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**USAID IMPACT ON COSTA RICA DEVELOPMENT  
DURING THE LAST 50 YEARS**

**The Role of USAID Funding on Natural Resources Management**

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## **1. Introduction**

Today it is broadly recognized that management of natural resources can be influenced by many factors. The fundamental premise underlying this perception is that both producers - who use natural resources as inputs, and consumers - who consume goods and services produced from natural resources or use natural resources directly, are responsive to incentives set forth by market forces, cultural or religious traditions, and legislation approved under ever-changing political agendas. Policies, programs or projects explicitly devised to modify prevailing resource use practices are a primary source of influence on resource management behavior and as a consequence may have a sizeable impact on long term development. Examples of these are the granting of subsidies to reforest, imposing bans on trade of timber or endangered species, watershed protection programs, purchasing of land to set aside as protected areas, technology transfer projects to improve energy efficiency use. There exist, however, many policies, programs or projects whose main goal is not to modify natural resource management, which result in substantial changes in resource utilization rates. Examples of these abound: land reform programs, import substitution and export promotion programs, agricultural production incentives, land taxes, exchange rate controls, and provisions for credit.

USAID funding to support Costa Rica development since the 1940s has been channeled mostly through projects that were not originally intended to modify natural resources management. Salient among them are road construction, control of population growth, education, health, and economic stabilization.

Because the present analysis of USAID contribution to Costa Rica development encompasses a comprehensive examination of the overall funding program, carried out on a sectoral basis by specialist in each field, the primary focus of this chapter will be on the disbursements that can be classified as directly oriented to improve resource management. The probable effects of other types of funding will be discussed in a chapter on the intersectoral linkages.

The chapter presents first an overview of the sector evolution to determine what is the natural resources base of Costa Rica and what are the main issues related to its management. Next, in Section 3, some reflections about the relationship between development and natural resources in Costa Rica and a series of policy issues are set forth. USAID program in natural resources is characterized in section 4, while making an analysis of its connection with the state of the art in sustainable development and about the driving forces that shaped the program. Finally, the assessment about the impact of USAID funding in natural resources is offered in section 5.

## **2. Sector overview**

### **2.1 Genesis and usage pattern of natural resources in Costa Rica**

The geologic history of Costa Rica has been shaped by tectonic plate movements which gave rise to various mountain ranges. This rugged terrain has been a determining factor in Costa Rica's exceptional climatic diversity and abundance of ecological life zones. Annual rainfall and temperature regimes are the first notable features in the country's physiography, ranging from 1500 mm in the driest areas to 6500 mm in the wettest areas for a nationwide average of 3300 mm, and temperatures ranging from 6 to 35 degrees, for a mean temperature of 27 degrees Centigrade. These factors, combined with a wealth of soils of volcanic origin supported the evolution of a dense tropical forest cover and one of the richest biodiversities per square kilometer in the world. As population expanded, the clearance of those forests became the driving force of an agriculture-based economy.

Steep slopes and short distances to both oceans have also resulted in numerous watersheds - one hundred in total, included in 34 groups. Rivers are the principal sources of potable water and hydroelectric power generation, but have been largely misused as the drainage system for rural and urban wastes, and in many cases as dumping sites.

Costa Rica's mineral resources include metals like gold, bauxite, copper, lead, zinc, iron, manganese, titanium, chrome, and nickel and non-metals like limestone, clay, and sulfur. None of these resources have been of significant economic importance in Costa Rica's development. Small deposits of petroleum, gas, and coal have also been detected, but the country has always relied on imports to meet local demand.

The most puzzling natural resources of Costa Rica are the marine and coastal resources. Costa Rica has ten times more marine territory than mainland; yet fisheries have traditionally constituted a tiny part of the overall economic activity, both as income generator and as a source of employment. The Pacific Coast is 1,100 km in longitude, five times longer than the Atlantic Coast; thus, the majority of catches (98%) occur on the Pacific.

The above description of Costa Rica's natural resources confirm that changes in land use over time are the key element to comprehend the sector evolution. Various analysts who have studied the process of deforestation coincide that in the forties approximately seventy per cent of the country's mainland was covered with forest (Koegh, 1983; Sader & Joyce, 1988). There still is some disagreement on how much of that forest have disappeared. Koegh and Silvander (1981) put the forest cover down to forty two percent in 1977, while Sader & Joyce estimated that for that year forest was only covering thirty two percent of the territory, and went further down to eighteen per cent in 1983. Those figures were disputed in the study published by World Resources Institute and Tropical Science Center in 1991, which estimates that for 1989 the forest cover was forty three percent (Solórzano, et al).

The true driving forces behind deforestation have been also motive of controversy. The

colonization process and commercial logging are generally accepted by academicians and policy makers as key factors. Squatting had a role during the sixties and seventies, but its importance in the eighties and nineties has been disputed by Lutz et al (1993). Expansion of pasture lands, cattle ranching and increased beef production and exports, correlates with the disappearance of forests. For many years the conventional wisdom was that the primary reason to clear forest was to establish cattle enterprises for beef production, mostly oriented to satisfy consumers demand in developed countries - the "hamburger connection." Only a handful of Costa Ricans dared to draw a question mark on this contention, which probably was true in some cases, but not to the extent portrayed by that stereotype. They counter argued that the correlation was high, but that cattle production had become the end of the deforestation chain, rather than its primary cause. No formal analysis was carried out to support this view. A more rigorous analysis to debate the hamburger connection was published by Marc Edelman (1997).

Whatever the precise figures be, and whatever the true causes were, the fact is that on any account deforestation has been rapid and performed in a very wasteful and destructive manner. Figure 1 shows a sequence of maps that have become proverbial of the dramatic changes in the use of the territory during the last five decades, and Figure 2 illustrates the correlation between forest land decline and the explosion of pasture land from the early sixties.

Titling has also posed a threat to the resource base. Conflicting claims to untitled lands present almost insurmountable problems for any systematic cadastral survey. Special titling programs are carried out for specific client groups by Instituto de Desarrollo Agrario (IDA) and Registro Nacional but no general approach has been seriously contemplated. Water concessions are granted by Servicio Nacional de Electricidad (SNE) but there appears to be little consideration given either to the watershed protection or water quality dimensions. Regulation of entitlements to use of water for waste disposal, i.e. water quality standards, have not been effectively imposed or monitored by the Ministry of Health. Overall the administration or non-administration of entitlements has led to conflicts among different agencies such as the Dirección General Forestal (DGF), IDA, the Instituto Costarricense de Electricidad (ICE), the Servicio Nacional de Riego y Avenamiento (SENARA) and the Ministry of Agriculture. These conflicts have been detrimental to sustainability and efficiency of resource use.

## **2.2 Costa Rica's present resource and environmental endowments**

Now, where is Costa Rica left at the end of the twentieth century in terms of endowment of natural resources? The extent of life zones is depicted in Table 1, with a marked prevalence of wet, moist and rain forests, which cover more than half of the area. Table 2 shows that almost 50% of the territory is under pasture, 15% is under crops, 36% is under forest and 7.5% is under other types of uses. Of the remaining forested land, two thirds are protected and one third are unprotected, and mostly concentrated in the South Pacific, Northern and Atlantic Zones - Table 3. Finally, Table 4 indicates how national parks and protected areas are distributed among different types of protection.

Despite the rapid deterioration of habitats, due to indiscriminate human intervention, Costa Rica still has a considerable biodiversity stock. It is estimated that there exist between ten thousand and twelve thousand plant species, and 1,449 species of vertebrates, of which 850 are bird species and 205 are mammals.

There is no inventory of marine fisheries. It is possible to have a gross idea of the make up of this stock. MIRENEM (1990) found that the total catch between 1970 and 1985 was composed as follows: 56% fish, 25% shrimp, 8.7% tuna, 7.4% sardine, 1.3% lobster, 0.9% green turtle and 0.7% mollusks. There are reports that catches have declined, specially of high value species. Although fisheries could become more important in the future, probably the most promising potential of marine and coastal zones is the development of ecotourism.

Instituto Costarricense de Electricidad (ICE) has reported a total hydroelectric potential of 8,500 MW, out of which only an 8.5% has been exploited. Potable water for residential and industrial use is estimated to exceed the present and future needs on an average yearly basis. There are, however, shortages, caused primarily by the high concentration of demand in the Great Metropolitan Area that accounts for almost two thirds of total consumption.

Erosion that ends in sedimentation is making more difficult and costly to generate electricity. For instance, during the storm of July 2, 1987 the Cachí dam had to cut off generation because it became flooded with mud and logs. An study of the dam site which at the time was only twenty years old, estimated an accumulated cost between US\$133 and US\$274 millions due to siltation (Leonard, J., 1987). This problem has become recurrent and the dam needs to be totally drained at least once a year to remove the build up of silt. The other major dams of the national interconnected system -Arenal/Corobicí, Rio Macho and La Garita, are also affected by erosion.

Pollution has sharply increased in recent years, jeopardizing the supply of water for human consumption. The capacity of the environment as a sink is also reaching critical levels. For instance, It is estimated that if the trend of pollution continues unabated, Rio Tárcoles, which is the main watershed in the Central Valley, would have to support by year 2025 a biological demand of oxygen equivalent to a population of 14 million people. This is not to say that the provision of potable by the water authority -Instituto Costarricense de Acueductos y Alcantarillados, has not been substantially improved, as has been reported in the chapter referring to the health sector. What it is important to recognize here is that the capability to meet the fast growing demand can be irreversibly endangered. This is a phenomenon that the population at large is starting to perceive. Based on a contingent valuation survey administered to over one thousand households from the Great Metropolitan Area of San Jose in May, 1995, Celis, et. al. found that 97% of the households interviewed were receiving potable water and 84% of them were fully satisfied with the service; nevertheless, at the same time 87% of the households declared to have seen polluted rivers in the Central Valley and out of these, 80% identified garbage, sewage water and industrial wastes as the main sources of such contamination. Yet, only half of the households are aware that part of the water they consume comes from aquifers, and 46% of these believe that the aquifers are also threatened by pollution.

Gold is the most important precious metal. A Los Alamos Laboratory survey detected new prospective areas in San Carlos, Toro Amarillo de Valverde Vega, Horquetas de Sarapiquí, Oreamuno de Cartago, and Puriscal, extending over 1,242 square kilometers. According to ALCOA in Valle de El General there are 118 million tons of bauxite reserves and some prospects have been identified in San Carlos, Guácimo, Upala, and Turrialba. Twenty prospects of copper have been detected in the Cordillera de Talamanca and La Amistad National Park. Iron and titanium ores have been found in the continental part of Punta Gorda in Guanacaste, and in beaches like Ocotol, Tivives, and Puerto Viejo de Limón. Manganese is located in Nicoya Peninsula and Chrome and Nickel in Santa Elena Peninsula. Limestone is disseminated nationwide with a potential for 13 billion tons. Sulfur has been reported in the Central and Guanacaste Cordilleras and in the forest reserve Juan Castro Blanco in San Carlos. A potential of 32.5 million tons of coal have been estimated in Zent and Uatsi in Limón Province.

### **3. Development and Natural Resources in Costa Rica**

With the only exception of the crisis at the end of the seventies and early eighties, Costa Rica's economic growth has been steady since 1950. This is depicted in Figure 3, where it can be seen that real per capita gross domestic product has increased since then regardless of the "model" that characterized each development stage. Moreover, Celis and Lizano (1995) demonstrated that a major driving force for these dynamism came and still comes from agriculture, which in turn grew due in part to the exploitation of natural conditions that favored the production of coffee and bananas. As discussed in chapter ... (*include # where Ricardo's discussion is included*), during the same period Costa Rica has also experienced noticeable advances in equity and welfare distribution and in the strengthening of democratic institutions.

Underlying this impressive performance of Costa Rica's economy was an accelerated use of the resource base. In 1991 an attempt was made to quantify the natural resource depreciation and to assess if the sustainability of development had been compromised (Solórzano, et. al.). The study revealed that natural resource depreciation during the period 1970-1989 was roughly equivalent to one year's gross domestic product and exceeded one third of gross capital formation, implying that conventional national accounts have been overstating net asset growth by ignoring the loss of productive natural assets and therefore misleading policy makers and the public about the long term sustainability of the country's development. To this regard, Solís (1994) argues that "In fact, it would be possible to suggest that the 'Costa Rican miracle' was achieved only at an extremely high environmental cost resulting from ill-conceived 'modernization' incentives ..."

Deforestation, soil erosion, chemical pollution, and other sources of environmental depreciation are not bad in themselves. As rightly postulated by Panayotou (1993), "a certain level of environmental degradation is an inevitable consequence of human activity." The basis for concern arises from the fact that some of the economic manifestations of environmental degradation that Panayotou (op. cit.), Pearce (1990, 1993) and Dixon (1995), among others, have identified as the

unmistakable signals that the foundations for long term development are wearing away, can be perceived in Costa Rica.

For instance, clearing of forests has taken place without concern for regeneration and future harvests. Forest exploitation has been driven by timber production, when several other non-timber goods and environmental services would generate a higher return. Overfishing in the Nicoya Gulf, the major fishing ground for artisanal fishermen, has decreased the productivity of stocks and has changed their composition towards lower-value species. The construction of all the hydroelectric power and water supply projects have not internalized the cost of conserving the watersheds and consequently the tariffs systems does not include charges for that purpose. Recycling of paper, glass, plastic, and metals is still incipient at best.

Fortunately, and despite the resource mismanagement record portrayed by Costa Ricans, they have not been completely insensitive to the need to protect their natural heritage. Following is a time line of some of the major decisions and knowledge gained that pointed in that direction:

- 1913** Costa Rican Government decides to protect the crater and lagoon of Poás Volcano.
- 1945** The first national park is designated, to protect natural cedar forests along the Panamerican highway.
- 1955** Irazú Volcano is declared national park.
- 1963** Cabo Blanco is declared wildlife reserve.  
The Organization for Tropical Studies (OTS), an international scientific consortium devoted to biological and agroecology research and training is founded.
- 1969** The Forest Law is approved, creating a National Parks Department and setting the legal framework to establish Wildlife Protected Areas System.  
Chirripó is declared national park.
- 1970** Cahuita is declared national park.
- 1971** Poás Volcano and Santa Rosa monument are declared national parks.  
The Natural Science Museum La Salle was inaugurated.
- 1973** The Guayabo, Negritos and Pájaros islands are declared Biological Reserve.  
Archaeological site Guayabo is declared national monument.  
Rincón de la Vieja Volcano is declared national park.
- 1974** Barra Honda is declared national park.
- 1975** Corcovado and Tortuguero are declared national parks
- 1977** Creation of Instituto Costarricense de Recursos Naturales (ICORENA).
- 1978** Hitoy-Cerere and Carara are declared biological reserves.  
Braulio Carrillo is declared national park.
- 1982** Palo Verde and La Amistad are declared national parks.
- 1985** Fundación Neotrópica is created.
- 1986** The Ministry of Natural Resources Energy and Mines (MIRENEM) is created.  
Lomas Barbudal is declared biological reserve.  
Creation of La Pacífica Ecological Center.
- 1987** First national congress on the Strategy for Conservation and Sustainable Development

(ECODES) is celebrated.

Creation of Asociación Ecológica Costarricense

The International Union for Conservation of Nature (IUCN) holds its General Assembly in San José.

**1989** Guanacaste National Park is created.

The Presidents of Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua signed the agreement that creates the Central American Commission of Environment and Development, whose goals are to improve the standard of living of Central Americans, make a rational use of natural resources, control pollution and restore the ecological equilibrium.

BOSCOSA project is started to stop the destruction of natural forests adjacent to Corcovado National Park.

**1990** Debt-swaps totalling US\$97.5 are formalized.

Arenal National Park is created.

MIRENEM published ECODES a strategy aimed at preserving the essential ecological processes, preserving the biological diversity, making a sustainable use of species and ecosystems, improving the standard of living of Costa Ricans, promoting an equitable balance between rural and urban areas, educating Costa Ricans about sustainable development, making rational use of non-renewable resources and the ecotourism potential.

Matina Reserve is created for the protection of marine and baula turtles.

The Association for Conservation of Natural Resources was created.

**1991** The CONSERVATION AREAS, a new conservation concept that engulfs protection, education, research, tourism or other controlled uses, land rehabilitation, reforestation, and agriculture with soil and water conservation, is adopted by the government.

*Satellite images reveal that approximately 21% of total legally declared forest reserves, 46% of protected areas and 77% of wildlife refuges were not under forest cover.*

Universidad Nacional inaugurates the Marine Biology Museum.

The Eco Museo de las Minas de Abangares is established.

Diriá National Forest in Guanacaste is declared.

The National Institute of Biodiversity (INBio) is created

**1992** *Erosion caused the loss of 725 million tons of fertile soil.*

*Costa Rica produces 1,500 tons of garbage per day and more than half of it is dumped on rivers, lots and roads.*

*Seventy per cent of rivers pollution originates in wastes dumped from coffee mills*

Juan Castro Blanco National Park in San Carlos was created.

Ballenas Marine National Park in Puntarenas was created.

A book on the Natural History of Costa Rica was published by the University of Costa Rica and the Organization for Tropical Studies.

The Centro Nacional de Didáctica (CENADI) produced radio programs for environmental education.

Fundación Neotrópica built the Youth Tropical Center in Osa Península  
1995 The Environmental Law is approved

Some of the above actions were undertaken following Costa Rica's own vision and using her own resources; many others were the result dialogue and commitment with bilateral and multilateral agencies. Salient among them is the relationship that over a period of five decades developed between the Peoples of Costa Rica and The United States of America.

#### **4. Main features of USAID funding in natural resources**

A few words of caution are necessary before analyzing USAID funding in natural resources. The information made available by the USAID Mission for the preparation of this assessment permits broad descriptions of the goals and areas of action, but it does not allow to build a detailed quantitative analysis by program areas. Another caveat is that for the majority of regional projects it has not been possible to determine the amounts allocated to Costa Rica. Furthermore, for some of the projects not even abstracts were available. Despite all this, an effort has been made to take a long view of USAID's programs in order to consolidate its recurrence over time and to identify their lasting effects, or the lack of them.

##### **4.1 Program area profiles**

Allocation of USAID funds to Costa Rica can be classified according to two major categories: the ones handled directly by the Mission in San José and those handled on a regional basis. Funds assigned through the Mission can be further classified as Development Assistance (DA) projects, Economic Stabilization and Recovery (ESR) projects, both in US dollars, and projects in colones or PL-480. The regional projects are handled either by the Regional Office of Central American Programs (ROCAP) or by Washington headquarters.

During the period 1948-1996, US\$51.7 millions were assigned through 25 projects administered directly by the Mission, while an unknown amount was disbursed via regional channels in 18 projects (see Table 5). The majority of all projects were classified as development assistance.

USAID funding of natural resource projects channeled through the mission experienced a sharp increase in the last fifty years, as Costa Rica passed through different development stages. As Table 6 shows, from practically zero in the period 1948-1961, in which only some isolated actions were supported by STICA to better manage the Tempisque River watershed and to strengthen community-based forest management and reforestation in the municipalities of Tres Ríos, Escazú, and Atenas, it jumped to six millions in the period 1962-1972, more than doubled that figure in the period 1973-1982 to fifteen million dollars, and doubled again for the period 1983-1995 to US\$30.5.

Funding in conservation projects is by far not only the largest, but also the most consistent over time. This is so, even though after doubling from the II period to the III, it declined 29% in the IV period, as AID is phasing out from Costa Rica. Table 9 identifies the projects that fall under this area.

The second most important area funded by AID/CR is forestry, which showed a very robust appearance in the fourth period, representing almost forty percent of total mission funding to the natural resources sector. The remaining 7.5% was assigned to education and energy that appeared as isolated efforts in the III period and projects that promote miscellaneous activities during the III and IV periods.

As reflected in Table 7, regional funding of projects that were partially implemented in Costa Rica is a modality that starts in the III period and almost triple in the IV period. Of those, projects in the energy area take more than half of total funding. Notice, however, that funding to conservation enhances the already increasing funding of the Mission, while regional sources supplement the meager funding to education and initiate, during the IV period, funding to fisheries. It is a real pity that information available does not permit to be more specific on the size of aid devoted to Costa Rica, with the exception of the areas of education and conservation, as shown in Table 8. Again, Table 9 presents a brief description of all regional projects.

#### **4.2 State of the art and driving forces behind USAID funding**

Broadly speaking, the transition observed in USAID funding to Costa Rica, from an aid program oriented exclusively to promote development to an aid program in which development and improved management of resources and the environment are considered two sides of the same coin, reflects a progressive worldwide change in the conception of development by academicians, policy makers, politicians and laymen.

This evolution in the way of thinking of international organizations, national governments, and the civil society can be traced more clearly during the last quarter of a century through a series of 'benchmarks' of global dimension:

*1972 The celebration of the Stockholm Conference on the Human Environment*

*1987 The publication of the Brundtland Commission's report, Our Common Future*

*1991 The creation of the Global Environment Facility, focusing on four specific project areas: biodiversity protection, reduction of greenhouse gas emissions, reduction of chlorofluorocarbon (CFC) emissions to protect the ozone layer (the Montreal Protocol), and controlling the pollution of international waters. The GEF is supported by countries around the world and is implemented by the World Bank, The United Nations Development Programme, and the United Nations Environment Programme.*

1992 *The World Bank's World Development Report, which concentrated on the links between development and the environment, and identified policies that could be beneficial for both environment and economic growth.*

1992 *The celebration of the Rio Earth Summit and the publication of the Agenda 21. There has been numerous post-Rio activities that seek to operationalize the concepts of sustainable development.*

Against this backdrop, it appears that the USAID projects for Costa Rica, aimed at improving resource and environment management, truly embodied the state of the art on sustainable development, even though this concept has proved very difficult to define and operationalize.

What have been the driving forces at play under this bilateral arrangement? In particular, who drove whom? Whose interests were served?

On its part, the United States enacted various agreements and the Mission took some steps on its own to accommodate its assistance agenda to the changing times. The first official steps date back to the early sixties:

"Whereas the *Act of Bogotá* recommended that there should be established an Inter-American program for social development directed to carrying out measures for improving, ... land use, ... and for the mobilization of domestic resources ... Article I: To assist the government of Costa Rica in its national development and in its efforts to achieve economic and social progress through effective use of its own resources ... " (COSTA RICA / Economic, Technical and Related Assistance / Agreement signed at San José December 22, 1961; entered into force September 7, 1962. Treaties and other international Acts Series 5155. US Government Printing Office, 1962)

That initial decision was revived in the "implementation agreement" dated December 23, 1988 between the Government of Costa Rica and de US Government, represented by USAID.

Previous to that, the Mission had put together a strategy to direct aid towards the natural resources sector. In that document, it was stated that "In the last few years USAID/CR has concentrated its efforts and financial resources on the issues of democracy, equity and economic stabilization. However if all these social and economic programs are to meet with long term success and bring enduring development to Costa Rica, development assistance also must focus on the renewable natural resources upon which most economic development in the country depends." (Natural Resource Management in Costa Rica: A Strategy for AID, mimeo. San José costa Rica, December 1987, pp 3) The strategy recommended: "**USAID support of the integration of forestry, agriculture and wildlife management in the buffer zones around one or two of the national parks of Costa Rica (pp 76) . This was favored because "the GOCR, with the help of private Costa Rican and US conservation groups has made a good beginning of protecting the wildlands and initiating management of some of them" (pp78); also because "other donors had already made successful contributions to this area, and because it fitted into the concept**

**of 'biosphere reserve' developed over several decades by UNESCO's Man and the Biosphere Program (MAB); thus the Central Cordillera and Corcovado were deemed to fulfil these conditions ... USAID support of the management of selected watersheds" (pp 77).**

Three Costa Rican documents were used to develop the strategy: "State of the Environment", "National Conservation Strategy", and "Action Plan 1986-1990 of the Ministry of Natural Resources Energy and Mines". (pp 2) It also used the "Natural Resources and Economic Development in Central America: A Regional Environmental Profile" by Leonard (1987), and cited Hartshorn Gary, et. al. Costa Rica (1983)

When the strategy was launched, AID report recognized that "In Costa Rica, numerous donors have worked for over a decade with the park service and a number of local private groups to establish the national parks/wildlands system. They have provided funds for acquisition and management of lands, training and education."

Interestingly enough, the strategy identified pollution as a major issue: "... organic matter, industrial and domestic effluents and sediments still contaminate the country's rivers -- the most serious national contamination problem. The Central Valley rivers are highly polluted with detergent effluents and contaminated river water is often used to irrigate vegetable crops in the Central Valley and to wash vegetables before sale (pp 45) ... Aquifers for the metropolitan area are being contaminated by garbage dumps, careless use of pesticides and fertilizers and lack of sewer systems (pp 45) ... Solid wastes are probably the most inadequately managed ( pp 46) ... Central Valley Urban centers have large problems with solid waste management and Costa Ricans still indiscriminately dump garbage (pp 46) ... air pollution comes principally from automotive exhausts, burning cane fields, and slash and burn agriculture. Industrial contamination of air is minor. San Jose has abnormally high levels of acid rain and high levels of particulate matter in the air." ( pp 46).

Despite this recognition, the strategy did not include any direct recommendation to abate pollution because the proponents decided to incorporate this and other environmental problems as part of a watershed management approach. They suggested to grant aid to municipalities, through IFAM, for small watersheds and to the recently formed Group for Integrated Watershed Management which included representatives from the major public institutions involved. ( pp 65-73 and annex I) in which garbage and other contaminants were but a part of the whole management of the watershed. This decision proved to be wrong because the watershed management initiative was rejected and with it the individual components were left out of the funding program.

The strategy also acknowledged that it responded to a US national directive: "Global AID policy on natural resources: AID's concern for the linkage between conservation and development is reflected in several policy and strategy documents. These include: Policy Determination 74; AID Forestry Programs and Policies, April 15, 1981; Policy Determination 6, Environmental and Natural Resource Aspects of Development Assistance, April 26, 1983, Agency Environmental Sector Strategy Paper, December 18, 1982, and the Recent LAC Regional Action Plan. In each case an emphasis is placed on institution building, training, policy reform and the transfer of information and technologies

for improved natural resource management. The present strategy was designed to closely conform to this policy and strategy guidance, and to serve as a basis for USAID/CR's action plan taking into account the conservation of tropical forests and biological diversity (see STATE 037076 and 118324). ... The various components of this strategy support the more recent AID Policy and Program Guidance on Humid Tropical Forests (see: 84 STATE 328482 and AID Action Plan on Conserving Biological diversity; Action Plan and International Environmental Protection Act of 1983, P-164 which adds Sec. 110 to the Foreign Assistance Act). Sec. 119 of the FAA specifically directs AID, in consultation with the heads of other US Government Agencies, to develop a US strategy including specific policies and programs, to protect and conserve biological diversity in developing countries. ... In a wider framework, the global concern about tropical forests is reflected in the Tropical forest Action Plan being developed by The World Bank, FAO and the World Resources Institute, and also in the Bellagio Strategy Meeting on Tropical Forests (July 1987) attended by national leaders, including Costa Rican Vice President Jorge M. Dengo, and donor agencies. Results of this meeting have been endorsed by AID Senior Assistant Administrator, Nyle C. Brady" ( pp 52).

"Current and previous USAID involvement: The only major recent involvement by USAID in natural resources is the Natural Resource Conservation Project (515-T-032, CORENA). It included components in watershed planning for the Rio Puriscal, a pilot watershed in the Rio Nosara, reforestation and range management on the Nicoya Peninsula, management of the natural forests of Sarapiquí and environmental education in the Braulio Carrillo National Park ( pp 53) ... No doubt defective design, diverse implementation sites, problems of internal management and start-up during the worst part of the economic crisis were some of the reasons for its poor performance ( pp 53) ... the Mission has two local currency funded projects of modest size administered through PL480, Title I. These include upgrading of infrastructure in the Caño Negro Wildlife Refuge in northern Alajuela Province and preservation of mangroves in Garabito Park at Esparza (pp 53) ... Based on experience in land settlement projects, the Mission has now fixed certain criteria for land purchase which take into account the potential deforestation which settlement encourages. Road construction has accelerated deforestation in newly settled areas. In the Northern Zone infrastructure Project (515-T-041), deforestation has accompanied improved access to the area. The Mission will conduct a complete environmental assessment as part of the design of the Northern Zone Consolidation Project (515-T-0235) (pp 53) ... In a joint effort with the Fundación Neotrópica, the Conservation Foundation is beginning work in the buffer zone around the Corcovado National Park. The purpose is to manage the forests and intensify agriculture in the vicinity of the park. This modest effort uses central funds designated for biodiversity, matched by a grant from the Conservation Foundation and supplemented by local currency from the Mission. ( pp 53) ... Central funding also give support to the World Wildlife Fund for biodiversity studies in Talamanca and to the Organization for Tropical Studies for environmental education. (pp 53) ... Which are the specific areas where USAID support could have the most impact? Many of the land abuse problems identified have their origin in the indiscriminate clearing of forests (problems of hydropower, water supply, flooding, loss of wildlife and wildlands, wood supply, erosion, etc.). consequently the proper management of the forest cover is one of the actions requiring the highest priority (pp 54) ... USAID/Costa Rica should embark on a strategy of assisting both the management of commercial forest as well as wildlands (pp 54) ... The

time is appropriate for action because of increasing public concern about the consequences of deforestation. The new forest law of 1986 and the forest emergency decree of September 1987 are concrete examples of this concern. the decree places serious restrictions on logging and land clearing, but at the same time gives incentives for industries to assure their own sustainable wood supplies through plantations and natural forest management (pp 54) ... A second related broad area of suggested USAID support is the improvement of land use in the country's major watersheds"

Furthermore, simultaneously with the USAID strategy of 1987, Costa Rica had two ongoing efforts:

- 1- the study on "the state of the Environment" being carried out by Fundación Neotrópica" with support from the Conservation Foundation. Preliminary results were used to support USAID strategy.
- 2- The "National Conservation Strategy" being prepared under the direction of the Ministry of Natural Resources Energy and Mines. USAID could not use this effort because of the very preliminary stage and because the Ministry was expecting to get the Neotropica's study to support its own.

In February of 1990 USAID/CR prepared the "Strategy for the Conservation of Natural Areas", which set the basis of a dialogue with Government of Costa Rica on how the Mission could assist Costa Rica in designing and implementing a long-term strategy for managing the wildlands through a National System of Conservation Areas (SINAC).

In addition, the bilateral cooperation extended beyond USAID/GOCR agreements. One case in point is the review prepared by Anne Hambleton (1994), in which she described thirty two U.S. Government programs - with sixteen within AID, supporting one hundred and fourteen biodiversity research and conservation activities. Other agencies, like the National Science Foundation (NSF), USDA Forest Service, U.S. Fish and Wildlife Service, Environmental Protection Agency (EPA), and National Cancer Institute have collaborated with Costa Rican institutions like the Organization for Tropical Studies, National Biodiversity Institute, Tropical Science Center, Fundación Neotrópica, The National Museum, the University of Costa Rica, and National University among others.

In conclusion, what transpires from this glance at the decision making process in granting and accepting concessional support for management of natural resources, is that what occurred was a conjunction of awareness and operationalization of new concepts of development in both the United States and Costa Rica, and there is little doubt that the interests of both countries were served.

## **5. Impact of USAID funding in natural resources**

A complete impact analysis of development aid seeks to determine the lasting effects of actions supported by the aid program, even if they were not part of the original objectives set by

project designers and pursued by project implementers. An exercise of this kind requires, at the very least, that the analyst not only have a clear picture of each aid program and its components, but also have a good understanding of the political and institutional setting as well as the relative size of the agency's disbursements as compared to local contributions and those of other development agencies. Ideally, one should also have access to information that allows an assessment of each program according to its *effectiveness and efficiency*, i.e. its success in attaining the proposed goals at the lowest possible cost, its *sustainability and replicability*, i.e. its success to put in place the conditions that assure the long term goals. In the present review lack of information precludes the incorporation many key elements; therefore ***the following reflections on USAID impact on development of the natural resources sector of Costa Rica are far from being a complete performance assessment.*** Even with this limitations, still some considerations are possible and hopefully some insights can be advanced to improve future USAID's involvement in similar endeavors.

## 5.1 Education

The two projects on education managed by the mission went to support one NGO, the Asociación Costarricense para la Conservación de la Naturaleza (ASCONA). The first project helped to launch an educational campaign through press, radio, and television stations. It also promoted seminars, conferences, round tables, lectures, and competitions in environmental protection and natural resource subjects, both at national and local levels. It also supported the establishment of a research mechanism whereby environmental needs were identified and then met by in-house volunteers' expertise or consultants hired with project funds. Emphasis was put on legal aspects and environmental planning. It was expected that ASCONA would set up both a long range planning process and a self-sustained fund raising mechanism. The second project assisted ASCONA to branch out by creating chapters in secondary cities around the country with the goal to initiate permanent environmental programs in local schools and to invigorate the dialogue with municipalities and stakeholders.

ASCONA, rapidly fell in disarray due to internal conflicts. Kristin A. Goss (1995), who prepared a critical analysis of this project asseverates that "many people who were closely involved with ASCONA in the early days believe that the sudden influx of AID funds set the stage for the group's demise. They argue, in essence, that ASCONA grew too big too fast."

To conclude that AID failed in this endeavor would not be fair, since many of ASCONA's members continue to be very active in the environmental arena and the activism displayed during the peak months of the group reached many people who until today actively participate and take positions in the broad spectrum of the environmental movement. Perhaps the failure of the mission was not to be able to perceive the local culture of this type of organizations, always prone to power struggles. Instead of giving all its support to one single group and to pretend that this group would grow from San José to all the rural areas and become an organization similar to the US Audubon or Sierra Club, USAID funds could have been channeled to various smaller and even diverging groups, to strengthen the platform for a more pluralistic debate.

Goss (1995) also offers some lessons learned out of the ASCONA episode: "First, if these groups [small NGOs] are given a lot of money very quickly, they may not be able to manage their growth effectively, and they also are likely to catch the eye of opportunists. There is a danger in trying to change the fundamental nature of a voluntary group overnight ... The ASCONA episode also suggests that, contrary to conventional wisdom, it is not necessarily unwise for a donor agency to throw its weight around at critical junctures, even as it respects an organization's independence at other times. ASCONA demonstrated that close monitoring of a recipient's financial expenditures may be of little help if the organization is being torn apart by internal warfare. In ASCONA's case, much of the problem centered on the fact the organization was constitutionally vulnerable to hostile takeovers because the bylaws did not provide for multi-year, staggered terms for board members".

AID's impact through education is discussed by the analysts who are assessing the education sector. However, It is very important to point out here that scholarships awarded for Costa Ricans to pursue graduate studies were always one major source of human capital formation in the country. For instance, loans AID-515-W-030/V-031 supported graduated studies in the areas of natural resources and energy. In a similar fashion, the support given to the graduate program of the Tropical Agronomic Center for Research and Training (CATIE) through USAID regional projects, has provided Costa Rican students with an opportunity to obtain Master's degrees in Agroforestry, Forest Management, Wildlands Management, and Watershed Management<sup>1</sup>. More recently, and with far reaching prospects, the support to create the School of Agriculture of the Tropical Humid Region (EARTH) is allowing the graduation Costa Rican students that will strengthen the entrepreneurial levels of resource management.

Last, but not least, the Central American Peace Scholarship (CAPS I & II) sponsored sixteen Costa Rican students who pursued higher degrees in biology, agriculture or natural resource management (Hambleton, 1994)

What would have happened if USAID's support had not been given? ASCONA still exists but playing a very low-key role, and carrying the stigma of the internal struggle. CATIE's programs would have not been what they were and consequently, Costa Ricans would have not benefitted as they did. Germany, Switzerland, the Nordic countries, Canada and Japan have also given support to CATIE, but until very recently USAID funding constituted the vital ingredient in the institution's research and training endeavors. For the scholarship programs, it is very likely that if USAID funding did not exist, other sources would have filled the gap. The research programs in the tropics have been regarded very important by many US universities, USDA, the Defense Department, the Smithsonian, the Environmental Protection Agency, NSF and numerous private foundations, that the opportunities for a bilateral interchange would have been exploited anyway. The inventory of such type of programs in the biodiversity field are a good example of what has been and will continue to be one of the most dynamic areas of collaboration (Hambleton, 1994). This is not to say that USAID funding was redundant in this area, since the need for education and professional interchange are immense and ever expanding.

## 5.2 Conservation and forestry

These two areas represent over ninety per cent of USAID/CR program funding to support natural resources management. They need to be examined together because they overlap in many cases and because complementary funding, from PL480 and ESR, reinforced both of them.

The first major attempt to influence the overall management of natural resources took form in the Natural Resource Conservation (CORENA) project, initiated in 1981. "... (It) emerged out of the concern of the GOOCR and the USAID Mission to fully utilize the renewable resources without further degradation of the resource base. To this end, a strategy was outlined to strengthen the capabilities of the GOOCR to develop through an integrated, pragmatic approach, a long-term plan that should leave the GOOCR in a position to cope with the deterioration of the natural resource base and be able to move forward with a strong nationwide program for its utilization, conservation and management in the mid 1980's. The project was designed to operate through five major components: Policy Analysis, Research and Coordination, Experimental Projects, Preparation of Management Plans, Environmental and Conservation Education, and Training and Technical Assistance." (Servicios Técnicos del Caribe, 1983). Being the largest and most comprehensive effort, it aimed at examining the effects of various legal, political, financial and socioeconomic policies on natural resources conservation and management, and at emphasizing silvicultural research. It included a pilot micro-watershed management in Upper Nosara, Guanacaste, conservation and fruit tree extension, reforestation and cattle management improvement, testing a reforestation subsidy scheme in combination with a supervised credit program for pasture and cattle improvement, preparation of five resource management plans, environmental and conservation education in the Braulio Carrillo National Park, as well as building recreation areas, natural trails, and a visitors center.

CORENA was a US\$21 million project, including counterpart monetary and in-kind contributions. It was multidimensional, going from the national to the park and farm levels in a variety of ecosystems. It was multisubject, covering the whole range of legal, social, economic, political, agronomic, and silvicultural aspects. As a large and complex project it hit against all the walls raised by the bureaucratic establishment, from delays in congress (18 months), to constraints for hiring of personnel, to complicated government of Costa Rica administrative and financial procedures, to lack of technical assistance, to lack of specific knowledge about tree species, to lack of coordination that resulted in decisions of third party institutions that undermined some of the key commitments to grant subsidies to farmers and to build a power plant in one of the communities. An evaluation report of May 10, 1984, one year before the end of the project, showed that only 25% of allotted funds had been expended. Nevertheless, according to two of the staff members, some good things were left, like training of personnel and the creation of a grassroots organization in Guanacaste, the Asociación Guanacasteca para el Desarrollo Forestal. Also, as Church, et. al. (1994a) point out " While the Natural Resources Conservation Project did not meet all of its objectives, its accomplishments in forestry training and a policy reform have built a foundation for subsequent initiatives."

The negative experience with CORENA delayed for several years the solution to the resource management problems of Costa Rica and left a sense of frustration and mistrust on the participating

institutions and the capability of the Government to carry out such an ambitious kind of project. This was fully acknowledged in the preparation of the strategy for AID in natural resource management in Costa Rica. First when a proposal for more focused projects was put forward - BOSCOA and FORESTA, and second when the watershed management component was not funded, most likely because it resembled the subject and institutional complexities of CORENA.

BOSCOA was conceived in 1987 by World Wildlife Fund and Fundación Neotropica to reduce pressures and stabilize land-use around the Corcovado National Park. The final evaluation report, prepared by Cabarle, et. al. (1992) found that "*... the most significant impacts of BOSCOA's work are in the areas of social and ecological sustainability. Not significant impact was noted by the team in economic or political sustainability; due, in part to the project's short life span and its emphasis on developing the capacity of local organizations ... Social sustainability has promoted positive changes in attitude towards forest conservation and sustainable management of forest resources, as witnessed by the 6,500 ha under improved land-use. BOSCOA has been the primary force behind the organizational development of the Osa communities, resulting in the creation of eight grassroots organizations since the project's inception ... BOSCOA has been effective in leveraging financial assistance from a variety of national and international sources; almost US\$1 million has been channeled to 11 grassroots organizations ... Ecologically, BOSCOA has stabilized land-use around the Corcovado National Park and lowered the risk of forest being cleared for agricultural use. This is true for both publicly-owned and privately-owned forests. Agricultural land-use has improved, with some 290 ha of degraded pasture lands being reforested and close to 160 ha having been switched from annual to perennial crop production by farmers belonging to grassroots organizations that receive technical assistance from BOSCOA ... There has been little change in the policies, economic incentives or land tenure laws which fuel deforestation on the Osa Peninsula. However, BOSCOA has catalyzed increased institutional cooperation, serving as a liaison among the various governmental bodies with responsibility on the Osa. An effective coalition of groups and interests working towards a common goal has been established, and will hopefully lay the foundation for the larger economic policy changes needed in the future if the forest is to survive ...*"

BOSCOA appears to have been successful in creating awareness in the community about the environmental problems and increase their confidence in the possibility of carrying out activities that are economically viable, without having to rely on a predation of natural forests. Because the project was trying to be too ambitious by trying to cover too large an area and faced some land tenure problems, its achievements in the forestry management area have been considered by many as practically nil. Although some farmers are continuing the agricultural practices on their own, no strong institutional foundation has been laid out.

The most ambitious initiative in USAID's revised development assistance strategy in Costa Rica is the \$7.5 million Fores Resources for a Stable Environment (FORESTA) project (1990-96). This project was designed as a regional effort to support ecologically sound long-term economic development of the parks and buffer zone areas in Costa Rica's Central Volcanic Cordillera region. Using funds released from debt forgiveness by USAID, the Costa Rican government is contributing

an additional \$10 million in local currency to capitalize an endowment that will provide ongoing financial support to the Foundation for Development of the Cordillera (FUNDECOR), created to carry out FORESTA activities.

FORESTA has four major components: 1) general operations, under which FUNDECOR among other things, develops overall plans and guidelines for the Central Volcanic Cordillera and strengthens the administrative organization to carry out these plans, manages and monitors all FORESTA project components and secures other sources of donor support 2) management of protected areas whereby it helps to develop park management plans and assist the Ministry of Environment and energy to establish regulations for directing all income earned from park visitors 3) natural forest management, to develop sustainable logging of natural forests and to simplify procedures for preparation and approval of natural forest management plans 4) "trees on farms" component, to restore degraded forest and agricultural lands.

In assessing FORESTA's impact, Church, et. al. (1994b) concluded that the main achievement was that " Participating land-owners and loggers in the Conservation Area of the Central Volcanic Cordillera (ACCVC) are now using practices that both reduce damage from selective harvesting in natural forests and raise the profits from logging operations." It also draws some lessons for project replicability: " USAID must be prepared to provide long term project assistance when attempting to establish and strengthen new NGOs with broad responsibilities for cooperating with government agencies, research and educational institutions, other NGOs and community groups to conserve forest resources" This observation was prompted by the fact that although very successful in the forest management component, it fell short in other components such as agroforestry, environmental education, community participation, research and monitoring, and staff training. All these activities are deemed vital for long term sustainability of conservation programs.

It also asserts that " In projects based on the introduction of new technologies USAID project design should analyze the need for continuing research support and, if appropriate, provide for such support" It is necessary to indicate that FORESTA included an arrangement with CATIE to provide technical assistance for agroforestry and forest management, two areas in which research is still on process and not precisely for the same biophysical and socioeconomic conditions of the ACCVC. A project officer also noted that when the agroforestry component was included, there was an oversight of the fact that these technologies require more labor, a factor that is scarce in the region due to high demand from banana plantations, citric plantations and ornamental plants farms. This deterred the acceptance by farmers.

In regards to protecting biological diversity, Church, et. al. (1994a), referring to FORESTA, contend that "land tenure policy must be clear and unambiguous if it is not to obstruct progress in protected area land consolidation ... without direction and regulation, nature tourism can result in superficial economic benefits and degradation of the very natural resources on which it is based ... monitoring habitat change and its relationship to protected areas use and management might best be undertaken entirely apart from the agencies, public and private, responsible for park operations."

The project is very recent to make a solid judgement about its lasting effects. The signs are good, though. FORESTA appears to be a candidate for a very successful enterprise. It has almost 14,000 of natural forest under management, and charges for the assistance services, it has been instrumental in consolidating the national parks in the Central Volcanic Cordillera, specially Braulio Carrillo National Park, it is active in the education of teachers, children and farmers, but lack a more systematic program for training of technicians and other community members, and is falling short in the reforestation of the buffer zone, although this may be overcome with the operation of the Joint Implementation agreement for carbon fixation, something that was not originally included in the project.

The third major project, "Regulation for Forest Management" (REFORMA), while also intended to promote sustainable forest management, took a policy-oriented approach by helping to create appropriate forestry regulations and strengthening government capacity to enforce these regulations, and enlisting public support for regulation.

The Northern Zone Consolidation project includes approximately \$1,245,000 for the following environmental activities: 1) an environmental education program which include curricula, courses and libraries for schools, environmental publications, and billboards and the development of a botanical garden 2) reforestation, and 3) technical assistance for solid waste management, mitigation measures for road building, pest management, land use and water quality work, and environmental impact studies.

The Native tree reforestation project seeks the long term sustainability and development of forest resources by developing the capability to plant native trees in the Térraba river valley. The project stimulate reforestation with native tree species by: 1) evaluating the usefulness of native and exotic species on a wide range of growing sites, 2) stimulating improved nursery management in the region's tree nurseries, and 3) evaluating the effects of native tree species on watersheds and degraded soils.

Now, turning to the complementary funding allocated through regional channels, it is important to notice that this type of aid encompassed the support to actions oriented to preserve biodiversity through establishment of management and research units - "Environmental Management Systems" and "Parks in Peril" projects.

Costa Rica is well known worldwide for its commitment to save whatever is left of its natural heritage. Indeed, since the administration of President Daniel Oduber, all administrations from both parties have supported the creation and consolidation of the National Parks System, and have evolved into a concept of megaparks that is expected to protect animals and plants, water and soils, for the betterment of humans in a more sustainable fashion. Undoubtedly, USAID has been instrumental in supporting conservation efforts. Salient among the successful components of aid are those devoted to training of personnel, specially at the graduate level.

USAID role in the consolidation of national parks will be felt for many years to come. In

particular, the drastic change of channeling funds via NGO's, like Fundación Neotropica and OTS, or more forcibly, by creating the NGO, like FUNDECOR, rather than awarding funds to government agencies. If AID had not existed, the latter probably would have not been created, because no other bilateral or multilateral agency would have embarked in an enterprise of such dimension, and because it would have been virtually impossible that the government of Costa Rica had allocated the funds for the FUNDECOR endowment from the ordinary budget. The case of BOSCOA is a bit different, because the other agencies like DANIDA, SIDA, and WWF would have converged and develop the project, perhaps at a smaller scale. Funding by USAID certainly helped to attract attention and secure commitment.

The modality of endowments to secure continuity of development or conservation activities is something that merits a closer look. The endowment not only develops a continuous stream of income, but forces the contribution of local government and creates a sense of belonging that does not occur in projects that come and go. This is true for well established institutions like CATIE or for the creation of new institutions like EARTH and FUNDECOR.

### **5.3 Energy**

To test and provide new energy-efficient wood fuels utilizing technologies appropriate for use in rural homes, communities, and industries, to develop alternate species and alternate patterns of production of fast-growing trees and shrubs, and to improve industrial energy efficiency and to reduce industrial consumption of imported petroleum by introducing energy audits, conservation measures, and energy-efficient machinery -"Fuelwood and Alternative Energy Sources" and "Regional Industrial Energy Efficiency" projects. To develop bioresource technologies adapted to less developed countries (LDC) needs and resources and to assist Bureaus, Missions and LDCs in developing bioresource programs and projects -"Bioenergy Systems and Technology" project. To increase the technical and institutional capability of selected LDCs to identify and develop indigenous conventional energy (CE) resources and to promote the development of more efficient energy policies in developing countries-"Tech-Assist in Conventional Energy" and "Energy Policy Development and Conservation" projects.

In commenting on the latter project a USAID officer noted that one of the major obstacles, and eventually a major achievements, was to convince sugar cane farmers and millers that they had to produce not only sugar but also energy.

### **5.4 Fisheries**

To support activities to improve analytical and sampling methods for determining the size, mortality rates, and growth rates of natural tropical fish populations -"Fisheries Stock Assessment" project.

## 5.5 Various

The "Remote Sensing Pilot Project" is the only one with abstract information, of the two that fall in the "various" category. This project was implemented by the National Geographic Institute (IGN) with U.S. contractor assistance. Technicians from IGN were trained in the interpretation, manual and computer-assisted, of LANDSAT imagery using images taken on a pilot area extending from Puntarenas to Puerto Limón. The end expected result was to produce maps that would help to improve management of natural resources.

Finally, in the "various" category, the "Regional Environmental and Natural Resources Management Project" is, without question, the most ambitious project designed by ROCAP as the regional response to the strategy for AID assistance to environmental and natural resource management in Central America. It involves more than 20 implementors performing over 20 multi-activity programs in eight countries. The project recognized the need for implementors and management alike to learn from doing. It also admitted the need to explore alternatives to traditional USAID project design paradigms, and a corresponding need for "paying as much attention to process as to product." Consequently, it provided less specific guidance than usual and more opportunity for innovation by the implementors, which included a heavy involvement of U.S. private and voluntary organizations (USPVOs) in Central America environmental and natural resource programs.

## 6. Conclusions

Costa Rica, as many other countries of market oriented or controlled economies, of America, Africa, Asia, or Europe, of Islamic, Catholic, Protestant or Buddhist religion, of western or eastern cultural tradition, poor or rich, has also experienced environmental degradation.

In fact, when compared to other neighboring or distant countries, Costa Rica's economy has displayed a better performance, coupled with better distribution of wealth and a stable political system. Furthermore, Costa Rica has gained a well deserved international reputation for her abolition of the army and her conservationist drive. Yet, at the same time, decade after decade through varying development strategies, Costa Rica managed, under pressure from lobbying groups, or based on ill conceived economic and social goals, or unintendedly in many instances, to build market and policy distortions that have resulted in an unchecked decline in the quality of soil and water, reduction of forest and marine stocks and loss of biological diversity.

Costa Ricans demonstrated an incipient recognition that preservation of nature for future generations could not be left to the working of distorted markets, when at the dawn of this century they decided to preserve the Poás Volcano. In the following decades, and until de mid nineties the bilateral relationship with the United States of America saw this recognition gain steam, initially during the World War two via STICA -with simple but practical methods of soil conservation and social reforestation, and later through the Agency for International Development, culminating with

the ambitious BOSCOSA and FORESTA projects.

The legacy of this bilateral cooperation is of utmost importance in the field of education where both countries joined efforts to enhance the quantity and quality of the human resource base. The result has been more conscious citizens in both countries and better knowledge about management and preservation of tropical resources. Equally important has been the experience gained in fostering institutional change in the broader sense conceived by North (1993); that is, the bilateral cooperation helped not only to reform and strengthen the government National Park System, to disseminate valuable forest management technologies, to promote legal changes like the Environmental Law, to open new opportunities for existing NGOs, like Fundación Neotropica, Tropical Science Center, and the Organization for Tropical Studies, and to create new ones like EARTH and FUNDECOR, but also endured the necessary and sometimes lengthy and costly process of trial and error in searching for the best cooperation strategy and the best structure of incentives for management of natural resources.

The closing down of USAID program in Costa Rica leaves a vacuum in the midst of an unfinished environmental agenda. For instance, despite the gradual elimination of protectionism in industry and agriculture, to bring domestic prices more in tune with international ones, cost of abatement of environmental degradation is far from being internalized in consumer prices. Electricity and water tariffs still do not include the cost of restoration and preservation of rivers and aquifers, and the sustainable management of forests on which they depend. The value of damages from downstream pollution caused by farmers and industries is unaccounted for; thus, despite old and new laws and regulations, polluters are not effectively deterred. Garbage collection, treatment and disposal are unresolved tasks. Dissemination among households of existing technologies for recycling has become just the rhetoric of political speeches and good wishes of action plans; more distant seems to be the necessary transformations in the price system that make recycling a profitable undertaking.

The primary responsibility to fill this vacuum lies on us, Costa Ricans; and there is no doubt that we are more willing and better equipped to undertake that responsibility today than we were fifty years ago. Last year the government passed the environmental law and also passed a law that transfers the collection and administration of land taxes to municipalities. As Strasma and Celis (1992) suggested, this was a badly needed reform since the tax proceedings could eventually empower local communities to resolve economic, social and environmental needs.

For the people and government of the USA, and specially to all USAID officers that make the bilateral collaboration in natural resources a worthy enterprise, the 'graduation' of Costa Rica from their development aid program must be a motive of satisfaction. We Costa Ricans, are also proud of it. Our hope is that new and innovative alliances will follow this successful partnership, since one lesson we learned well in this fifty years is that the management of the continental resources is a joint responsibility. A case in point is migratory birds. We have learned to see them not only as a North American patrimony that flies every winter in search of warmer lands, we see them also more like our patrimony that flies to the North to reproduce. Their protection is an obligation of all citizens of this continent.

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**Figure 1: Costa Rica: changes in forest cover**

[INSERT MAP]

Source: Oficina de Planificación Sectorial Agrícola (OPSA) and Dirección General Forestal. Copied from *Desarrollo Socioeconómico y el Ambiente Natural de Costa Rica, Situación Actual y Perspectivas*, eds. Alonso Ramírez Solera and Tirso Maldonado Ulloa. 1988. Fundación Neotrópica. San José.

**Figure 2: Costa Rica: national land use for the years 1950-1990**

[INSERT GRAPH]

Source: Tosi O., Joseph. ...???

**Figure 3: Costa Rica: Real Per Capita GDP 1950-1994**

[INSERT FIGURE 3]

Source: Dennis Meléndez-Howell. 1994. The Costa Rican Economy. The Leadership for Environment and Development Program. LEAD International Inc. and ProDesarrollo Internacional. San Jose, Costa Rica

**Table 1: Extent of life zones in Costa Rica  
- in thousand hectares -**

<b>Life Zone</b>	<b>Area</b>	<b>Share</b>
1- Tropical dry forest	526.3	10.3
2- Tropical moist forest	1236.6	24.2
3- Tropical wet forest	1154.9	22.6
4- Tropical premountainous moist forest	240.2	4.7
5- Tropical premountainous wet forest	695.0	13.6
6- Tropical premountainous rain forest	500.8	9.8
7- Tropical lower mountainous moist forest	10.2	0.2
8- Tropical lower mountainous wet forest	76.7	1.5
9- Tropical lower mountainous rain forest	378.1	7.4
10- Tropical mountainous wet forest	5.1	0.1
11- Tropical mountainous rain forest	275.9	5.4
12- Tropical subalpine rain paramo	10.2	0.2
<b>Total</b>	<b>5,110.0</b>	<b>100.0</b>

Source: Holdridge, Leslie R. 1971. Forest environment in tropical life zones: a pilot study in Costa Rica.

**Table 2: Costa Rica: land use categories  
- in thousand hectares -**

<b>Land use category</b>	<b>Area</b>	<b>Share</b>
Annual crops	386	9.5
Perennial crops	236	5.8
Pasture	1,652	40.8
Forest	1,476	36.4
Other land	306	7.5

Source: Land devoted to crops, pasture and other were taken from the Agricultural Census of 1984. Forest Land was taken from Dirección General Forestal

**Table 3: Distribution of Forested Lands  
- in thousand hectares -**

<b>Region</b>	<b>Protected</b>	<b>Unprotected</b>	<b>Total</b>	<b>Share</b>
Dry Pacific Zone	41.4	40.9	82.3	5.6
East Central Valley	159.3	35.2	194.5	13.2
Central Valley	5.1	3.3	8.4	0.6
West Central Valley	40.0	31.0	71.0	4.8
Central Pacific	4.1	6.7	10.8	0.7
South Pacific	267.3	133.4	400.7	27.2
Northern Zone	70.1	148.6	218.7	14.8
Atlantic Zone	385.4	104.2	489.6	33.1
<b>Total</b>	<b>972.7</b>	<b>503.3</b>	<b>1,476</b>	100.00

Source: Dirección General Forestal (DGF). 1990. Statistics Bulletin.

**Table 4: National parks and other protected areas in Costa Rica  
- in thousand hectares -**

<b>Existing protected areas</b>	<b>Number</b>	<b>Area</b>	<b>Share %</b>
1- National parks	18	468.5	31.9
2- Biological reserves	6	16.6	1.1
3- Restricted natural reserves	1	1.2	0.1
4- National monuments	1	0.2	0.01
5- Wildlife refuges	8	107.7	7.3
6- Forest reserves	9	312.5	21.3
7- Protected zones	29	178.2	12.1
8- Indigenous reserves	21	303.3	20.7
9- Biosphere reserves	2	?	?
10- Recreation sites	2	?	?
11- Sites of world patrimony	1	?	?
<b>Total</b>	<b>93</b>	<b>1468.2</b>	<b>100.0</b>

Source: Calderón, Pablo and Umaña, Alvaro. 1994. Natural Resources. The Leadership for Environment and Development Program. Mimeo. LEAD International Inc. New York.

**Table 5: USAID funding in natural resources during 1948-1996  
- in thousand US constant dollars of 1987 -**

Type of project	Number	Amount	% Share
<b>Costa Rica Mission</b>			
Development Assistance	13	34,218	66.2
Economic Stabilization and Rec.	5	12,477	24.1
PL-480	7	5,028	9.7
<b>Subtotal</b>	<b>25</b>	<b>51,723</b>	<b>100.0</b>
<b>Regional</b>			
Development Assistance	19	a/	
<b>Total</b>	<b>44</b>		

Source: USAID/CR and MIDEPLAN archives

a/ The disbursements for Costa Rica could be identified only in seven of the projects. All the nineteen projects totaled US\$227.8 million.

**Table 6: USAID/CR funding in natural resources during 1948-1996  
by development period and area of support  
- in thousand US constant dollars of 1987 -**

Area	Period	I 1948-1961	II 1962-1972	III 1973-1981	IV 1982-1995	Total		
						US\$	%	Number
Education		0	0	995	0	995	1.9	2
Conservation		0	6,102	12,421	8,771	27,294	52.8	13
Forestry		0 <sup>a</sup>	0	0	20,554	20,554	39.7	7
Watershed management		0	0	0	0	0	0	0
Energy		0	0	1,267	0	1,267	2.5	1
Fisheries		0	0	0	0	0	0	0
Various		0	0	415	1,198	1,613	3.1	2
<b>Total</b>		0	6,102	15,098	30,523	51,723	100	25
Share (%)		0	11.8	29.2	59.0			

Source: USAID/CR and MIDEPLAN archives

<sup>a</sup> STICA supported a few actions in watershed management and reforestation

**Table 7: USAID/REGIONAL funding in natural resources during 1948-1996  
by development period and area of support  
- in thousand US constant dollars of 1987 -**

Area	Period	I 1948-1961	II 1962-1972	III 1973-1981	IV 1982-1995	Total		
						US\$	%	Number
Education		0	0	0	25,826	25,826	11.3	2
Conservation		0	0	3,169	24,537	27,706	12.2	6
Forestry		0	0	0	0	0	0	0
Watershed management		0	0	0	5,734	5,734	2.5	1
Energy		0	0	55,439	67,780	123,219	54.1	7
Fisheries		0	0	0	5,932	5,932	2.6	1
Various		0	0	0	39,366	39,366	17.3	2
<b>Total</b>		0	0	58,608	169,175	227,783	100.0	19
Share (%)		0	0	25.7	74.3			

Source: USAID/CR archives