996), by 1990 the group was also reviewing the EISs of electricity generating schemes, road constructions and large tourism resorts. In 1992, the name of the commission was changed once again to the Inter-institutional Commission for the Evaluation and Control of Environmental Impact Assessments by
Executive Decree No. 21930-MIRENEM and their regulatory framework was passed in November of 1993 through Executive Decree No. 22628-MIRENEM. At this point, the commission started to function with a new and more integrated group of professionals representing various public sectors.

In November 1994, the MIRENEM issued yet another change to the Costa Rican EA system. The commission was renamed the *National Commission for Environmental Impact Assessments* through Executive Decree No. 23783-MIRENEM. The regulations for the organization and functioning of the commission were also presented under this decree. The regulations no longer focused on mining activities, and instead established the procedures and requirements for presenting and approving/rejecting EIAs for all projects or activities that had the potential to harm the environment, irrespective of their economic nature.

The rank of the commission was finally upgraded to a secretariat in November 1995, when the *National Technical Environmental Secretariat* (SETENA) was created through Law 7554, the LOA. In particular, Articles 17 through 24 in the LOA establish the basis of Costa Rican EA system. Articles 17 and 18 broadly define the projects or activities that are required to present an EA to the SETENA prior to the initiation of the action, and specify that EIAs need to be carried out by an inter-disciplinary team of authorized professionals, registered with the SETENA. Article 19 states that SETENA resolutions must be well founded and justified. Article 20 mandates that the secretariat will establish mechanisms to ensure that its decisions are carried out, and that those who fail to comply will be subject to sanctions. Article 21 creates the *Guarantee of Compliance with Environmental Obligations*, a fund developed to support monitoring and impact mitigation activities. Articles 22 and 23 outline the public’s right to participate in the EA process, require the SETENA to inform municipalities of proposed projects in their jurisdictions, and opens all EA documentation to the public. Article 24 states that all technical criteria and weighting schemes used by the SETENA to evaluate the EISs are of public nature.

Through the ratification of the LOA, the Costa Rican EA requirements were integrated under a single law. In addition, a set of specific procedures outlining the organization and functioning of the SETENA, as well as procedures for carrying out EAs...
was approved by the Costa Rican Legislative Assembly in November of 1997. These are known as the SETENA Regulations.

4.4 THE COSTA RICAN EA SYSTEM

The Costa Rica EA system resembles the EA systems of most developed countries. Although it is unclear after which EA system the Costa Rican EA system was modeled, EA practitioners in Costa Rica believe that it is a combination of EA theory and practice from the US and Spain. As shown in Figure 4.1, the EA is initiated, in principle, with the consideration of alternative courses of action to a project or activity. Following the design of the project or activity, a preliminary environmental analysis is carried out to determine if a full EIA is required or if the proponent must sign a Declaration of Environment Obligations. The latter is signed only if the proposed project or activity is believed to result in minor environmental damages, requiring simple environmental management practices. If the preliminary environmental analysis determines that the potential environmental impacts are significant, a scoping activity is carried out to establish the Terms of Reference (ToR) for the full EIA.

The EIA process should result in the presentation of an EIS, which includes predictions of the type and magnitude of potential impacts, the significance of these impacts, and an outline of monitoring and mitigation plans. The EIS is then reviewed and either the proponent is required to present additional information (annexes), or the EIA/EIS is rejected or approved. If approved, a Guarantee of Compliance with Environmental Obligations, equivalent to a maximum of one percent of total project costs, is established by the proponent to cover for monitoring, post-auditing, mitigation and compensation activities. At all stages of the EA, the public is allowed to provide their input and concerns to the SETENA.

The Costa Rican EA system is managed by the SETENA, which is comprised of a number of units that carry out different components or activities of the EA system. These include a:

- General Secretariat;
- Technical Assessment Unit;
- Preliminary Environmental Assessment Unit;
Figure 4.1 The Ideal Costa Rican EA System

1. Consideration of Alternatives (SETENA Regulations Article 3)
2. Design of Project or Activity
3. Screening (Preliminary Environmental Analysis)
4. Scoping (Terms of Reference)
5. EIA and EIS Preparation
   - Prediction
   - Significance Assessment
6. EIS Review
7. Evaluation and Final Decision Making
8. Guarantee of Compliance with Environmental Obligations is established
9. Monitoring and Post-Auditing of Actions
10. Mitigation and Compensation
- Environmental Monitoring and Follow-up Unit;
- Information and Planning Unit;
- Legal Unit; and an
- Administrative Unit.

Although these units function independently while carrying out their respective duties, they all participate in the final decision-making process.
CHAPTER V

RESEARCH FINDINGS

5.1 INTRODUCTION

This chapter evaluates the Costa Rican EA system and the EAs of the three proposed coastal zone development projects within the Papagayo Project. The findings are presented following the EA principles listed under the evaluative framework (Table 3.2). Under each principle, a discussion about the effectiveness of the LOA and SETENA regulation is provided, followed by a discussion of the results of the three coastal zone project EAs. The evaluation of the Costa Rican EA system (LOA and SETENA Regulation) represents the normative effectiveness evaluation, while the evaluation of the three EAs represents the strategic evaluation of actual EA practice. Once again, it is important to note that not all principles have normative and strategic evaluation criteria. Therefore, the discussion is limited to the relevant principles of the Costa Rican EA system and/or the three EAs.

5.2 THE LEGAL AND ADMINISTRATIVE STRUCTURES OF THE EA SYSTEM

The Costa Rican EA System

The Costa Rican EA system currently functions under legally enforceable provisions outlined in Articles 17 through 24 of the LOA (see Section 4.3). These eight provisions serve as the basis for the more specific SETENA Regulations (Costa Rica, 1997b), ratified by the Costa Rican Legislative Assembly in January of 1997. The EA provisions are unambiguous, clearly outline EA requirements and procedures, and specify the responsibilities of all those involved in the EA process. All other EA requirements specified under other executive decrees or laws were overruled following the passage of the LOA, differentiating the EA system from other legal provisions. For example, Article 6 of the Mining Code was not revised, but all proposed mining activities must now present EIA/EISs to the SETENA. In addition, Article 2 of the LOA specifies the Costa Rican government’s commitment to paving the way towards environmental sustainable
economic development, which meets basic human needs without compromising the same options for future generations.

The SETENA is given a limited amount of discretion in determining which projects require a site evaluation and when monitoring activities are carried out. In addition, the SETENA has the power to determine how often, and under what format, it will require periodic environmental management program updates (SETENA Regulations, Articles 23 and 26). For all other EA activities, specific time limits have been clearly outlined in the SETENA Regulations (Articles 18, 23, 24, and 27).

All of the steps in the EA process are enforceable through the courts and non-compliance is subject to sanctions (LOA, Articles 98-10 and SETENA Regulations, Articles 52-55). The administrative agency in charge of carrying out these objectives is the SETENA. This group of professionals, comprised of representatives “donated” from several public institutions and state universities, falls under the umbrella of the MINAE, yet has been given a considerable amount of autonomy to conduct their activities. The SETENA members have academic and professional backgrounds in the following subjects: law, forestry, geography, agronomy, biology, environmental planning and management, natural resources management, geology, health sciences, engineering, hydrology and economics. They evaluate and rule on the EAs of both public and private initiatives and are always independent of the proponent.

The SETENA has less than 20 full-time staff and is severely understaffed, considering that it has responsibility to evaluate the EAs of all proposed developments within the Costa Rican territory. However, the SETENA’s workload has remained manageable because it is estimated that only a small percentage (15 to 30 percent) of all developments requiring an EA, actually adhere to the EA requirements imposed by the LOA and SETENA Regulations. The other 70 to 85 percent of developments are carried out without the approval of the SETENA, and therefore, are illegal. According to members of the SETENA’s Administrative Unit, although these projects and activities should be subject to sanctions, this seldom occurs because most of them go unnoticed. If illegal projects are noticed, however, it usually occurs following the completion of the project, at which point sanctions might be imposed or those responsible will be asked to develop an environmental management plan, avoiding the EA process. According to
members from the Environmental Monitoring and Follow-up Unit, most often the SETENA will turn a blind eye if the magnitude of the project is not large, because the secretariat does not have enough staff to implement the sanctions and follow through with them. As of August of 1998, the SETENA was further understaffed, as the representatives from two public institutions had not been determined and “donated.”

During interviews with members of the SETENA in 1997 (Mateo, 1997), many officials complained that the MINAE was not providing the secretariat with enough logistical and financial support to carry out their activities. For example, the SETENA has only one vehicle to conduct site inspections and monitor projects and activities all over the country. According to members of the Environmental Monitoring and Follow-up Unit, the vehicle breaks down regularly. In addition, SETENA members do not receive formal training on EA theory and practice prior to, or once they join the secretariat. According to several SETENA members, before joining the secretariat they had never heard of an EA and were expected to learn on an ad hoc basis how the process functions. Funding of the SETENA’s activities has also been problematic. As of August of 1998, the SETENA had not received funding from the MINAE for over two months. The discontent among all SETENA members interviewed is quite clear.

5.3 COVERAGE OF THE EA SYSTEM

The Costa Rican EA System

According to Article 17 of the LOA, all human activities that alter or destroy the environment and/or generate dangerous or toxic residual materials must be subject to an EA. The LOA and SETENA Regulations apply to both private and public initiatives (Article 19, LOA), and according to all SETENA members, in practice EA provisions are applied to all actions, as stated in SETENA Regulations (see Section 5.4).

The LOA or SETENA Regulations do not specify provisions requiring that impacts must be assessed at all stages of a project or activity. However, the SETENA has developed a Basic Guidelines for the Elaboration of Environmental Assessment Studies of Development Activities (from now onwards referred to as the EIA Basic Guidelines) (SETENA, 1995) where they suggest that project proponents consider impacts at the implementation, operation and closing or decommissioning stages of a project. The EIA
Basic Guidelines, however, is only a guide and EIA consultants do not have to adhere to all the provisions outlined in the guide. According to all members of the SETENA, EA is often considered finished once approval to implement a project or activity is granted. Therefore, the temporal coverage of the EAs is limited. Nevertheless, the SETENA has a monitoring unit that conducts occasional site inspections of approximately 30 to 40 percent of approved projects or activities.

Finally, it is unclear if the LOA excludes from the EA process, impacts on the socio-economic, cultural, health and aesthetic components of the environment. In Article 1 of the LOA, the term ‘environment’ is defined as a system of different natural elements that interact with human beings, thus focusing on the biophysical components of the environment. However, in Article 2, section E of the LOA, environmental damage is stipulated as a crime against the country’s social, economic, and cultural environment, apparently recognizing the multi-faceted aspects of the environment. In the EIA Basic Guidelines, proponents are asked to consider the physical, biological and human environment (i.e. socio-economic, community and cultural components of the environment). This apparent contradiction must be addressed.

5.4 THE CONSIDERATION OF ALTERNATIVES

The Costa Rican EA System

Neither the LOA nor the SETENA Regulations outline provisions requiring the consideration of alternatives. However, in Article 3 of the SETENA Regulations, the EIA is defined as a mechanism that identifies alternatives to a proposed project or activity with the greatest environmental benefit. In addition, in the SETENA’s EIA Basic Guidelines, project proponents are asked to consider the no-action alternative. However, due to the nature of the guidelines, this has never been carried out. Therefore, it is unclear if proponents of a project or activity are required to consider alternatives. As of August of 1998, none of the SETENA members interviewed had ever examined an EIS that demonstrated the consideration of the no-action alternative or alternative actions, sites, scheduling plans or project designs.
EAs of the Three Coastal Zone Development Projects

None of the three EISs for the coastal zone development projects outlined or demonstrated in EA documentation that alternative actions, sites, scheduling plans or project designs had been considered. Instead, in all three EISs the consultants justify the proposed developments based on the natural beauty of the area and on plans to construct resorts that will compliment the spectacular scenic characteristics of Culebra Bay. The project justification in all three cases fails to consider, for example, the socio-economic impacts of the proposed projects and the potentially deleterious impacts on the natural and scenic beauty of the area.

5.5 SCREENING

The Costa Rican EA System

The Costa Rican EA system mandates that a preliminary environmental analysis of all proposed projects or activities must be carried out before a decision is made as to whether, or not, a full EA is required. During this screening stage, the Preliminary Environmental Assessment Unit of the SETENA may (this is optional according to SETENA Regulations, Article 24) conduct a site inspection, and will then ask the proponent of project or activity to present a Preliminary Environmental Assessment Form (FEAP) (Article 19, SETENA Regulations). The FEAP is a pre-formatted document that proponents must fill out, briefly describing the proposed project, the surrounding physical and social environment, and justifying the viability of the project. The SETENA Regulations outline in Articles 19 and 20 (modified in August of 1997 through Executive Decree No. 26228-MINAE) (Costa Rica, 1997c) all of the types and dimensions of projects or activities that require a FEAP, and those which are exempt. Articles 21 and 22 of the SETENA Regulations outline all projects or activities that require a full EIA. Although the lists are fairly complete, they fail to include activities or projects, which if implemented individually, might pose minor threats to the environment, but whose cumulative effects might be significant, such as numerous small urbanization schemes.

Final screening decisions are made by the SETENA during their plenary sessions, and their rationale and justification for either requiring a full EIA, or not, must be published and made available to the proponent and the public (Article 19 and 24, LOA).
If a full EIA is required, the SETENA must also enclose the terms of reference for carrying out the EIA (Article 20, SETENA Regulations). If a full EIA is not required, the proponents will need to fill out a Declaration of Environmental Obligations, outlining their environmental responsibilities and environmental management plans. All proponents are given the right to appeal the SETENA’s decisions according to Article 342 of the General Law of Public Administration of Costa Rica, the LOA’s Article 87 and the SETENA Regulation’s Article 27.

**EAs of the Three Coastal Zone Development Projects**

According to Article 20 of the SETENA Regulations, all tourism projects with dimensions greater than 2,000 m², or those with plans to build more than 50 hotel rooms, must submit a FEAP. As a result, all three coastal zone development projects were required to present a FEAP. According to a member of the Administrative Unit of the SETENA, after revising the FEAP, the SETENA decided that the three proposed projects would require a full EIA and notified the proponents in writing the justification for the SETENA resolution. However, neither the FEAPs nor the SETENA resolutions for the three case studies were located during the study period, and are believed to be lost.

**5.6 SCOPING**

**The Costa Rican EA System**

The scoping stage takes place early in the EA process and is primarily used to identify the boundaries of the EIA. If the SETENA resolves that a project or activity requires a full EIA, the Preliminary Environmental Assessment Unit will present the proponent with a copy of the *EIA Basic Guidelines*. The *EIA Basic Guidelines* outline all the environmental and socio-economic components that should be described and addressed in the EIA, and if necessary, the Preliminary Environmental Assessment Unit will add project specific EIA requirements (Article 13 and 20, SETENA Regulations).

The *EIA Basic Guidelines* also serve as the ToR for carrying out an EIA, but according to SETENA members, consultants are not obligated to follow every step in the guide, and are given a considerable amount of discretion to decide what is important and what is not. Yet, Article 18 of the SETENA Regulations specifies that all submitted EISs must be elaborated in accordance with any specified guidelines and additional ToR
defined by the SETENA. The requirement, or not, to fulfill the EIA Guidelines needs to be clarified in EA legislation. Nevertheless, the SETENA uses the *EIA Basic Guidelines* when reviewing EISs, and it is in the consultant’s interest to follow it as much as possible. The proponents are allowed to appeal any SETENA decision according to Article 342 of the *General Law of Public Administration of Costa Rica*, the LOA’s Article 87, and the SETENA Regulation’s Article 27.

**EAs of the Three Coastal Zone Development Projects**

As mentioned in the previous section, the proponents of the three coastal zone development projects presented a FEAP early in the EA process and, according to members of the Technical Assessment Unit and Administrative Unit, were asked to carry out a full EIA, using the *EIA Basic Guidelines*. However, it is unknown if the proponents and their consultants were asked to cover other specific EIA requirements. Based on the documentation available and on the structure of the EISs, it appears that the proponents and EIA consultants followed the majority of the components outlined in the *EIA Basic Guidelines*, added a number of new components, and ignored several components. Therefore, the impacts addressed in the EISs are similar to the ones specified in the *EIA Basic Guidelines*, but it is difficult, if not impossible, to determine if irrelevant impacts were screened out and if consultants were asked to expand on EIA requirements outlined in the *EIA Basic Guidelines*. This process needs to be better documented.

**5.7 PREPARATION AND PRESENTATION OF THE EIS**

**The Costa Rican EA System**

An EIS must be prepared and presented to the SETENA, prior to the initiation of an action, if the proposed project is deemed to have a significant impact on the environment (LOA, Article 17 and the SETENA Regulations, Articles 19, 20, 21 and 22). Article 18 of the SETENA Regulations outlines the format and submission requirements of the EIS, and a *Form for the Receipt of Environmental Impact Assessments* must be filled out by a SETENA member once the EIS is presented to the secretariat. According to members of the SETENA, the EIS should not be accepted if components listed on the form are missing.
The LOA and SETENA Regulations do not specify length requirements for the EISs, which often lead to voluminous and unmanageable EISs (Mateo, 1997). There are also no checks to determine if the EISs are unbiased, however, the use of registered consultants ensures that mostly reputable consultants or consulting firms carry out the EIAs. The SETENA has created a *Form for the Inscription of Consulting Firms*, in which consultants and consulting firms must describe their academic and professional background(s), areas of expertise, and their national and international work experience. The SETENA members will determine which consultants or consulting firms are allowed to register, according to their degree of experience, entrepreneurial abilities and integrity.

According to Article 18 of the SETENA Regulations, the executive summary of the EIA (*i.e.* summary of the full EIS) must include an introduction (*i.e.* project objectives, location, owners and justification), a description of the project and/or action and its surrounding environment, positive and negative impacts of the project, impact mitigation and prevention plans, environmental management plans and a *Declaration of Environmental Obligations*. This declaration is a formal document by which project proponents assume responsibility for any environmental impacts that may result from the implementation of the project, and agree to implement corrective and mitigation measures if necessary. Article 18 also specifies that the EIS must be presented using simple terminology and in a fashion that is comprehensible to the layperson. Guidance on fulfilling these requirements is outlined in the *EIA Basic Guidelines* and is readily available to the project proponents and consultants. The guidelines, however, do not specify methods or techniques that must be utilized to carry out the study and this is left to the discretion of the consultant. Yet, the EIA must be carried out by an interdisciplinary team of accredited consultants (Article 41, SETENA Regulations) duly registered with the SETENA and they must describe in detail any methods used to carry out their studies. Article 42 of the SETENA Regulations outlines the process for registering as a consultant with the secretariat.

**EAs of the Three Coastal Zone Development Projects**

The proponents of the three coastal zone development projects presented EISs to the SETENA after carrying out their respective EIAs (Table 5.1). However, the proponents of both tourism projects on Monte del Barco Beach presented the EISs
Table 5.1 Comparative Results of EIS Preparation and Presentation

<table>
<thead>
<tr>
<th></th>
<th>Coastal Zone Project of Monte del Barco Beach</th>
<th>Monte del Barco Tourism Project</th>
<th>Iguanita Beach Tourism Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIS presented?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>EIS presented before activities began?</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Form of Receipt of EIA filled out?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Consultants registered?</td>
<td>Not initially</td>
<td>Not initially</td>
<td>Not initially</td>
</tr>
<tr>
<td>Executive summary?</td>
<td>Not initially</td>
<td>Not initially</td>
<td>Not initially</td>
</tr>
<tr>
<td>Introduction?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Project description?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Description of environment?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Positive and Negative Impacts identified?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Mitigation, prevention and compensation measured outlined?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Environmental management plan?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Presented a Declaration of environmental obligations?</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Is EIS understandable?</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Interdisciplinary team of consultants?</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Note: Shaded areas represent inconsistencies in EA practice.

After land clearing activities had begun, and therefore were operating illegally. As mentioned in Section 3.3, the SETENA ordered that all activities be halted until the EIS was approved. Proponents of the Iguanita Beach Tourism Project submitted the EIS prior to the SETENA's approval. When the EISs were presented to the SETENA, a Form for the Receipt of Environmental Impact Assessments was filled out for all three proposed projects, and all three were missing an executive summary, but met all other format and submission requirements. The EISs were accepted, despite the SETENA's policy to not accept incomplete EISs. The proponents of the three coastal zone projects submitted the executive summaries shortly after (no particular date is specified).

The three EISs are lengthy. The Coastal Zone Project of Monte del Barco Beach EIS is 135 pages long, with an unnumbered annex that is even longer. The Monte del Barco Tourism Project EIS is 216 pages long and includes a 40-page annex. The Playa Iguanita Tourism Project EIS contains 102 pages and a 25-page annex. All three EISs
included descriptions of the surrounding biophysical, socio-economic and cultural environment and the projects, outlined positive and negative impacts of the project, described mitigation, prevention and compensation plans, and presented environmental management plans. However, only proponents of the Monte del Barco Tourism Project and Iguanita Beach Tourism Project presented a Declaration of Environmental Obligations. It is important to note that all three EISs dedicated the vast majority of their study to describing the surrounding biophysical environment and project, while very little text space was allocated to describing the socio-economic and cultural environment, or identifying potential impacts, impact mitigation, prevention and compensation plans, and environmental management plans. For example, in the EIS for the Coastal Zone Project of Monte del Barco Beach, a total of 106 pages (83%) were allocated to describing the biophysical environment and the project, while 22 pages (17%) covered all other components. In the EIS of the Monte del Barco Tourism Project, 155 pages (77%) were used to describe the project and the biophysical environment. A total of 22 pages (11%) were used to describe the socio-economic and cultural environment, 8 pages (4%) to outline positive and negative impacts of the project, and 17 pages (8%) to cover all other components. The EIS of the Iguanita Beach Tourism Project contained 51 pages (61%) describing the project and biophysical environment, while a single page (1%) described the socio-economic and cultural environment, and 19 pages (23%) outlined potential project impacts. Another 12 pages (15%) were dedicated to outlining mitigation, prevention and compensation plans, and the environmental management plan. Major efforts are being allocated by the consultants to gather baseline data while a limited amount of time is dedicated to considering and predicting the potential impacts of the proposed actions.

The descriptions presented allow the decision makers to visualize the project and surrounding areas, but the maps and diagrams included in all three EISs were of poor quality. The majority of the maps lacked titles, legends, orientation arrows and were not referenced. Many of the maps were poor quality photocopies of maps from unknown sources. While the text information in the EISs was presented in a clear manner, none of the descriptions were concise and easily comprehensible. Descriptions of the environment were meticulous yet the information was seldom related to the proposed
project, making it difficult to determine the relevance of the descriptions. In addition, the information is very technical in nature, written primarily for experts in the fields of geology, geography, geomorphology, hydrology, hydrogeology and biology.

Not all consultants who carried out the EIA and presented the EISs were registered under the SETENA at the time of submission. In both the Coastal Zone Projects of Monte del Barco Beach and the Monte del Barco Tourism Project, one consultant in each EIA case was not registered. However, both consultants were registered with the SETENA a few days after presenting the EISs. The teams that carried out the EIAs were multidisciplinary (not interdisciplinary) groups of professionals including biologists, geologists, hydrologists, hydrogeologist, and civil engineers. There were no social scientists involved in the EIA process, placing serious questions on the validity of socio-economic descriptions and analyses presented in the three EISs. In all three EIAs, the two head consultants were same for all three studies.

5.8 THE PREDICTION OF EFFECTS AND IMPACTS

The Costa Rican EA System

According to Article 18 of the SETENA Regulations, the EIS must present predictions of both the positive and negative environmental impacts of proposed developments. The EIA Guidelines suggest that the magnitude of the impacts be considered and that impact predictions be quantified as much as possible. However, there are no provisions outlining the need to address variations in impacts, potential changes in all aspects of the environment, or the need to link the prediction stage with monitoring activities. Also, there is no guidance as to what methods or techniques should be used to predict environmental impacts. As a result, the consultants who carry out the EIAs are allowed to choose their environmental impact prediction techniques and methods, but according to SETENA members, these must be described in the EIS.

EAs of the Three Coastal Zone Development Projects

The three EISs presented a series of predictions about the potential impacts of the three coastal zone developments on the physical, biotic and socio-cultural environment. The predictions addressed the types of expected impacts, as well as the physical extent, duration and magnitude of the impacts. However, only the Iguanita Beach Tourism
Project EIS outlined potential impacts according to construction and operation stages of the project. In all three cases, the consultants did not outline the techniques of methods used to formulate their predictions, nor the assumptions or rationales behind their results. It appears that the predictions were based on their own personal experience and expertise. These were presented in a sufficiently clear manner that the Environmental Monitoring and Follow-up Unit should be able to focus their monitoring activities on particular predicted impacts. Results from the prediction stage are presented in Table 5.2.

Table 5.2 Comparative Results of Prediction Stage

<table>
<thead>
<tr>
<th>Impacts on Physical Environment</th>
<th>Coastal Zone Project of Monte del Barco Beach</th>
<th>Monte del Barco Tourism Project</th>
<th>Iguanita Beach Tourism Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technique used to identify Physical Impacts</td>
<td>Not defined</td>
<td>Not defined</td>
<td>Not defined</td>
</tr>
<tr>
<td>Impacts on the Biotic Environment</td>
<td>Loss of vegetation and perturbation of fauna</td>
<td>Loss of vegetation, perturbation of fauna, and loss of aquatic ecosystems</td>
<td>Loss of vegetation, perturbation of fauna, and loss of aquatic ecosystems</td>
</tr>
<tr>
<td>Technique used to identify Biotic Impacts</td>
<td>Not defined</td>
<td>Not defined</td>
<td>Not defined</td>
</tr>
<tr>
<td>Technique used to identify Socio-Cultural Impacts</td>
<td>Not defined</td>
<td>Not defined</td>
<td>Not defined</td>
</tr>
</tbody>
</table>

5.9 SIGNIFICANCE ASSESSMENT

The Costa Rican EA System

Neither the LOA nor SETENA Regulations outline provisions requiring the significance assessment of impacts. However, the EIA Basic Guidelines suggest that significance assessment activities should be carried out, and a number of ways that might aid in determining the significance of impacts (e.g. impact duration, level of intensity, geographical extension, and probability of recurrence) are outlined.
**EAs of the Three Coastal Zone Development Projects**

Despite presenting predictions of potential impacts, none of the three EISs presented significance assessment results or demonstrated in EA documentation that this had been considered.

**5.10 EIS REVIEW**

*The Costa Rican EA System*

All EISs in Costa Rica must be reviewed by the SETENA before a final decision is made as to whether to approve or deny a project or activity. Once the SETENA resolves that a proponent must carry out a full EIA, a file of all correspondence and documentation of the process is kept at the Secretariat’s offices. The public has the legal right to review all documents in the file at any time during the EA process, unless the information is guarded by industrial property rights (Article 23, LOA). They are also allowed to voice any concerns regarding the proposed project and these must be kept on file and considered in final decision making (Article 22, LOA). The public is also allowed to review the final EIS and all comments must also be taken into consideration during final decision making (Article 22, LOA). According to all SETENA members interviewed, however, the public seldom reviews the EISs or participates in the EA process.

The reasons for the low levels of participation are unclear, but there are a number of factors that may explain this phenomenon. First, the public might not be aware of their right to participate in the EA process. Even though the SETENA publishes occasionally the names of the projects whose EISs are being reviewed, the publications do not clearly specify that the public is allowed to comment on the EISs. Second, the public may not be aware that a particular project has presented an EIS and is being reviewed by the SETENA, as the secretariat only publishes these announcements occasionally and primarily for larger projects. Third, all members of the SETENA who were interviewed stated that even though opportunities for participation exist, the public is seldom consulted directly regarding a proposed project. Fourth, although copies of EISs are kept at the respective municipality of proposed projects, all other EA documentation is kept on
file at the SETENA’s offices in San Jose, perhaps making these inaccessible to groups of individuals who reside outside the capital city.

The SETENA members, which include professionals in both the sciences and social sciences, review the EIS. Objectivity in the review process is ensured, according to members of the SETENA’s Technical Assessment Unit, by requiring that all reviewers present reports of their results, along with rationales for their decisions. These are also available to the public. Although no review criteria to determine EIS adequacy are available, the EIS reviewers will usually use the EIA Basic Guidelines and any additional ToR as a guide to ensure the completeness and adequacy of the EISs. If additional information is required, the SETENA has the right to ask the proponent to present an annex with all the necessary modifications (Article 23, SETENA Regulations). Proponents are allowed according to Article 342 of the General Law of Public Administration of Costa Rica, the LOA’s Article 87, and the SETENA Regulation’s Article 27, to appeal any review decisions.

EAs of the Three Coastal Zone Development Projects

The three EISs were reviewed by the Technical Assessment Unit of the SETENA, but were not reviewed by the public despite their availability. In all three cases, the SETENA members found a number of deficiencies in the EISs and demanded that annexes with additional information and modifications be presented. The Coastal Zone Project of Monte del Barco Beach EIS missed a number of legal requirements (not outlined in the Form for the Receipt of Environmental Impact Assessments and, therefore, missed), presented a limited description of the marine environment, did not adequately address potential socio-economic and cultural impacts, and did not contemplate the impacts at all phases of the project (SETENA, 1997a). In addition, the EIS was missing a timeline for project activities and many of the maps, tables, figures and graphics were of poor quality. The Monte del Barco Tourism Project EIS presented a number of problems related to the description of a proposed dam and lake, and did not identify the potential impacts of these, if seismic activity was to damage the dam (SETENA, 1997b). The Iguanita Beach Tourism Project EIS presented incomplete data about forest cover and soil types in the project area (SETENA, 1997c). In addition, a number of maps were missing, and the mitigation, prevention and compensation plans were incomplete. The
results of the review, along with the rationales for review decisions, were published and made available to both the proponents and the public (SETENA, 1997a; 1997b; 1997c). It is important to note that the deficiencies outlined above were addressed in the annexes presented in all three case studies.

5.11 EVALUATION AND FINAL DECISION MAKING

The Costa Rican EA System

The final evaluation is carried out by members of the SETENA during a plenary session, at which a final decision to either accept or reject the EIS is also made. The evaluation and final decision are based on the findings presented in the EIS, including the positive and negative environmental impacts of the proposed project, and is only done after the SETENA members have reviewed the documents. During the plenary session, the final decision is based on the expertise and experience of the secretariat's members, as there is no guidance on how to carry out the evaluations. Once the final decision is made, the SETENA will publish a formal document, which is presented to the proponent and made available to the public. Once again, the public can review these documents if they are aware that the EIS of a particular project has been reviewed, or if the announcement of the review is published in national newspapers. According to all SETENA members, the public will seldom participate in the review of EISs, probably due to the same reasons outlined in section 5.9. The proponent is allowed to appeal the final decision according to Article 342 of the General Law of Public Administration of Costa Rica, the LOA’s Article 87, and the SETENA Regulation’s Article 27.

EAs of the Three Coastal Zone Development Projects

The evaluation of the three EISs and subsequent final decisions were based solely on the findings presented in the EIS, and a site inspection in the case of the Coastal Zone Project of Monte del Barco Beach. According to members of the SETENA’s Technical Assessment Unit, the positive and negative environmental impacts of the projects were considered in final decision making, and the rationale for these decisions were published and made available to the proponents and the public (SETENA, 1997a; 1997b; 1997c).
5.12 MONITORING AND POST-AUDITING OF ACTIONS

The Costa Rican EA System

According to Articles 20 and 84 of the LOA, if a project is allowed to proceed, the SETENA must monitor its progress to ensure that the proponents are complying with the terms and conditions of approval established by the SETENA and the provisions outlined in the environmental management plan. The SETENA has an Environmental Monitoring and Follow-up Unit, which will carry out the monitoring activities and will also tend to any complaints concerning a particular project or action (Article 14, SETENA Regulations). However, as was mentioned above, the SETENA has only one vehicle to carry out monitoring activities throughout the country. Therefore, according to members of the SETENA’s Environmental Monitoring and Follow-up Unit, they will usually only monitor activities or projects in the vicinity of San Jose, unless the project is very large and has the potential to significantly harm the environment.

An additional problem with monitoring practices is the lack of an interdisciplinary team to carry out these activities. Despite the fact that members of the Environmental Monitoring and Follow-up Unit have professional and academic backgrounds in both the sciences and social sciences, they do not have the expertise to effectively monitor all environmental components. As a result, monitoring activities are usually restricted to the area of expertise of the person conducting the activity. In addition, usually only one official will visit a site to monitor for compliance, therefore further limiting the scope and validity of monitoring activities.

According to the SETENA members, the monitoring unit will also conduct post-audits to evaluate the accuracy of predicted impacts. However, there is no published guidance on how to carry out post-audits or monitoring activities. All results from monitoring and post-auditing activities must be published and are made available to the public. If the project proponents do not meet the established conditions of approval, they may be subject to a series of sanctions such as the permanent loss of a fund known as the Guarantee of Compliance with Environmental Obligations (see sections 4.3 and 4.4), or the temporary or permanent closure of the project. However, the SETENA will first usher a warning and will later demand that the necessary changes be made to the project or activity. The Guarantee of Compliance with Environmental Obligations also helps to
cover some of the costs of monitoring activities. Once again, proponents have a right to appeal monitoring or post-auditing results according to Article 342 of the *General Law of Public Administration of Costa Rica*, the LOA's Article 87, and the SETENA Regulation's Article 27.

**EAs of the Three Coastal Zone Development Projects**

Baseline monitoring was carried out for all three case studies and the results were presented in the three EISs as descriptions of the biophysical, socio-economic and cultural components of the environment. However, as of August of 1998, the SETENA had not carried out any effects/impact monitoring or post-auditing activities for the two approved coastal zone developments. Playa Iguanita Tourism Project had not begun construction activities, and therefore did not require effects/impact monitoring or post-auditing. However, the proponents of the Coastal Zone Project of Monte del Barco Beach and Monte del Barco Tourism Project (same proponents) began construction activities, such as land clearing, prior to the SETENA's approval. Therefore, even though the project has not advanced much since the approval, the SETENA should consider revisiting the site to monitor for predicted impacts of soil erosion and subsequent water pollution.

If monitoring activities were to be carried out by the SETENA, they would use the environmental management plan outlined in the EIS as an initial guide. The environmental management plan outlines the responsibilities that proponents commit to once the project is implemented. In the case of the Coastal Zone Project of Monte del Barco Beach, effects/impacts monitoring would examine the felling of trees, land clearing activities and impacts on superficial and subterranean waters. According to the environmental management plans (outlined in the EIS) of the Monte del Barco Tourism Project and the Iguanita Beach Tourism Project, effects/impacts monitoring would examine impacts on superficial and subterranean waters, air and noise pollution during the construction phase, impacts on vegetation cover, impacts on the stability of soils and potential impacts on archeological sites. Compliance monitoring for all three case studies would determine if construction plans are being carried out in accordance with SETENA resolutions and those plans outlined in the EIS.
5.13 MITIGATION AND COMPENSATION

The Costa Rican EA System

Article 18 of the SETENA Regulations mandates that all proponents must present plans for the mitigation of impacts in the EISs. The EIA Basic Guidelines suggest that these include plans to minimize, rehabilitate or compensate for environmental impacts. Also, according to Article 21 of the LOA, the proponent must establish a Guarantee of Compliance with Environmental Obligations, which is a fund equivalent to one percent of the total project cost. This fund is used to carry out monitoring activities and to mitigate environmental impacts during the design and execution of the project, and may be used up to a period of ten years, depending on the size and duration of the project. This fund is evaluated on a yearly basis to ensure that it is capable of supporting the monitoring and mitigation activities. In addition, proponents may be required to use the fund and/or additional funds to fulfill compensatory obligations if the SETENA deems it necessary (Article 99, LOA).

EAs of the Three Coastal Zone Development Projects

All three EISs outlined impact prevention and mitigation plans for the physical, biotic and socio-cultural environment. However, the proponents of all three projects were asked to re-evaluate their impact prevention and mitigation plans because these were found to be weak and inadequate by the SETENA members (SETENA, 1997a; 1997b; 1997c). The new impact prevention and mitigation plans were presented in annexes that the SETENA ordered following the EIS review, and all three met the expectations of the SETENA members. A comparison of impact prevention and mitigation plans are presented in Table 5.3.

5.14 PUBLIC PARTICIPATION AND CONSULTATION

The Costa Rican EA System

The LOA places special emphasis on the role of public participation in environmental planning and decision making and devotes Chapter II to the subject. In Articles 7, 8, 9, 10 and 11, the creation, function and integration of Regional Environmental Councils, which are groups of public participants in charge of analyzing,
Table 5.3 Comparative Results of Mitigation Plans

<table>
<thead>
<tr>
<th>Physical Environment</th>
<th>Coastal Zone Project of Monte del Barco Beach</th>
<th>Monte del Barco Tourism Project</th>
<th>Iguanita Beach Tourism Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Mitigation</td>
<td>Fertile soils will be separated and reused.</td>
<td>Fertile soils will be separated and reused.</td>
<td>Fertile soils will be separated and reused.</td>
</tr>
<tr>
<td>-Prevention</td>
<td>Machinery will be well maintained to avoid atmospheric pollution.</td>
<td>Machinery will be well maintained to avoid atmospheric pollution.</td>
<td>Machinery will be well maintained to avoid atmospheric pollution.</td>
</tr>
<tr>
<td>Storage rooms holding fuels and toxic materials will be water proofed to avoid water contamination.</td>
<td>Storage rooms holding fuels and toxic materials will be water proofed to avoid water contamination.</td>
<td>Storage rooms holding fuels and toxic materials will be water proofed to avoid water contamination.</td>
<td></td>
</tr>
<tr>
<td>Tree planting to improve landscape and avoid soil erosion.</td>
<td>Tree planting to improve landscape and avoid soil erosion.</td>
<td>Tree planting to improve landscape and avoid soil erosion.</td>
<td></td>
</tr>
<tr>
<td>Biological Environment</td>
<td>Fire control measures.</td>
<td>Fire control measures.</td>
<td>Fire control measures.</td>
</tr>
<tr>
<td>-Mitigation</td>
<td>Native tree planting to recover cleared areas.</td>
<td>Native tree planting to recover cleared areas.</td>
<td>Native tree planting to recover cleared areas.</td>
</tr>
<tr>
<td>Socio-cultural Environment</td>
<td>Coordination with National Museum and workers to avoid archeological damage</td>
<td>Coordination with National Museum and workers to avoid archeological damage</td>
<td>Coordination with National Museum and workers to avoid archeological damage</td>
</tr>
<tr>
<td>-Prevention</td>
<td>Coordination with National Museum and workers to avoid archeological damage</td>
<td>Coordination with National Museum and workers to avoid archeological damage</td>
<td>Coordination with National Museum and workers to avoid archeological damage</td>
</tr>
</tbody>
</table>

discussing, denouncing, and controlling activities, programs and projects which might harm the environment, are outlined. In addition, as was mentioned above (see Section 5.9), the public has the legal right and is encouraged to review and comment on all EIA documentation, including the EISs and the SETENA’s decision-making criteria and weighting schemes, if they use any (Articles 22, 23 and 24, LOA). The SETENA has to announce occasionally in local newspapers which EISs are being reviewed, and has to invite the population to review these. All comments from the public must be considered
in the evaluation and final decision-making stages. According to SETENA members, a public audience may also be held, but this is determined by the SETENA, who have the discretion to decide if it is necessary or not.

All EIA documentation and the copies of the EISs are kept at the SETENA. In addition, copies of EISs are kept at their respective municipalities for public review. Despite the SETENA's encouragement for public participation, the process for reviewing the EISs and EIA documentation can be difficult (see section 3.3). The documents may not be copied or purchased, and all EA documentation, beside the EISs, is only kept on file in San Jose at the SETENA's offices. This makes access difficult for those who live in rural areas and do not have the means to travel to the city. In this particular study, the EISs and EIA documents were photocopied only because special permission was granted by the interim Minister of Environment and Energy at the time, due to the nature of the research (see Section 3.3). As has been mentioned above several times, the public has the right to appeal any SETENA decision according to Article 342 of the General Law of Public Administration of Costa Rica, the LOA's Article 87, and the SETENA Regulation's Article 27.

**EAs of the Three Coastal Zone Development Projects**

Public participation opportunities were provided during the EA process of the three coastal zone development projects, however, according to the SETENA members, nobody took this opportunity to comment on the EISs or the EIA process. No public audiences were held for any of the three proposed projects.

### 5.15 MONITORING OF EA SYSTEMS

**The Costa Rican EA System**

Neither the LOA nor the SETENA Regulations outline provision requiring the monitoring of the EA system itself. However, members of the SETENA agree that an implicit auto-evaluation system exists within the secretariat to ensure that the EA system functions appropriately (Mateo, 1997) and all members interviewed believe that changes will be made to the EA system if necessary. For example, during the past three years, numerous SETENA members have been asked to return to their original jobs because they are not adapting well to their new responsibilities in the secretariat or have
performed poorly. It is important to remember that all SETENA members are "donated" from other public institutions and organizations, and those who leave the SETENA, usually return to their previous jobs. A logbook of EA documentation is kept at the SETENA's offices, but no records of the financial costs or time required to carry out the EAs are kept.

5.16 COSTS AND BENEFITS OF THE EA

The Costa Rican EA System

According to the majority of SETENA members, project proponents often complain about the cost of carrying out EAs. However, other SETENA members have found that usually only national proponents complain about EA costs, while international proponents find the costs to be reasonable. The SETENA members agree that often, time requirements outlined in the SETENA Regulations (Articles 18, 23, 24 and 27) are not honored by either the proponents or the SETENA, yet the SETENA members have found that this shortcoming has never created any major problems.

Overall, members of the SETENA believe that the EA process has altered the behaviour of proponents, consultants and the public, and they also believe that the SETENA has begun to create a culture of environmental responsibility in Costa Rica. For example, when the SETENA was first instituted, it was estimated that only five to fifteen percent of developments in Costa Rica were fulfilling EA requirements (Mateo. 1997). Nowadays, it is estimated that 15 to 30 percent of all actions and projects are going through the EA process. Some SETENA members believe this has been the result of proponents' fears that developments may be shut down. All SETENA members believe that EAs have resulted in improved project designs and environmental quality, and that the process is becoming more acceptable to project proponents. There is no empirical evidence to suggest, however, that the EA process has significantly altered the outcome of decisions. Ultimately, projects have been rejected due to incomplete or inadequate EISs, but once these problems are fixed, they are often approved, such as in the case of the Monte del Barco Beach projects.
5.17 CONSISTENCY AMONG THE THREE CASE STUDIES

The findings outlined in the previous sections demonstrate that the EAs of three coastal zone development projects adhered to the same EA requirements and produced similar results. However, it is difficult to attribute these positive results to the EA provisions outlined in the LOA and SETENA Regulations. The three EIAs were carried out by the same two head consultants, and supported by numerous other consultants. The high level of consistency might have been achieved because the head consultants were consistent in their approach to carrying out EIAs and presenting EISs, and not because of the EA requirements outlined in the LOA and SETENA Regulations.

Therefore, it appears that the factors determining the acceptability or rejection of the projects were based on the ability, or lack thereof, of the proponents to present to the SETENA all the EIA requirements. This is demonstrated in the two Monte del Barco Beach project proposals. In the Coastal Zone Project of Monte del Barco Beach proposal, the project was rejected because it was missing a number of EA requirements. Once the proponents changed the name of the project to the Monte del Barco Tourism Project and fulfilled the missing EIA requirements, the project was approved.

5.18 SUMMARY DISCUSSION

The evaluation of the effectiveness of the Costa Rican EA system and the three coastal zone developments EAs yielded interesting results. The Costa Rican EA system was evaluated using a normative evaluation framework, while the three EAs were evaluated using a strategic evaluation framework (Table 3.2). A summary of the strengths and weaknesses identified through both evaluations are presented below.

A number of strengths were identified in the Costa Rican EA system. Most importantly, the EA system was developed and implemented with the purpose of pursuing the goals of sustainable development. It is supported by a strong legislative basis and is legally enforceable through the courts. Those who do not comply with EA requirements are subject to sanctions, including fines and the temporary or permanent closure of a project or activity. This was demonstrated through the Monte del Barco Beach tourism projects, when the SETENA demanded that all activities be halted until EISs had been formally approved by the secretariat. The EA system is managed by an semi-autonomous group of
professionals known as the SETENA, who are always separate from the proponenty, reducing the possibility of biases in decisions and avoiding conflicts of interest. The screening provisions are clearly outlined in the SETENA Regulations and final decisions regarding the requirement of a full EIA, or not, and the rationale for final decisions are presented by the SETENA following a preliminary environmental analysis. Even if a full EIA is not required, all project proponents must sign a Declaration of Environmental Obligations, ensuring that all projects implemented take the environment into consideration. Proponents of projects deemed to have a significant impact on the environment, must submit an EIS for review by the SETENA, and format and submission requirements are specified in the SETENA Regulations. An inter-disciplinary team of accredited consultants, registered with the SETENA, must carry out the EIAs and write up the documents. The EISs are reviewed and evaluated by SETENA members, including experts in both the sciences and social sciences, and final decisions (including their rationales) are published and made readily available to proponents and the public. If a project is implemented, the SETENA must monitor the project and members have the right to request that impacts be mitigated, or affected populations receive some form of compensation. The public is allowed to provide input in the EA process at any time and they have the legal right to review the EISs and all other EA documentation. In addition, the public has the legal right to appeal any SETENA decision. Overall, the benefits of the EA system appear to outweigh the costs, and it seems that a culture of environmental responsibility is developing in the country.

The Costa Rican EA system also presents a number of weaknesses. As was identified by Mateo (1997), the SETENA continues to be understaffed and under-funded, and incoming members usually have little, if any, knowledge of EA theory and practice. Despite having drafted the EIA Basic Guidelines, the SETENA does not require that these guidelines be followed in their entirety, which might limit the coverage of the EA. In addition, ambiguities in the definition of the term ‘environment’ might further result in EIAs with limited coverage. The proponents of a project are not required by law to consider alternative actions, sites, scheduling plans or project designs. Screening activities fail to account for projects or activities whose individual impacts may be insignificant, but whose cumulative impacts may significantly harm the environment. The
requirements for scoping are unclear in EA legislation. The SETENA has not outlined length requirements for the EA, which has often lead to the presentation of voluminous and unmanageable EISs, and there is little guidance available for proponents and consultants on how to carry out predictions and significance assessments. The SETENA also has been given little guidance on how to carry out evaluations and make final decisions. Monitoring and post-auditing activities are weak, as the SETENA has neither the means nor sufficient staff members to carry out these activities. Although all EA documentation is open to the public, it can be difficult for the public to review the documents due to bureaucratic requirements imposed by the SETENA. The SETENA has not established a formal mechanism for monitoring the EA system, limiting the ability of the SETENA to adapt to changes as experience is gained.

A number of strengths in EA practice were identified by analyzing the EAs of the three coastal zone developments. In general, all three EAs followed the requirements set out by the LOA and SETENA Regulations. In all three cases, a FEAP was filled out and an EIS was presented. The EISs all contained descriptions of the projects and surrounding environments, predictions of potential environmental impacts, impact mitigation and prevention plans, as well as environmental management plans. During the evaluation and final decision-making stage, the SETENA used the findings presented in the EIS, published their results and made these available to the proponents and the public.

However, the three EAs also exhibited a number of weaknesses. For example, the three EAs did not always follow suggested EA requirements outlined in the *EIA Basic Guidelines*, such as the consideration of alternative courses of action, including the no-action alternative. The Monte del Barco Beach project proposals began their construction activities prior to receiving approval by the SETENA. In all three cases, the proponents failed to submit executive summaries on time. The EISs were lengthy and the vast majority of the text was allocated to describing the proposed project and its surrounding environment, while very little text space was devoted to discussing predicted impacts. Therefore, even though the requirement for considering potential impacts was fulfilled, the material presented was inadequate. In addition, the information presented was very technical, not easily understood by the layperson, and in all three cases, the maps and diagrams presented were of very poor quality. Not all consultants who carried out the
EIAs were registered at the time of submission. Although, this is only a formality, it needs to be heeded by project proponents in order to ensure the adequacy of EIAs. Also, the interdisciplinary teams failed to include social scientist in the EIAs and preparation of EIS. It is unclear how the predictions were formulated and the consultants did not present the assumptions or rationales behind their results. Significance assessments were not carried out. In all three cases, the proponents were asked to submit an additional annex to the EISs, in order to complement the studies or because the EISs required modifications. No monitoring activities had been carried out by the SETENA as of August 1998, despite the fact that the proponents of Monte del Barco Tourism Project have cleared some large tracts of land, exposing the area to erosion and sedimentation problems, and thus requiring monitoring. Finally, the public did not participate in the EAs of the three coastal zone development projects.

Overall, the results indicate that, besides some minimal fine-tuning, the Costa Rican EA provisions outlined in the LOA, SETENA Regulations and EIA Basic Guidelines are effective and should result in the implementation of an EA system that can make a significant contribution to the goals of sustainable development. For example, in principle, the EA system is a legally enforceable process that attempts to harmonize development with environmental protection, while ensuring that all projects and actions are carried out in accordance with the views of the Costa Rican society. In practice, however, EAs are not applied to all potentially damaging actions and the views of society are seldom heard. In addition, the approval or rejection of a project or activity appears to rest on the presence, or lack thereof, of EIS requirements, and less on the substantive issues contained in the EISs. Therefore, based on the results presented in the preceding sections, it is difficult to visualize how current EA practices, and in particular the three case studies, can make a contribution or move Costa Rica’s development process towards sustainable development.

The purpose of this chapter was to present the results from the evaluation of the Costa Rican EA system and the three coastal zone development project EAs. In the following chapter, a number of recommendations for strengthening some of weaknesses identified in the Costa Rican EA system and practice are presented.
CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

This research evaluated the effectiveness of the Costa Rican EA system at a normative and strategic level. Through a review of the literature on EA theory and practice, a set of fundamental EA principles were identified and the requirements for fulfilling these principles were determined. The result was a review of best EA practice, applicable to the context of both a developed and developing country. Based on the literature review, a normative evaluative framework was created to evaluate the EA provisions outlined in the Costa Rican LOA and SETENA Regulations. In addition, a strategic evaluation framework was developed to evaluate the practice of EA in Costa Rica, and was applied to the EAs of three coastal zone development projects.

The context of the study was established by reviewing the evolution, thus far, of Costa Rica’s path towards sustainable development, as well as by reviewing the history of EA practice in the country. Following, the results of both the normative and strategic evaluations were presented. From both these evaluations, the strengths and weaknesses of the Costa Rican EA provisions and practice were identified.

The purpose of this chapter is to outline a number of recommendations for strengthening the Costa Rican EA system, in an attempt to move EA practice closer to the goals of sustainable development. In section 6.2, shortcomings identified in the EA provisions outlined in the LOA and SETENA Regulations are addressed, while in section 6.3, shortcomings in EA practice are addressed. In both sections, desirable and/or feasible changes are discussed. In addition, a post-script that addresses some recent changes to the Costa Rican EA system is presented, and the chapter concludes with a discussion on directions for future research.

6.2 STRENGTHENING THE LOA AND SETENA PROVISIONS

The Costa Rican EA provisions outlined in the LOA and SETENA Regulations exhibit a number of weaknesses that need to be addressed. First, it is both desirable and
feasible for the SETENA to require that all project proponents follow the *EIA Basic Guidelines* in their entirety, as well as any other additional ToR outlined by SETENA members. Not only will this establish a minimum benchmark of EIA requirements, but will also significantly facilitate the review process. In addition, if provisions outlined in the *EIA Basic Guidelines* are required, proponents will be forced to consider the significance of effects and present documentation proving that alternative actions, sites, scheduling plans, project designs and the no-action alternative have been considered, as outlined in Chapter VI of the *EIA Basic Guidelines*. This will also ensure that that selected alternatives are better justified.

Second, the SETENA should introduce provisions requiring that proponents and consultants determine if the proposed project or activity has the possibility of compounding the negative environmental impacts of activities in its surroundings or vicinity. In other words, the cumulative effects of proposed projects needs to be examined in the EIA, and documentation of this consideration needs to be presented in the EIS. However, this would entail training SETENA members and consultants on cumulative effects assessment, an activity that must be supported by a well-established monitoring system. The feasibility of implementing this requirement is questionable, as its success rests on the possibility of training those involved in the EA process on cumulative effects assessment and on establishing stronger and more effective monitoring systems (see Section 6.3).

Third, it is imperative and feasible that the SETENA establish length requirements for the EISs and each component in the EIS, in order to avoid the submission of unmanageable documents. For example, the SETENA can request that baseline surveys be well balanced with effect and impact predictions, in terms of text space allocation. If the proponents feel that additional space is required, the SETENA should be given the discretionary power to decide if permission will be granted or not. Permission to submit longer EISs should only be granted on the basis of not compromising important and pertinent information for EIS length. The SETENA must also require that EIS are presented in a comprehensible manner, easily understood by the layperson, and that diagrams, maps and photographs are of publishable quality.
Finally, the SETENA should establish a formal mechanism by which the practice and performance of EA activities carried out by the secretariat are monitored and evaluated on a regular basis. When the SETENA was first instituted in 1995, the members would occasionally hold staff retreats to discuss the progress of the secretariat. According to several SETENA members, this practice was stopped approximately two years ago for unknown reasons. The SETENA should reinstate this practice as a standard SETENA activity. These could be done three of four times per year, over the course of a day. Another option is to hire an independent review body of experts that will monitor the secretariat's activities over a period of time and present reports on their performance and advise members how to strengthen the EA system. This, however, would require funds that the SETENA does not have at the moment, therefore, making the former option a more feasible one at this time. If funding to the SETENA increases in the future, the second option would be advisable. Most importantly, if weaknesses are identified, the SETENA must make a serious commitment to address any shortcomings expeditiously.

6.3 STRENGTHENING EA PRACTICE

The Costa Rican EA system has been weakened, to some extent, by problems associated with the SETENA. Despite the MINAE's good intentions to create an inter-disciplinary body to direct and manage the Costa Rican EA system, the secretariat has not been able to meet its full potential because they do not have enough staff or funding to carry out their responsibilities.

Therefore, the MINAE must ensure that representatives from all public institutions, who should comprise the SETENA's team, are identified and "donated" to the secretariat on time. This matter can no longer go unattended as it has in the past. However, the MINAE also needs to consider some of the problems that have resulted in this shortcoming. For example, several public institutions cannot afford to "donate" their members to the SETENA without compromising their ability to fulfill their own duties, or there may be no officials who are willing to change their posts to join the secretariat. In addition, the pool of potential candidates within public institutions, who may join the SETENA, may be limited or inadequate for the job. Therefore, it is recommended that the
SETENA consider hiring individuals from outside the public institutions who are willing, and perhaps better qualified, to fulfill the SETENA’s duties.

Hiring individuals from outside the public institutions has the benefit of creating more jobs, but also necessitates that the SETENA be allocated additional funds. The SETENA must pressure the MINAE to release funds allocated to the SETENA as outlined in the Costa Rican government’s budgetary plan. The General Secretary of the SETENA has the right to resort to legal recourses if this requirement is not met. In addition, the SETENA should ask the MINAE to consider the possibility of increasing funding in order to hire more staff. Once again, based on the funding practices at the time of this study, it is questionable if the MINAE will be able to further help the SETENA.

In order to avoid the submission of inadequate EISs and in order to facilitate the EIS review process, the SETENA must, and can, ensure that all consultants who carry out the EIAs are duly registered with the SETENA before the study is conducted. The SETENA should demand that proponents submit the names of the consultants and consulting firms that will complete the EIAs and EISs, before the EIA Basic Guidelines and ToR are issued. In addition, the SETENA should only allow the EIA to begin if the consultants and sub-consultants form part of an inter-disciplinary team covering all disciplines relevant to the study. The names and contact numbers of consultants from a wide variety of disciplines are kept at the SETENA’s offices, which would facilitate the identification of adequate candidates to carry out the EIAs.

The SETENA should also draft guidelines or utilize the existing EA literature to educate consultants and SETENA members on different methods and techniques for carrying out prediction and significance assessment activities. There are numerous professionals in both private and public institutions that are well acquainted with EA theory and practice, and there is a considerable amount of literature available on the topic in the state universities’ libraries, the MINAE, and the libraries of public and private institutions. However, it is important that guidelines for carrying out predictions and significance assessments are drafted in accordance with the Costa Rican social and institutional/regulatory context (see Section 4.1).
The SETENA members should be trained or given guidance on how to carry out EA evaluations to purport their final decisions. Overall, the SETENA members need to be trained in both EA theory and practice prior to joining the SETENA. Every year, numerous EA theory/practice seminars and courses are given by various local and international institutions including former SETENA members, the IUCN, the Tropical Science Center and the Neotropica Foundation. The SETENA should take advantage of these opportunities to train incoming members. Once again, this might require additional funds that the SETENA might not have, and therefore, may not be possible. If this is the case, incoming SETENA members should at least receive some in-house training by more experienced officials.

Monitoring and post-auditing activities need to be strengthened. Once again, this necessitates that the MINAE provide the necessary funds to carry out these activities. For example, the Environmental Monitoring and Follow-up Unit requires additional staff and vehicles. If more staff cannot be hired, then the possibility of assigning to the municipalities, monitoring responsibilities within their respective jurisdictions, must be explored. If more vehicles are required, the SETENA should use part of the Guarantee of Compliance with Environmental Obligations provided by project proponents, to either purchase or rent vehicles. In the past, SETENA members would travel with the proponents to the sites, but problems with bribery and/or harassment, led to the elimination of that practice. This practice should still be avoided.

Although public participation is considered, in principle, to be very important in the Costa Rican EA system, it has not been effective in practice. Seldom had the public reviewed and commented on the adequacy of EISs or other EA documentation. Even when the names of EISs being reviewed by the SETENA have been published in national newspapers and the public has been invited to comment on these, participation has been infrequent. Therefore, the SETENA needs to actively seek the public’s participation through other means. For example, the SETENA could request, after issuing copies of the EISs to their respective municipalities, that they impart their views as to the adequacy of the EIS and appropriateness and viability of the proposed action. In addition, the SETENA could request that the municipalities present the EISs to environmental and developmental NGOs, which is Costa Rica’s most popular means of public participation.
(see Section 4.1), for comment. The public would continue to have access to copies of EISs kept in the municipalities, as well as the SETENA's offices.

Finally, the public should be allowed to review the EA documents in the SETENA's library without the need of a SETENA member being present. In order to avoid the theft of pages or damage to the EISs, those who review the documents must sign in with the Information and Planning Unit, which will check if the documents are complete and not damaged, following each review. If the documents are incomplete or damaged, fines can be issued to those responsible. Another option is to microfiche EISs and EA documents and make them available at the University of Costa Rica's library system, which has microfiche machines. If the public wishes to make comments, the SETENA could establish a shift rotation system by which each of the 20 members of the SETENA attends public concerns when necessary for one or two hours per week. This would give the public a minimum of 20 hours, or a maximum of 40 hours, of the working week to impart their views. In order to address the views of those who do not live within the capital city or those who do not have the means to travel to San Jose, the SETENA must ask the municipalities and environmental and developmental NGOs to relay any concerns identified.

6.4 POST-SCRIPT

Since the time that the three coastal zone development EISs were submitted to the SETENA for review, and the secretariat purported their respective resolutions, a number of changes have taken place in the Costa Rican EA system. In November of 1997, a Manual of Technical Instruments for the Environmental Assessment Process were drafted and ratified by the Costa Rican Legislative Assembly (Costa Rica, 1997d). This technical-administrative instrument was created to support the SETENA Regulations and to outline a specific methodology for carrying out EAs and EIAs.

The manual addresses some of the weaknesses identified in the Costa Rican EA system, through this research. First, significance assessments were introduced in the preliminary environmental assessment stage to identify potentially significant impacts of the proposed development. However, criteria to determine if an impact is significant, or not, were not developed and are left to the discretion of the SETENA professionals. The
public is not consulted at this stage. The screening stage was also improved with the introduction of a much longer and comprehensive categorization system (i.e. I, II, III, and IV) to determine if proposed actions or projects will require, or not, and EIA. If a project requires an EIA, a *Form for the Elaboration of the Terms of Reference* (FETER) is filled out by the SETENA with help of the proponent to establish the ToR of the EIA. Specific and detailed EA requirements are outlined in the FETER and supporting documents. Also guidance on predicting impacts and determining their significance, quantitatively and qualitatively, is outlined in the manual. Finally, a methodology for reviewing EIS and making final decisions was developed to help the SETENA members in carrying out these activities. An extensive glossary is provided for reference.

More recently in December of 1998, the SETENA submitted a “Regulation Project” to the Legislative Assembly for review, in order to explore the possibility of rescinding the SETENA Regulations in order to introduce a new set of regulations. If implemented, the structure of the SETENA would change in principle, but the process itself would remain very similar. Only two units would exist, the Environmental Assessment Unit and Support Unit, along with a plenary commission and the General Secretary. The Environmental Assessment Unit would manage the preliminary environmental assessment, EIA and the monitoring and follow-up processes, while the Support Unit would manage the legal assessment and administrative process (Figure 6.1).

**Figure 6.1: Proposed Organizational Structure for the SETENA**

The proposed regulations were drafted following the change of government in April of 1998, and during the research period for this study, the SETENA was functioning in a transition period between the original SETENA Regulations and the proposed regulations, despite the fact that the new regulations had not been approved.
When questioned about the justification for the changes, several SETENA members were unclear of why the changes were proposed, while one member stated that it was a more conceptually sound EA model. Besides the organizational changes and changes of names of particular EA activities, differences between the two regulations cannot be identified.

6.5 FUTURE RESEARCH

The purpose of this research was to conduct a normative and strategic evaluation of the effectiveness of the Costa Rican EA system. Despite the fact that three case studies were used in this research to illustrate the effectiveness of EA practice in the country, a larger sample of case studies for various types of projects and activities, prepared by different consultants and consulting firms, would provide a stronger basis from which generalizations about the effectiveness of the Costa Rican EA system could be drawn. Therefore, the scope of this study could be expanded to evaluate the effectiveness of a larger and more varied sample of EAs. With larger sample it would also be easier to determine if the country’s EA system is truly moving towards the goals of sustainable development.

Some authors, however, believe that if an EA system is committed to the pursuit of sustainable development, then it must address the problems of development at the source. In other words EAs should be applied to policies, programs and plans (PPPs). This activity is now commonly known as Strategic Environmental Assessment (SEA) and is defined as “a process for identifying and assessing environmental consequences in the context of the formulation and implementation of new or revised policies, plans and programs (PPPs), or other non-project level initiatives that may not conform exactly with a formal definition of PPPs” (Bisset, 1996: 44). SEA application is currently restricted to developed countries and large international organizations and, therefore, its use and application in a developing context has not been analyzed. It would be interesting and of great relevance to analyze the possibility of incorporating SEA principles in the EA system of a developing country, such as Costa Rica, based on the country’s institutional arrangements, political and economic context, and current EA provisions.

Also, as was mentioned in Chapter I, the theory and practice of EA in developing countries has not been well explored, particularly in Africa and Latin America. To date,
all seven Central American countries (Belize, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica and Panama) have established some form of EA (IUCN, 1996), however, the effectiveness of EA theory and practice in this region, except for Costa Rica (Mateo, 1997), has never been assessed. As a result, the potential contributions of EA to the objectives of sustainability in Central America have not been fully explored. A comparative review of the effectiveness of current EA theory and practice in the seven Central American countries would be an excellent revelatory study that would evaluate the potential for bridging and integrating EA practice and sustainability within Central America’s economic, political, institutional, socio-cultural and environmental context.
Appendix A

List of EISs and Annexes Used in the Study
## EISs and Annexes

### Coastal Zone Project of Monte del Barco Beach

- **Documents:**
  - EIA for the Coastal Zone Project of Monte del Barco Beach
  - Annex to EIA: Coastal Zone Project of Monte del Barco Beach
  - Executive Summary: EIA for the Coastal Zone Project of Monte del Barco Beach
- **Prepared By:**
  - Oikos Consultants and Consultec
- **Location of Documents:**
  - SETENA Offices and Municipality of Liberia (File Number: 0006-97)

### Monte del Barco Tourism Project

- **Documents:**
  - EIA for Monte del Barco Tourism Project
  - Annex to EIA: Monte del Barco Tourism Project
- **Prepared By:**
  - Consultec
- **Location of Documents:**
  - SETENA Offices and Municipality of Liberia (File Number: 0063-97)

### Iguanita Beach Tourism Project

- **Documents:**
  - EIA for Iguanita Beach Tourism Project
  - Annex to EIA: Iguanita Beach Tourism Project
- **Prepared By:**
  - Consultec
- **Location of Documents:**
  - SETENA Offices and Municipality of Liberia (File Number: 0080-97)
Appendix B

General Interview Questions
Questions that were asked to all SETENA members, and the former SETENA member interviewed, are the following:

(1) What is your academic and professional background and those of the members in your unit?

(2) Have you and/or other members of your unit received any formal training on EA theory and practice?

(3) Are EAs applied to all actions that may pose a significant threat to the environment as outlined in the LOA and SETENA Regulations?

(4) Are alternative actions, sites, scheduling and project designs ever considered and presented in the EISs?

(5) How are final decisions made as to whether to accept or reject a proposed project?

(6) Are there mechanisms to ensure the objectivity of final decisions?

(7) Does the SETENA have a system to evaluate the functioning of the EA system?

(8) How does the SETENA decide which consultants and consulting firms are allowed to register with the secretariat?

(9) Do you believe that EAs have resulted in improved project designs and improved environmental quality?

(10) Do you believe EAs have altered the behaviour of developers and the public in Costa Rica?
References


EIA Centre. (1993) EIA in Developing Countries. Leaflet 15, EIA Centre, Department of Planning and Landscape, University of Manchester, Manchester.


SETENA (1997a) Resolution No. 144-97-Coastal Zone Project of Monte del Barco Beach. MINAE. March 6.


