

**COUNTRY PROFILE
ON
ENVIRONMENT**

COSTA RICA

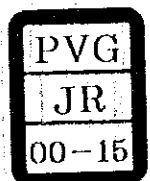
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JAPAN INTERNATIONAL COOPERATION AGENCY



1997年12月15日

USERS GUIDE: Contents of the Report

This report consisted of the following Chapters on environmental information of the country.

1. Keywords of the Environment

Various features and principal environmental issues and their related matters of the country are schematized within 1 page to easily understand the country's natural and social environmental issues on the whole.

2. Fact Sheet

Principal indices and natural and social environmental characteristics of the country such as economy, demographic statistics, socio-economic conditions, various important resources available in the country are described.

3. Institutional Context

3.1 Environmental Agency

Matrix table on governmental agencies related to the environmental issues in the Chapter 4 is described to grasp the role of the agencies easily. Responsibilities and organizational structure of the principal responsible agency for the environment, and responsibilities of related agencies are explained. Main activities of the various environmental non-governmental organizations are described in the table.

3.2 National Environmental Policy

Environmental policy of the country such as national environmental action plan is explained.

3.3 Environmental Laws and Regulations

Environmental laws and regulations of the country including their status of applications are described.

4. State of the Environment

In this Chapter, status of the various environmental issues as follows are covered with information on related agencies, related standards, laws and regulations, examples of the issue are explained. In the section 4.3, other kind of considerable environmental issues in the country are described based on the report which local consultant prepared.

4.1 Air Pollution	4.7 Waste Water Management
4.2 Water Pollution	4.8 Forest Conservation/Desertification
4.3 Other Pollution	4.9 Biodiversity
4.4 Waste Management	4.10 Natural Resource Management
4.5 Energy Conservation and Alternative Energy	4.11 Natural Disaster
4.6 Water Supply	4.12 Environmental Education

5. International Relationship

Status of the implementation of the economic and technical assistance projects in the country are outlined. International conventions and agreements on environment which the country agreed and ratified are listed up in section 5.1, and environmental projects which are funded and/or implemented in the country by donor countries and international organization in the section 5.2. In addition, location map of the project funded and implemented by using the Official Development Assistance (ODA) of Japanese government are showed.

6. Sources of Information

Governmental environmental agencies related institutions and NGOs are listed with the some information such as contact address and e-mail address.

7. References

References used in the report are listed.



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1. KEYWORDS OF THE ENVIRONMENT

1.1 Features of the Country

	Related pages
<p>① Gross Domestic Production(GDP) US\$2,317 per capita (Japan : US\$33,857, China : US\$361) Total : US\$7.6 billion</p>	=> 2. Fact Sheet p. 3
<p>② Extraordinary Ecological Diversity 5% of all the globe species in the country Total population: 35 million, Urban population: 26 million</p>	=> 2. Fact Sheet p. 3 => 4.9 Biodiversity p. 18
<p>③ High Rank of HDI* World rank: 33rd (32nd: Korea, 34th: Argentina in 1994) (Causes: high life expectancy, medium level per capita income, etc.) *HDI: United Nations "Human Development Index"</p>	=> 2. Fact Sheet p. 3
<p>④ Tourism About 800 thousand visitors per year (Impact: abundance of the ecological diversity=> ②)</p>	=> 2. Fact Sheet p. 3 => 4.9 Biodiversity p. 19

1.2 Keyword of Environmental Issues

	Related page
<p>① Destruction of natural habitats</p> <ul style="list-style-type: none"> · Deforestation => · Many tourists & lack of protection => 	<p>4.8 Forest conservation p. 16 4.9 Biodiversity p. 18</p>
<p>② Natural hazards</p> <ul style="list-style-type: none"> · Flood, landslide, earthquake, volcanic eruption 	=> 4.11 Natural Disaster p. 20
<p>③ Institutional weakness</p> <ul style="list-style-type: none"> · Weakness of governmental agencies and laws 	=> 3. Institutional Context p. 4

Republic of Costa Rica

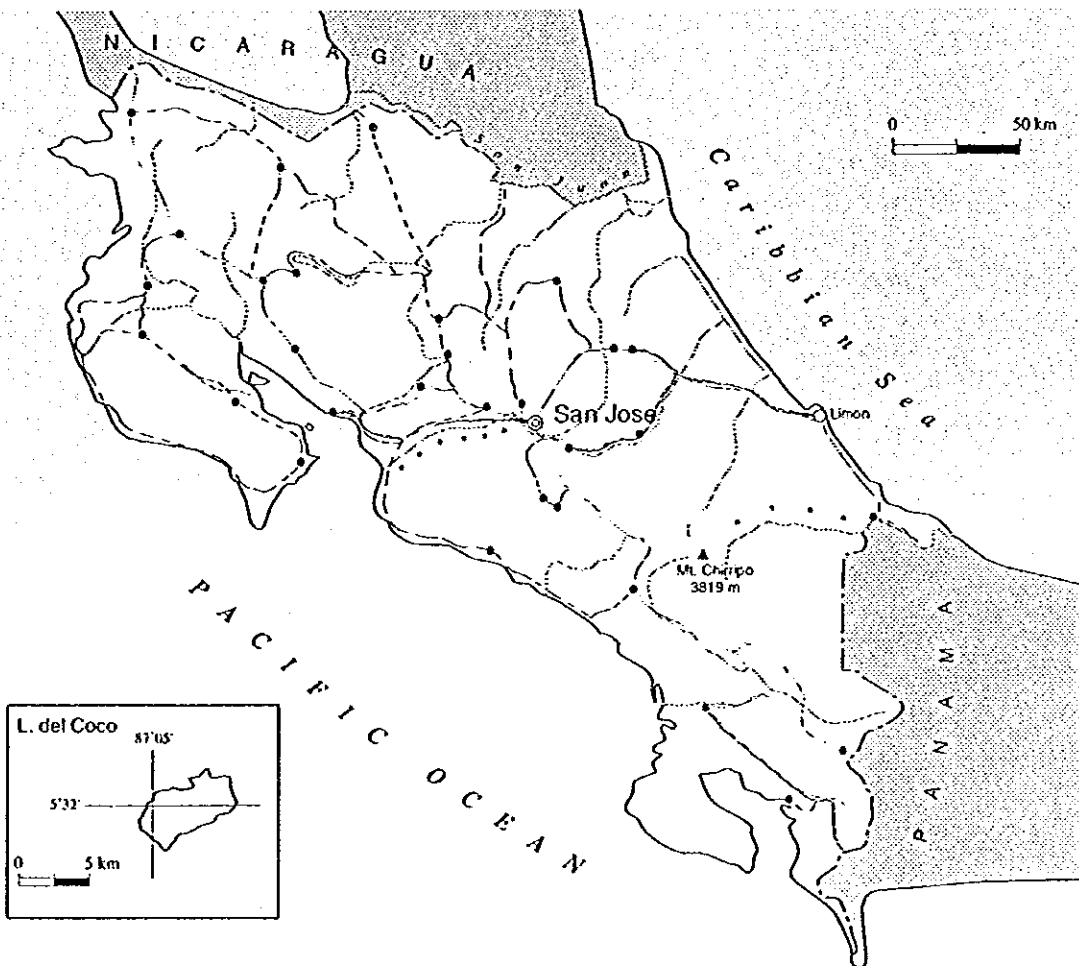
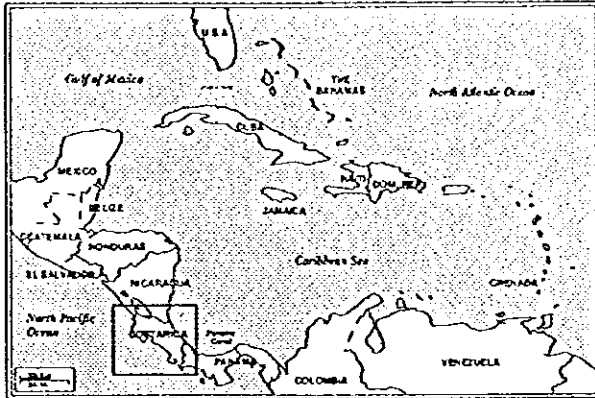


Figure 1 Location of Costa Rica

2. FACT SHEET

2.1 Socio-economic Index

Index	Data	Data year	Reference
Population	3.42 million (annual average incremental rate : 2.4% (1990~95))	1995	b)
Race	Mixed blood with Caucasian 95%, black person 3%, aborigines 2%	no information	d)
Religion	Catholicism (national religion)	no information	d)
Literacy rate	Adult female : 89% Adult male : 94%	1990	b)
Urban Population rate	50% (1.7 million)	1995	b)
Life expectancy	76 (1990~1995 average)	1990-95	b)
Under-5 mortality rate	16 (per 1,000)	1993	b)
GNP ¹	\$7,031 million (\$2,150/person)	1993	b)
GDP ¹	\$7,577million (\$2,317/person)	1993	b)
GDP structure	Agriculture : 15% Industry : 26% Service industry & others : 59%	1993	b)
Prime industry	Food processing, sugar, textiles, fertilizer, medicines, furniture	1996	d)
Prime resource	Gold salt, ?, cryptomeria, mahogany, coffee, banana, sugar cane, cacao, corn, cotton, hemp, fish	1996	d)
Safe water (% of population with access) ²	Urban : 86% Rural : 99%	1980-1995	b)
% of seweraged population ³	Urban : 99% Rural : 98%	1980-1995	b)
Human Development Index (HDI)	0.889 (World rank 33, GDP per capita rank 60 in same year)	1994	c)

¹ : The estimated value of the GNP was exchanged and adjusted from local currency into US\$ by means of 3-year average of exchange rates. The estimated value of the GDP was presented in US\$ of 1993 based on the exchange rate.

² : "Safe water" includes treated surface water, and untreated water which is pumped up from protected spring / excavated well and sanitary well.

³ : "Seweraged population" should be met conditions that the population in urban area can use public sewerage and indoor facility such as dug bole outdoor toilet, pouring water toilet, private sewerage system, public community toilet, and similar facilities, and that the population in rural area can use dug hole outdoor toilet, pouring water toilet, or other proper treatment methods.

2.2 Geographical Characteristics

Area : 51,000 km ² (about 1.4 times as Kyusyu in Japan)
Geographical features : (no information)
Highest place : Mt. Chirripo (3,819 m)

Source: a)

2.3 Meteorological Characteristics

Climate: (no information)
Season: (no information)
Average temperature: (no information)
Average annual rainfall: more than 2,000 mm/year in most of the country
Climatic classification: (no information)

Source: a)

2.4 Ecological Characteristics

Biogeographical feature: (no information)
Identified animals and plants: 5% of all the globe species
Protected area : National Park system started 25 years ago.

Source: a)

2.5 Hydrological Characteristics

Main river: (no information)
Lakes: (no information)

Source: a)

2.6 Other Characteristics

Tourist: about 800 thousand visitors/year

Source: a)

3. INSTITUTIONAL CONTEXT

3.1 Environmental Agency

3.1.1 Governmental Agency

(1) Environmental issues and Related Governmental agencies

(see "6. SOURCES OF INFORMATION" on each agencies and its contact address.)

Governmental Agency	4.1	4.2	4.3				4.4	4.5	4.6	4.7	4.8	4.9	4.10	4.11	4.12
	Air pollution	Water pollution	(1) Noise	(2) Soil	(3) Radioactive	(4) Odors	Waste	Energy	Water Supply	Waste Water	Forest	Biodiversity	Resources	Disaster	Education
Ministerio del Ambiente y Energía (MINAE)	○	—	na	na	na	○	—	○	—	○	—	○	—	—	na
Ministerio de Obras Públicas y Transportes (MOPT)	○	—	na	na	na	—	—	—	—	—	—	—	—	—	na
Defensoría de los Habitantes	○	—	na	na	na	○	—	—	—	○	—	—	—	—	na
Autoridad Reguladora de los Servicios Públicos (ARESEP)	○	—	na	na	na	—	○	—	—	—	—	—	—	—	na
Instituto Nacional de Acueductos y Alcantarillados (AyA)	—	○	na	na	na	—	—	—	○	○	—	—	○	—	na
Ministry of Health (MS)	—	—	na	na	na	○	○	—	—	○	—	—	—	—	na
Municipal governments	—	—	na	na	na	—	○	—	○	○	—	—	○	—	na
Secretaría Técnica Nacional Ambiental (SETENA)	—	—	na	na	na	—	○	—	—	—	—	—	—	—	na
Instituto Costarricense de Electricidad (ICE)	—	—	na	na	na	—	—	○	—	—	—	—	—	—	na
Compañía Nacional de Fuerza y Luz (CNFL)	—	—	na	na	na	—	—	○	—	—	—	—	—	—	na
Sistema Nacional de Areas de Conservación (SINAC)	—	—	na	na	na	—	—	—	—	—	○	○	○	—	na
Contraloría Ambiental	—	—	na	na	na	—	—	—	—	—	○	—	—	—	na
Universidad de Costa Rica (UCR)	—	—	na	na	na	—	—	—	—	—	—	○	—	—	na
Dirección de Geología y Minas	—	—	na	na	na	—	—	—	—	—	—	—	○	—	na
Comisión Nacional de Emergencias (CNE)	—	—	na	na	na	—	—	—	—	—	—	—	—	○	na
Local emergency committees	—	—	na	na	na	—	—	—	—	—	—	—	—	○	na
Others	—	○	na	na	na	—	—	○	○	—	—	○	○	○	na

Note: 1) : ○ → related — → No relation na → no information

2) : 4.3 other pollutions,

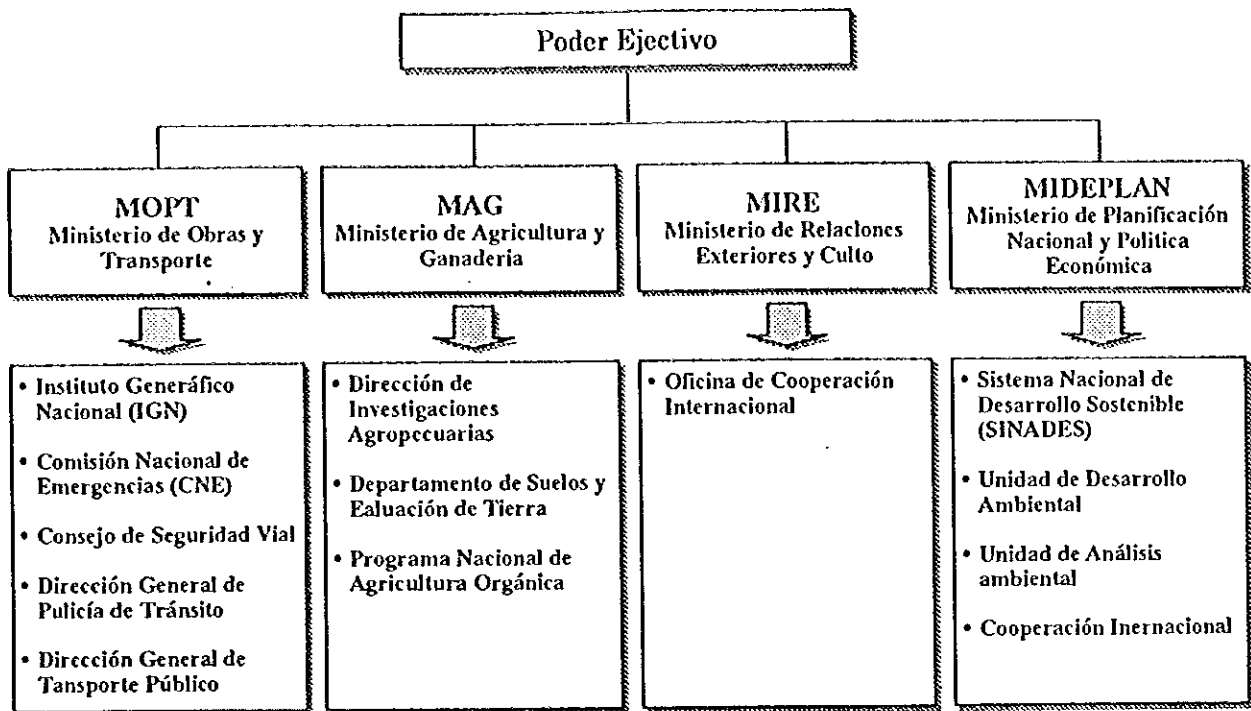
4.3(1), Noise, 4.3(2) Soil pollution, 4.3(3) Radioactive substances, 4.3(4) Offensive odor, 4.4 Waste management,

4.5 Energy conservation and alternative energy, 4.7 Waste water management,

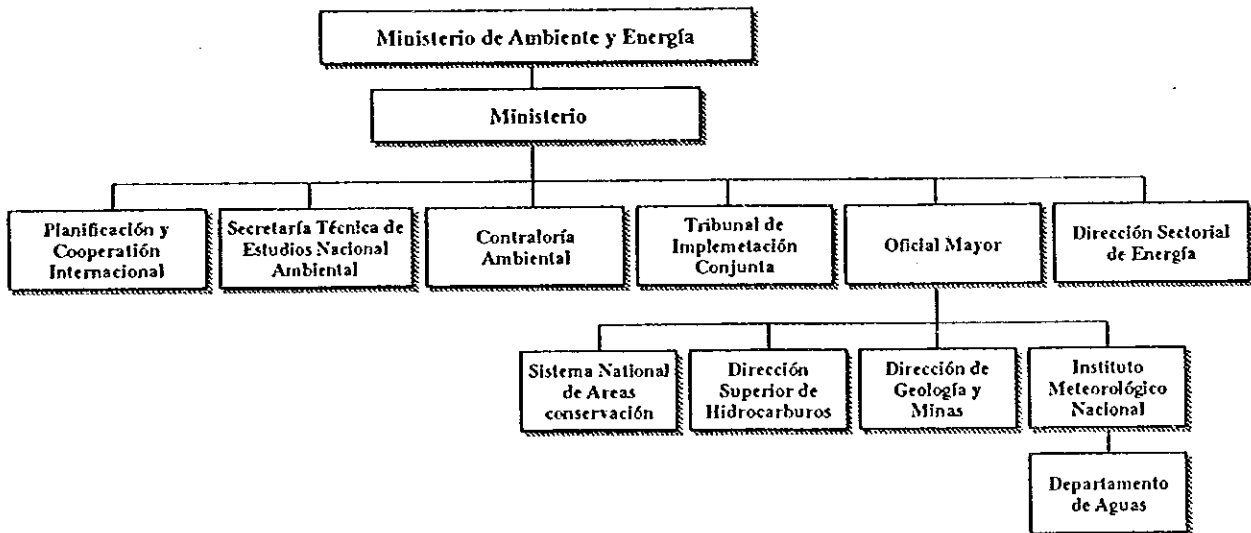
4.8 Forest conservation / desertification, 4.10 Natural resource management,

4.11 Natural disasters, 4.12 Environmental education

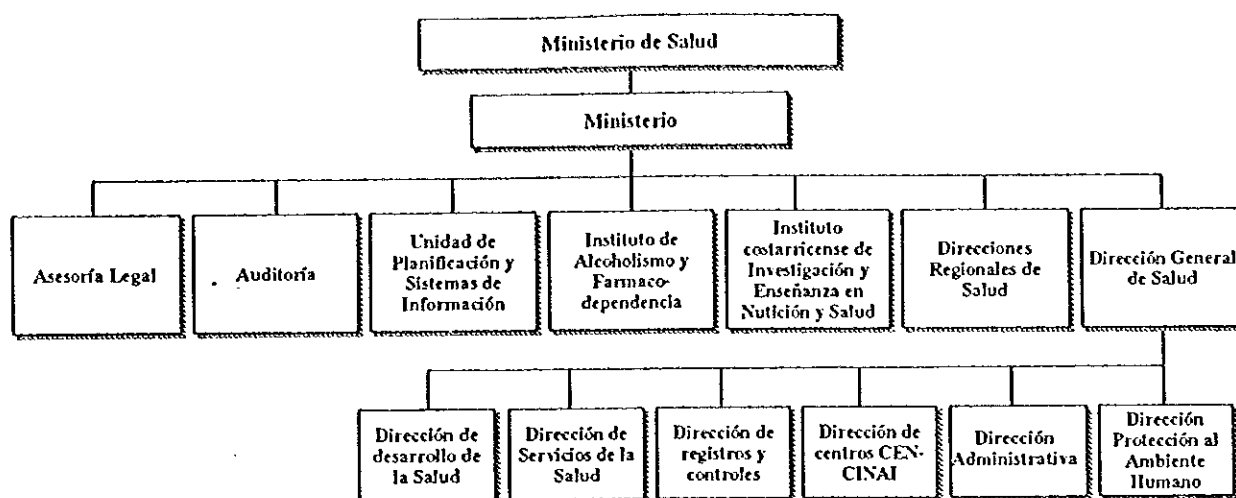
3) : Refer to each section related to other agencies when column is filled by ○.



Source: a)



Source: a)



Source: a)

(3) Other governmental organization related to environmental issues

Organization / Outline of activities	Annual budget	Number of staff
(no information)	no information	no information

Source:

3.1.2 Non-governmental Organization (NGO)

Name of NGO	Established year	Main activities
(no information)	no information	

Source:

3.2 National Environmental Policy

Policy/Project Name and Contents	Funding or Implementing Agency
(no information)	

Source:

3.3 Environmental Laws & Regulations

Laws & Regulations	Status	Related Sections
1996 Law of Regulatory Authority of the Public Services (<i>Ley de la Autoridad Reguladora de los Servicios Públicos</i> n°7593). • Public services such as water supply, garbage collecting, electricity, etc.	(no information)	4.4. 4.5. 4.6
1996 Forest Law and its regulation (<i>Ley Forestal</i> n°7575 del 14/4/96 y su reglamento). • Forest conservation and rational exploitation, biodiversity conservation, water resources protection and water pollution.	(no information)	4.6 4.8 4.9
1995 Environmental Organic Law (<i>Ley Orgánica del Ambiente</i> n°7551 del 13/11/95). • Atmospheric, water and soil pollution, waste management, conservation of forests, biodiversity, natural resources, energetic resources, marine and coastal resources, environmental education, land use planning, environmental impact assessment, organic agriculture, participation of communities.	(no information)	4.1. 4.2. 4.3. 4.4. 4.5. 4.8. 4.9. 4.10. 4.12
1992 Wild Life Conservation Law and its regulation (<i>Ley de Conservación de la Vida Silvestre</i> n°7317 del 7/12/92 y su reglamento). • Forest and biodiversity conservation, water pollution, natural resources management.	(no information)	4.2. 4.8. 4.9. 4.10

Laws & Regulations	Status	Related Sections
1973 Health General Law, modified in 1975, 1980, 1982 and 1988 (<i>Ley General de la Salud n°5395 de 1973</i>) <ul style="list-style-type: none"> Relates human health with water, air, noise and waste pollution and other environmental issues. 	no information	4.1, 4.2, 4.3, 4.4
1970 Municipal Code (<i>Código Municipal, ley n°4574 del 4/5/70</i>). <ul style="list-style-type: none"> Sets municipal responsibilities regarding public services such as water supply, waste collecting, as well as natural resources conservation and natural disaster assistance. 	no information	4.4, 4.6, 4.10, 4.11
Penal Code (<i>Código Penal, ley n°4573 de 1970</i>). <ul style="list-style-type: none"> Establishes penalties and fines to some injuries related with environmental aspects. 	no information	none

Source: a)

4. STATE OF THE ENVIRONMENT

4.1 Air Pollution

The Main Source of air pollution is transportation but there are some industries which pollute locally in different parts of the country. In particular, the three cement plants generate some particles but the situation has improved. The fertilizers factory in Puntarenas is generating some gases.

Related Agency
① Ministerio de Obras Públicas y Transportes (MOPT)
② Ministerio del Ambiente y Energía (MINAE)
③ Defensoría de los Habitantes
④ Autoridad Reguladora de los Servicios Públicos (ARESEP)

Source: a)

Some important facts
<ul style="list-style-type: none"> • generation of air pollution is high but their impacts in the San Jose metropolitan area are relatively minor because the strong NE winds in the dry season and heavy rains during the rainy months take away the pollution. • recent measurements in San Jose (1997) show the following levels of pollutants in micrograms per cubic meter: NO_x = 46.4; CO = 9.3; total particles in suspension 189.6; ozone = 52.0; PM10 = 38.5. (Mideplan/SIDES) • quality of fuels is much lower than in developed countries. Sulfur contents in diesel was 10,000 PPM (parts per million) in 1997. It is expected to go to 5,000 PPM this year, and the target is 500 PPM by 2003; in the meantime, diesel in the European Community (EU) has 500 PPM of sulfur and will go to 350 PPM by the year 2000. In Costa Rican eco-gasoline sulfur content is 900 while in the EU will go to 150 PPM in 2000 (Financial Times, Automotive Environment Analyst, February 1998) • fleet vehicles is very old: more than half of the vehicles are older than 10 years and many diesel vehicles are 20 years old (Jimenez, 1997)

Source: a)

Some Solutions
<ul style="list-style-type: none"> • accelerate the process of improving fuels quality, in particular reduce the SO_x content of diesel which can make possible to use vehicle catalyzer which will capture the NO_x • push for a renewal of the vehicle fleet, specially urban buses • correct the environmentally perverse cross-subsidy in favor of diesel and put an environmental tax to diesel and regular gasoline sold in the main counties of the Great Metropolitan Region of San José • make the pollution allowed limits stricter for every type of vehicle and reinforce vehicles testing on the road • introduce natural gas vehicles for some routes of urban public transportation

Source: a)

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Law on air pollution	○	<ul style="list-style-type: none"> • 1995 Environmental Organic Law (<i>Ley Orgánica del Ambiente n° 7554 del 13/11/95</i>) • 1973 Health General Law, modified in 1975, 1980, 1982 and 1988 (<i>Ley General de la Salud n° 5395 de 1973</i>)
② Ambient air quality standard	?	
③ Emission standard (stationary and/or mobile sources)	?	
④ Environmental monitoring results	?	

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

4.2 Water Pollution

The measurement of water pollution is not easy and requires systematic programs. Costa Rica does not have them. The regular measurements are done only in relation with water supply (AyA) and in some cases with hydroelectricity production (ICE). Recently the program of Bandera Ecológica of MINAE measured pollution levels in most Costa Rican beaches in order to give a "free of contamination banner". The measurements of underground water are also very few, and some relatively high levels of nitrates were detected (AyA, Senara).

Costa Rican society has not been very carefully cleaning its rivers because almost all the water consumed comes from aquifers and natural springs (in the higher parts of the watersheds and the river courses).

The main types of pollution in the Costa Rican rivers are untreated sewage, effluents from agriculture and agroindustry, erosion (both of fertile soils and clay), and some industrial effluents. The situation changes very much with different rivers. The Virilla that crosses the San José metropolitan area and discharges in the Grande de Tarcoles are probably the most polluted rivers in the country. Significant quantities of solid wastes are thrown in the rivers affecting seaboard communities and damaging hydroelectric turbines (140 million colones in september 1996, only in Ventanas).

There is not enough information about the state of different water courses and deposits both for river and sea water in different seasons. Similar problems exist for underground water deposits.

Related Agency
① Instituto Nacional de Acueductos y Alcantarillados (AyA)
② Other public utilities JASEC
③ ESPH
④ Municipal governments and local councils

Source: a)

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Law on water pollution	○	<ul style="list-style-type: none"> • 1995 Environmental Organic Law (<i>Ley Orgánica del Ambiente n°7554 del 13/11/95</i>) • 1992 Wild Life Conservation Law and its regulation (<i>Ley de Conservación de la Vida Silvestre n°7317 del 7/12/92 y su reglamento</i>) • 1973 Health General Law, modified in 1975, 1980, 1982 and 1988 (<i>Ley General de la Salud n°5395 de 1973</i>)
② Water quality standard	?	
③ Effluent standard	?	
④ Drinking water standard	?	
⑤ Water quality monitoring	?	
⑥ Guidelines on water quality	?	

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

4.3 Other Pollution

(1) Noise

Noise Pollution
<ul style="list-style-type: none"> • San José and other Costa Rican cities have high levels of ambient noise, created mostly by the traffic, but also by airports location, certain industries, etc. • Costa Rican construction, in particular new low cost design have very bad low noise damping properties • Very few construction projects include significant noise control measures

Source: a)

Possible solutions
<ul style="list-style-type: none"> • impose regulation both to construction and to noise generators • educate people for a more silent life (specially due to vehicles horns)

Source: a)

(2) Soil Pollution

Soil pollution has occurred in a few documented cases, the most significant where the soils contaminated with copper components that were abandoned by the United Fruit Company in the south Pacific Region of Costa Rica.

There are suspicions that other contaminated soils in open dumps, and in places close to certain chemical plants as the Moín refinery. On the other hand, many of the gasoline expenders had leaky tanks that are polluting the soils nearby, but the MINAE started just a couple of years ago to correct that problem through tank substitution.

Source: a)

(3) Radioactive Substances

Hospitals and other institutions use radioactive substances. The residues are now being returned to the provider. There is medical use of radioactive substances and recently (1997) there was an accident in the San Juan de Dios Hospital with the "cobalt machine" which affected 115 patients many of them have died already, the victims have received a relatively small economic compensation.

Source: a)

Related Agency
• Comisión de Energía Atómica

Source: a)

(4) Offensive Odor

There are some complaints about offensive odors in different parts of the country, the strongest ones are: sewage treatment plants (Puntarenas), solid waste collection trucks, open dumps, some sanitary landfills, and chicken and pig farming. In one exceptional occasion, several years ago, a group of citizens burnt down a "fish treatment factory" in an urban area, because of reiterative non-compliance and failure of the legal system to close it down.

Source: a)

Related Agency
① Ministry of Health (MS)
② Ministry of Environment and Energy (MINAE)
③ Defensoría de los Habitantes

Source: a)

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Law on noise	○	1973 Health General Law, modified in 1975, 1980, 1982 and 1988 (<i>Ley General de la Salud n°5395 de 1973</i>)
② Standard on noise level	?	
③ Law on soil pollution	○	1995 Environmental Organic Law (<i>Ley Orgánica del Ambiente n°7554 del 13/11/95</i>)
④ Law on radioactive substance	?	
⑤ Law on offensive odor	?	

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

4.4 Waste Management

The generation of solid waste at the households is of approximately 600 g/person/day; most Costa Rica have twice a week collection service, in many areas of the country is disposed in open dumps. Some industrial residues are being reused within the factories (plastics) or send to recycling plants (cardboard), a lot of hazardous waste remains within the industrial facility. Source: a)

Related Agency
① Municipal governments
② Autoridad Reguladora de los Servicios Públicos (ARESEP)
③ Ministry of Health
④ Secretaría Técnica Nacional Ambiental (SETENA)

Source: a)

Most of the Agriculture and food Processing Residues are composed or used as fuel
<ul style="list-style-type: none"> Composting has increased dramatically in the last five years, however for most processors it is a form to eliminate a waste and not a form to produce organic conditioner and fertilizer, the best results are in Ingenio Juan Viñas where the nitrogen content of the product is much higher (personal communication Ronald Arrieta) Recuperation levels are high specially for paper and cardboard, it is estimated that more than 130 tons of cardboard and paper are recycled daily, There are recycling plants for paper, paperboard, glass, and there are small smelters for aluminum, copper, etc. There are some efforts to recycle the plastic generated in the banana plantations The steel scrap is being exported to El Salvador to be processed there Some recovered aluminum is being recycled in small shops, and some is exported to the United States, other metals are also recycled in the country Old tires, old motor oil and some plastics are being used as fuel at the two cement plants of the country. The equipment for traditional solid waste collection is relatively new, but there are no specialized vehicles for recycling materials

Source: a)

Disposal of Solid Waste
<ul style="list-style-type: none"> Most of the household solid waste is being deposit in "engineered land fills" which however do not show adequate international standards (impermeabilization, leachate treatment), the rest is thrown into open dumps There is not enough funds for an adequate solid waste management, but there is a danger that the private only private firm the WPP gets monopoly power and can start raising its prices with no adequate control

Source: a)

Economic and Institutional issues
<ul style="list-style-type: none"> Many people are paying very little or nothing for their solid waste service The municipal governments in charge of solid waste management are very weak

Source: a)

Some Solutions
<ul style="list-style-type: none"> proceed with a diagnostic of the situation with recommendations for each type of productive activity reinforced and accelerate the correction efforts currently done in the CCSS, in particular the creation of "a security landfill of secure landfill cells" promote the recycling and neutralization of hazardous residues establish a register system for every firm or institution that uses, transports, disposed, process hazardous materials and quantify the different wastes at every stage improve the technologies for their handling and transport

Source: a)

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Laws on waste	○	<ul style="list-style-type: none"> 1996 Law of Regulatory Authority of the Public Services (<i>Ley de la Autoridad Reguladora de los Servicios Públicos n°7593</i>) 1995 Environmental Organic Law (<i>Ley Orgánica del Ambiente n°7554 del 13/11/95</i>) 1973 Health General Law, modified in 1975, 1980, 1982 and 1988 (<i>Ley General de la Salud n°5395 de 1973</i>) 1970 Municipal Code (<i>Código Municipal, ley n°4574 del 4/5/70</i>)
② Laws on hazardous waste	?	

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

4.5 Energy Conservation and Alternative Energy

The energy consumption per unit of national product or energy intensity of the Costa Rican National Product has decreased slightly. In 1996 was 74.6% of the intensity in 1970. However the remain almost constant during the period (1994-96). It seems evident that there are many opportunities for additional energy efficiency. However, this process will be negatively compensated by the rapid grow of energy consumption in the transportation sector (more cars) and by changes in the structure of the Costa Rican economy away from agriculture and toward manufacturing, more intensive in energy consumption (electronics components, apparel, paper, printing). Some important facts are:

- The energy consumption per capita increased in the period 1993 to 1996 by 12.4% to reach 26.3 terajules per 1,000 people
- The recent increases in energy consumption are due mainly to the duplication of energy consumption in the transportation sector in the period 1987-1996 to 40,389 terajules (12 terajules per 1,000 persons)
- The industrial sector has increased its overall energy consumption to 23,063 terajules in 1996, i.e an 33.9% increase since 1987 (Mideplan, SIDES)

Most people have access to electricity, 93.2% in 1997 (almost 100% in the urban areas). Much of the Costa Rican electricity come from hydroelectric plants (now represents close to 85% of the total generation). Hydro projects are located in different watersheds, and have a significant water storage capacity to support dry weather for several years. Another important energy source is geothermal that in 1997 represented close to 10% of the electricity production.

Energy - saving efforts: The low prices of electricity for the residential sector (4 cents of US dollars per kW-hour up to 250Kw-hour) do not motivate savings. The industrial and commercial sector were extremely slow in improving their energy efficiency despite relatively expensive electricity starting in 1990 (due to cross-subsidies to the residential sector). The Law for the Rational Consumption of Energy (No 7447) of 1994, was used later to force every big electricity consumers to do energy audits to discover ways to improve its electricity efficiency. There are several educational efforts by NGOs and electric companies.

The country produces wind energy in the Guanacaste highlands (1.4% of all the electricity in 1997). There is a map with the wind-energy potential of the country (ICE). There is a big potential for Solar Energy which is rarely used, in part due to relative low rates for the residential sectors. There is a plan by ICE to provide electricity by alternative sources and systems, specially solar to approximately 6% of the household that are very expensive to reach by the national interconnected grid (which is also connected to the nearby countries)

Biomass Energy contribution is a very rapidly changing reality with a dual phenomena: (a) reduction of the household fuelwood use and (b) increases in industrial use of biomass fuels in particular in coffee processing plants, Kraft paper mills, food outlets, etc. Most of the residues of other productive activities are being used in energy production and will end helping in the production of electricity through co-generation specially in sugar cane mills

Source: a)

Related Agency
① Instituto Costarricense de Electricidad (ICE)
② Compañía Nacional de Fuerza y Luz (CNFL)
③ JASEC
④ Ministry of Environment and Energy (MINAE)

Source: a)

Principal hydroelectric plants in Costa Rica

Name	River	Canton	Generator Turbines Num-KW	Total Capacity KW
La Garita	Grande Virilla	Central Central	2-15,000 2-48,690	127,380
Río Macho	Macho Macho	Orosi Orosi	2-15,000 3-30,000	120,000
Cachí	Reventazón Reventazón	Jimenez Jimenez	2-32,000 1-36,800	100,800
Arenal	Arenal Lake	Tilarán	3-52,466	157,398
Corobici	Arenal Lake	Tilarán	3-58,004	174,012
Total				679,590

Source: ICE

Principal thermal plants of Costa Rica

Name	City	Type	Fuel	Capacity of Generators Num-KW	Total Capacity KW
Colima	San Jose	Recip Recip	Diesel/Fueloil Diesel/Fueloil	4-2,970 2-3,830	19,540
San Antonio	San Jose	Steam Gas Turb	Fueloil Diesel	2-5,000 2-19,050	48,100
Barranca	Barranca	Gas Turb	Diesel	2-20,800	41,600
Moin	Limon	Recip	Diesel/Fueloil	4-8,000	32,000
Total					141,240

Source: ICE

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Laws on energy use and conservation	○	<ul style="list-style-type: none"> · The Law for the Rational Consumption of Energy (No 7447) of 1994 · 1996 Law of Regulatory Authority of the Public Services (<i>Ley de la Autoridad Reguladora de los Servicios Públicos n°7593</i>) · 1995 Environmental Organic Law (<i>Ley Orgánica del Ambiente n°7554 del 13/11/95</i>)

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

4.6 Water Supply

The enormous physical diversity of Costa Rica presents with many different hydrogeological conditions within its territory (see the National Hydrogeological Map produced by SENARA at 1/500,000 scale). The diversity is related to variations of precipitation regimes, topography, different infiltration coefficients, and the structure of the underground geologic system and its water enclosing capabilities.

Enormous water availability in most of the country with the exception of Guanacaste with significant vulnerabilities to serious dry seasons and lack of underground water in many areas. The coastal area has very small aquifers very vulnerable and incapable of supporting the big tourist developments being built there

Very good Coverage of the water supply systems in particular in urban areas. Some limitations in the service, in the rural areas the spring water is not treated, and in some urban areas water is not available continuously, specially in the dry season (January to April)

Big technological differences between different institutions: Acueductos y Alcantarillados (AyA) is a national descentralize institution in charge of providing running water to most of the metropolitan area of San José and many other cities. There are several municipal owned or controlled services in medium size cities some of them within the Metropolitan Region of San José (Alajuela, Heredia, Cartago). There are hundreds of local water councils that provide water to rural communities.

Inadequate and unfair fare structure does not promote conservation because cost does not increase with the level of consumption and for private wells the extraction rights decrease considerably with higher volumes.

Source: a)

Related Institution
① Instituto Nacional de Acueductos y Alcantarillados (AyA)
② ESPH
③ Municipal governments

Source: a)

Possible actions and solutions
<ul style="list-style-type: none"> • Reduce the losses of water in the Metropolitan Area of San José that some people estimate in 30% due to leaky conduction and distribution lines • Increase the redundancy in the system through: interconnections main piles, increase the number of tanks and water deposits • Increase the water fares to include the "environmental payments" to protect the water sources from degradation • Reinforce the main line Oroquieta - San José against landslides and earthquakes • Promote the protection of recharge areas, water springs and other areas important to the water supply of urban and rural communities. • Increase considerably the research and the protection measures to the natural systems providing the raw water • Reduce the illegal connections to the water systems • Improve the treatment of water in the rural systems

Source: a)

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Laws on water resources and supply	○	<ul style="list-style-type: none"> • 1996 Law of Regulatory Authority of the Public Services (<i>Ley de la Autoridad Reguladora de los Servicios Públicos n°7593</i>) • 1996 Forest Law and its regulation (<i>Ley Forestal n°7575 del 14/4/96 y su reglamento</i>) • 1970 Municipal Code (<i>Código Municipal, ley n°4574 del 4/5/70</i>)
② Laws on use of water resources	?	

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

4.7 Waste Water Management

Big Improvements in the coffee processing industry in the last four years thanks to a combination of actions: stiffer regulation (Wildlife Law article 132), agreements for improvements along several years, pressure by the Health ministry, the Environmental Controllers (MINAE), and the Defensoría de los Habitantes (Obnudsman). The results have been excellent: the consumption of water was reduce by one order of magnitude (now is of approximately .5 cubic meters per 50 kilograms of "coffee ready to toast".

Geotécnica, a Brazilian company employing mostly Costa Rican engineers is developing the predesign of sewage treatment plants for most of the major cities of Costa Rica. Later it will proceed to the design of sewage treatment plants for the Metropolitan Area of San José and a five smaller cities. There are possibilities that the Interamerican Development Bank will finance part of the investment.

Source: a)

Related Agency
① Instituto Nacional de Acueductos y Alcantarillados (AyA)
② Ministry of Health
③ Ministry of the Environment and Energy (MINAE)
④ Municipal Governments
⑤ Defensoría de los Habitantes

Source: a)

Essential components of the reality
<ul style="list-style-type: none"> • Most of sewage is not treated • Many productive activities through highly polluted effluents into the rivers • There are many neglected opportunities to decrease pollution levels • The regulatory system does not promote "good environmental behavior" with enough effectiveness

Source: a)

Some solutions
<ul style="list-style-type: none"> • Promote efforts of "cleaner production" aggressively specially in industrial sectors with non-organic and hazardous effluents • Build sewage lines in neighborhoods without them • Improve and reinforced the institutional effort to build sewage treatment plants for Costa Rican urban areas • Increase the experimentation with different biological methods for sewage and other organic effluents treatment at different scales • Increase the marginal cost of inadequate handling through stronger penalization (fines, closing of productive facilities)

Source: a)

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Laws on sewerage system	?	
② Laws and regulations on industrial effluent	?	
③ Effluent standard	?	
④ Results of monitoring	?	

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

4.8 Forest Conservation/Desertification

Most of the hardwoods of the country are not available any more, they were wasted under a regime of perverse incentives for deforestation and lack of knowledge and long term thinking. Among the many very valuable species not available any more are: caoba, cristobal, etc.

The biggest impact of this deforestation has been the destruction of many natural habitats with very different elevations, rainfall patterns, temperature, humidity. Too late to correct it, maybe would be possible to protect what is left.

The deforestation has slowed down dramatically but still affects very valuable forest, including private property areas within national parks. In the seventies the deforestation rate was around 50,000 ha/year, that lower to 30,000 ha/year during the eighties. Mideplan indicates that in 1994 only 8 000 hectares were deforested but many Costa Ricans remain doubtful about the figures.

There are significant reforestation efforts, mostly homogeneous plantation, with two non-native species: melina and teak. In the period 1979-1995, 139 thousand hectares were reforested with the help of government incentives. During that period MINAE estimates that 844 thousand tons of CO₂ were captured (Mideplan/SIDES)

Unfortunately not all the reforestation efforts are positive, in some case land owners have deforested (even with very low use of the raw material) and immediately claim for reforestation tax breaks. Many firms took reforestation as gimmick to lower their taxes, but with no adequate knowledge, appropriate technology, and financial commitment to the long term horizons of wood plantations and they have abandon many of the reforested areas once the law was changed.

In some critical areas (Guanacaste, or highlands El General county) peasant cooperatives or organizations have promote reforestation with external aid with some success.

There are many efforts to let the natural forest to recover and grow up again from pasture land, coffee plantation or abandoned bushes. This is a relatively rapid process in Costa Rica (from 10 to 20 years). This process has occurred with many different land tenures: national parks, the surrounding of the Arenal Reservoir (ICE land), private areas which are being plan as tourist spots, or local and foreign conservationists.

Selective extraction. Pórtico is a firm that does selective extraction of "caobilla" within primary and secondary forest in approximately 6,000 hectares that owns in the Atlantic Coastal Zone. This wood is used to make "fine doors" exported to developed countries.

Forest Products. Recent data from MINAE indicate wood consumption of 35,814 tons during 1992 and 31,289 during 1993. Approximately three fourths of the wood was used in the production of plywood and similar products (partially coming from the area of the Tortuguero National Park) (Mideplan/SIDES, 1998).

Source: a)

Related Agency
① Sistema Nacional de Areas de Conservación (SINAC)
② Contraloria Ambiental

Source: a)

Possible solutions
<ul style="list-style-type: none"> • Use tax exceptions, in particular the one over property value and the recognition as value of natural capital protection to compensate private owners of environmentally valuable land • Increase the use of remote sensing and satellite images to discover violations to the existing regulations and improve the control over corrupted officials • Promote reforestation with slow growth valuable tropical species, as a long term investment • increase the control in the construction materials and furniture markets for the use of scarce species • Promote additional reforestation with fast growth species, preferably local • Permit controlled extraction of valuable species preserving the essential elements of the tropical forest • Transform primary and secondary forest into tourist attractions

Source: a)

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Laws on forest conservation	○	<ul style="list-style-type: none"> • 1996 Forest Law and its regulation (<i>Ley Forestal n°7575 del 14/4/96 y su reglamento</i>) • 1995 Environmental Organic Law (<i>Ley Orgánica del Ambiente n°7554 del 13/11/95</i>) • 1992 Wild Life Conservation Law and its regulation (<i>Ley de Conservación de la Vida Silvestre n°7317 del 7/12/92 y su reglamento</i>)
② Laws and regulation on protection area	?	
③ Laws on desertification	?	

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

4.9 Biodiversity

Many of these problems are related to the issues of their habitats. It is clear from the experts opinions that every habitat that is not explicitly protected, and even some that have some protection, are being abused (Cortes, Solis, and others). This problems are partially the result of the Costa Rican success, too many tourists, too many people without sensibility or knowledge interacting with very fragile environments, too many poor or abusive people ready to produce biodiversity for exports.

So the challenges ahead are complicated and diverse. Each habitat, each park has its own weak points, vulnerabilities, and tensions. They require management designs that confront successfully these new challenges.

Source: a)

Related Agency
① InBIO
② Universidad de Costa Rica (UCR)
③ Universidad Nacional (UNA)
④ Ministerio del Ambiente y Energía (MINAE)
⑤ Sistema Nacional de Areas de Conservación (SINAC)
⑥ Fundación de Parques Nacionales

Source: a)

Some Critical Problems
<ul style="list-style-type: none"> • the natural habitat areas are being reduced by the intrusion of direct and indirect human activity • there is over-exploitation of wildlife resources through a non sustainable use and illegal trade of wild life species • many of the National Parks nearby areas have not compatible uses with the preservation effort • many of the lands within National Parks are still in private hands • some of the protected areas are too small for an effective protection of fauna, and there lack of enough environmental corridors which will protect their seasonal migration patterns • some wetlands were transformed into banana plantations • many of the coastal wetlands are being destroyed by pollution and deforestation

Source: a)

Some Solutions
<ul style="list-style-type: none"> • increase the research about the real damage level of different habitats in particular, coastal wetlands very fragile and subjected to big pressures coming not only from the nearby activities but also by developments far away • educate the Costa Rican people in general, for example, the Commercial Television Program "Sin Fronteras" which is very popular is a good example of the tasks ahead. • improve the effectiveness of existing laws (Wildlife, public coastal areas) • reinforce the purchase of critical lands from private owners • develop regional planning tools that would protect this areas from impacts coming from nearby regions

Source: a)

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Laws on protection for fauna and flora	○	<ul style="list-style-type: none"> • 1996 Forest Law and its regulation (<i>Ley Forestal n°7575 del 14/4/96 y su reglamento</i>) • 1995 Environmental Organic Law (<i>Ley Orgánica del Ambiente n°7554 del 13/11/95</i>) • 1992 Wild Life Conservation Law and its regulation (<i>Ley de Conservación de la Vida Silvestre n°7317 del 7/12/92 y su reglamento</i>)
② Laws and regulations for protection for specific species	?	
③ Laws and regulations on hunting	?	
④ Laws and regulations on protection area	?	
⑤ Listed species in the Red Data Book	?	

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

4.10 Natural Resource Management

Costa Rica is a country with enormous natural resources. However these resources do not include oil or minerals (except for some small gold mines). The Costa Rican natural resources are related to big fish banks in the Pacific Coast, tropical forests, abundant water in most of the country and relatively fertile soils in parts of the country.

In general, the greatest problem with natural resources management in Costa Rica is the lack of an appropriate accounting system which could give official value to its different parts. Even more important is to charge for "the natural resources use" to every one in order to pay for the conservation of this natural capital for future generations. Some of the natural resources are underused (fisheries, in particular by Costa Ricans), others are being overused (forest, fisheries in the Nicoya Gulf), and many are being misused (most of the Costa Rican aquifers, erosion of fertile agricultural soils).

There are several critical cases: the destruction of natural resources (soils and water) due to urbanization in the Great Metropolitan Region of San José, the potential destruction of small coastal aquifers in Guanacaste because of over-exploitation by big hotel facilities, the destruction of primary forests and the overused of many natural resources by different economic activities (including tourism).

The monitoring is very limited. The public electricity company ICE has a very good hydrology department that keep track of many water resources, but there are many opportunities for improvement in this area.

Source: a)

Related Agency
① Ministerio del Ambiente y Energía (MINAE)
② Sistema Nacional de Areas de Conservación (SINAC)
③ Dirección de Geología y Minas
④ Instituto Costarricense de Electricidad (ICE)
⑤ Instituto Nacional de Acueductos y Alcantarillados (AyA)
⑥ INCOPECA
⑨ Municipal governments

Source: a)

Possible solutions, additional to the mention before
<ul style="list-style-type: none"> • Improve monitoring • Improve the computation of the environmental benefits of this resources to humans activities in the short and long term

Source: a)

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Laws on conservation of natural resources	○	<ul style="list-style-type: none"> • 1995 Environmental Organic Law (<i>Ley Orgánica del Ambiente n°7554 del 13/11/95</i>) • 1992 Wild Life Conservation Law and its regulation (<i>Ley de Conservación de la Vida Silvestre n°7317 del 7/12/92 y su reglamento</i>) • 1970 Municipal Code (<i>Código Municipal. ley n°4574 del 4/5/70</i>)
② Laws on use and conservation of mining resources	?	
③ Laws on underground resources	?	

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

4.11 Natural Disasters

There are many natural hazards in Costa Rica, some of them specially flooding and landslides are transform into disasters by human activities.

Flooding occurs mainly in the lowlands, both in the Pacific and Atlantic coastal areas, but also in the northern plains and in some rivers in the urban areas of San José, Turrialba. Some of the towns in the coastal areas are in the flood plains (Villa Neilly, Ciudad Cortes). Some of the cities have used the highest places very inefficiently and the poor people invade with their (ranchos) low land areas.

Landslides occur continuously in the country specially because the mountainous terrain and the heavy rains (more than 4 m/year) weaken many areas affected by human intervention: roads, constructions

Earthquakes are frequent in most of Costa Rica, their magnitude rarely goes over 7 in the Richter Scale, however some of the most destructive ones have been small and superficial (Cartago 1841, 1910) and Orotina (1924). The Limón - Telire earthquake occurred in April of 1991 had a Richter magnitude of 7.6 and created many damages, a big proportion of them were in protected areas. The magnitude of this earthquake seems very high for Costa Rican standards. The standards of Seismic Engineering practices in Costa Rica are very high, that has meant relatively small damages for relatively significant earthquakes. However, new cheap construction systems, not tested adequately could bring bad surprises in the next one.

Volcanic Eruptions there are several active volcanoes in Costa Rica (Arenal, Poás e Irazú). There are many agricultural and tourist activities nearby that are permanently under threat.

Source: a)

Related Agency
① Comisión Nacional de Emergencias (CNE)
② Costa Rican Red Cross
③ Local emergency committees

Source: a)

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Laws on natural disaster	○	• 1970 Municipal Code (<i>Código Municipal, ley n°4574 del 4/5/70</i>)

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

4.12 Environmental Education

There are environmental components in the curriculum of primary and secondary education. There are numerous, but mostly isolated efforts, all over the country for additional environmental education, mostly directed to children. However, many teachers lack knowledge to teach effectively about the complex environmental realities and sustainability issues of Costa Rica, tropical regions, or specific topics. Many teachers promote emotional slogans, but provide little hard information and knowledge to promote critical thinking.

The Public Universities in particular the University of Costa Rica and Universidad Nacional develop numerous programs of social extension with their students, including significant environmental components. Many NGOs develop informal education programs centered in their local or substantive interest. Many environmental research and extension programs have significant components for education.

However, the main educational problem is to provide producers and the rest of the adult population with knowledge about instruments, technologies, potential policies including economic tools that can improve the production processes and other human activities to make them environmentally more sustainable.

Source: a)

Related Agency
University of Costa Rica and Universidad Nacional

Source: a)

Possible Actions
<ul style="list-style-type: none"> • reinforce the creation of networks of people interested in environmental and sustainability education • promote permanent environmental education for every adult centered in the opportunities for improvement as producer, decision maker and consumer • systematize, integrate and adapt to kids and teenagers all the knowledge about the system • broaden the perspective of young people about sustainable development and environmental problems. • develop educational tools for adults

Source: a)

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Laws on education	○	• 1995 Environmental Organic Law (<i>Ley Orgánica del Ambiente n°7554 del 13/11/95</i>)
② Guidelines on environmental education	?	

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

5. INTERNATIONAL RELATIONSHIP

(1) Trans-boundary Issues

There have been very few cases of trans-boundary problems. Maybe the most significant was the construction of the Arenal Dam which move water going north to Nicaragua to the Pacific Coast. Nicaragua protested because the navigability of the Rio San Juan could decrease. However nothing has been documented after the construction.

Precedents and status of international environmental cooperation that can provide further environmental projects funded by donor agencies or implemented with the cooperation/collaboration of other countries

The international cooperation in the environmental area has been very big, relatively diverse and coming from many countries. However, most of it has been to preserve biodiversity and not to control and moderate the impacts of human activities and settlements.

Among the many cases of international cooperation, it is possible to highlight the following:

- purchases of land for the National Parks system
- debt for nature swaps (Costa Rica was in the early 90's one of the first countries to implement it)
- there has been broad support for training short and long term (academic) from many countries: USA, Spain, Germany (DAAD), Japan, The Netherlands
- funds for biological research specially from the USA organizations
- support for different activities in particular implementation of more sustainable practices with the bilateral agreement with the Dutch government on sustainable development
- support for solid waste management by the German GTZ, for sanitary landfills construction by the Spanish and Dutch governments
- support for water supply and other related matters by (CAPRE-GTZ)
- support for seismological research by the Norwegian Government
- support of the European Community on cleaner production in general
- GEF has some small projects on energy efficiency
- PNUD support for the program Sustainable Human Development which produces an annual report about the Costa Rican reality
- selling of CO₂ absorption capacity of Costa Rican forest to Norway (1997)

In general, foreign aid to Costa Rica has been reduced drastically in the last few years, because the country has reached a threshold of development which is consider too high for some governments. However, there are many critical activities that cannot be implemented for the moment with local resources, this include both research and infrastructure. On the other hand, some foreign donors are discovering that it is possible to create projects with Central American scope based and including Costa Rica (for example, French, Canadian and Dutch assistance programs).

5.1 International Convention

Name of international Convention	Year
1) (no Information)	

5.2 International Cooperation Project

Project	Donor
(no Information)	

6. INFORMATION SOURCE

6.1 Public Governmental

Name of Organization	Contact Address
a) Ministerio de Agricultura y Ganaderia (MAG)	<ul style="list-style-type: none"> • Colegio La Salle Sabana Sur P.O.Box 10094-1000 San Jose Tel. 232-9420, Fax. 232-2103 Tel. 231-2344 ext. 325, Fax. 296-2586 Tel. 231-2344 ext. 334, Fax. 296-0858 Tel. 231-2344 ext. 337, 296-2495, 231-2625, Fax. 296-0858
b) Ministerio del Ambiente y Energia (MINAIE)	<ul style="list-style-type: none"> • 200 este y 50 sur de la Corte Suprema de Justicia P.O.Box 10094-1000 San Jose Tel. 233-4533, 2571417, Fax. 257-0697 • Costado Norte de Emergencias del Hospital Calderon Guardia P.O.Box 73350-1000 San Jose Tel. 258-2621, Fax. 233-1791 • Sabanilla de Montes de Oca, del Campo Deportivo UCR 300 este P.O.Box 10104-1000 San Jose Tel. 225-6627, Fax. 225-3691 • Sabanilla de Montes de Oca, del Campo Deportivo UCR 300 este P.O.Box 85810-1000 San Jose Tel. 225-9067, Fax. 253-8028, 224-3961 • Ave. 10-12 calle 1, San Jose P.O.Box 10104-1000 San Jose Tel. 280-9417, Fax. 280-6575 • Calle 25, avenidas 8 y 10, Edificio Vista Palas. P.O.Box 126-2120 San Francisco de Guadalupe Tel. 233-1955, Fax. 221-3027, 233-7095 • Ave. 10-12 calle 1, San Jose P.O.Box 10094-1000 San Jose Tel. 256-8467, Fax. 233-2334 • Costado norte, Emergencias del Hospital Calderon Guardia. P.O.Box 7-3350-1000 San Jose Tel. 222-5616, Fax. 223-1837 • De la Casa Italia, 100 oeste, Barrio Francisco Peralta P.O.Box 1338-1002 Paseo Estudiantes Tel. 234-0973, Fax. 234-0651 • Sabanilla de Montes de Oca, del Campo Deportivo UCR 300 este P.O.Box 5298-1000 San Jose Tel. 225-7548, 225-5845, 253-7555, Fax. 225-8862 • De la Casa Italia, 250 sur en Barrio Gonzalez Lahmann. P.O.Box 10104-1000 San Jose Tel. 283-8004, Fax. 283-7343 • Sabanilla de Montes de Oca, Del Campo Deportivo UCR 300 m. este P.O.Box 11384-1000 San Jose Tel. 253-9942, Fax. 253-9942
c) Ministerio de Educacion Publica	<ul style="list-style-type: none"> • Antigua Embajada Americana P.O.Box 10087-1000 San Jose Tel. 233-9050, Fax. 233-0390 • Detras del Centro Comercial El Pueblo, Frente a Recope en San Francisco de Goicoechea P.O.Box 465-2120 San Jose Tel. 255-3525, Fax. 255-4527
d) Ministerio de Obras Publicas y Transportes (MOPT)	<ul style="list-style-type: none"> • Costado oeste del Liceo de Costa Rica P.O.Box 10176-1000 San Jose Tel. 257-7798, Fax. 255-0042 • 100 m norte del Aeropuerto Tobias Bolanos en Pavas. P.O.Box 5258-1000 San Jose Tel. 220-2020, Fax. 220-2054 • 200 m noroeste y 100 m este del Parque de la Paz. P.O.Box 1138-1011 San Jose Tel. 227-8072, Fax. 286-0939, 227-3617
	<ul style="list-style-type: none"> • Costado oeste del Liceo de Costa Rica P.O.Box 10176-1000 San Jose Tel. 223-4626, Fax. 222-2918 • Costado oeste del Liceo de Costa Rica P.O.Box 10176-1000 San Jose Tel. 257-7798 ext. 2373, Fax. 222-7479

Name of Organization	Contact Address
	<ul style="list-style-type: none"> • Costado oeste del Liceo de Costa Rica P.O.Box 148-1001 San Jose Tel. 223-9266 ext. 619, Fax. 226-8692
e) Ministerio de Planificación Nacional Y Política Económica (MIDEPLAN)	<ul style="list-style-type: none"> • Edificio Alfa, calle 4, avenida 3 y 6. P.O.Box 1127-1000 San Jose Tel. 223-2322, Fax. 221-3282 • Edificio Alfa, calle 4, avenida 3 y 6. P.O.Box 10127-1000 San Jose Tel. 223-4720, 223-2322, ext. 2610, Fax. 221-3091 • Edificio Alfa, 6 Piso, calle 4, avenida 3 y 6 P.O.Box 1127-1000 San Jose Tel. 223-2322 ext. 2608 o 2609, Fax. 258-18-68 • Edificio Alfa, calle 4, avenida 3 y 6. P.O.Box 10127-1000 San Jose Tel. 233-1292, 223-2322 ext. 2517, Fax. 223-7930
f) Ministerio de Salud	<ul style="list-style-type: none"> • Calle 14 y Avenida 16, Edificio Antigua Escuela de Enfermeras, San Jose P.O.Box 10123-1000 San Jose Tel. 233-0683, Fax. 255-2594 Tel. 233-2149, Fax. 233-2149 Tel. 223-0333, Fax. 233-2149
g) Museo Nacional de Costa Rica (MNCR)	<ul style="list-style-type: none"> • Calle 17 Avenida Central y Segunda. P.O.Box 749-1000 San Jose Tel. 257-1433, 221-4429, Fax. 233-7427

Source: a)

6.2 Public Autonomous

Name of Organization	Contact Address
a) Autoridad Reguladora de los Servicios Públicos (ARESEP)	<ul style="list-style-type: none"> • Sabana Sur, de la Contraloría 400 oeste. P.O.Box 936-1000 San Jose Tel. 220-0102, Fax. 220-0374
b) Caja Costarricense de Seguro Social (CCSS)	<ul style="list-style-type: none"> • Calle 5 y 7 Av. 2 San Jose P.O.Box 10105 San Jose Tel. 258-3165, Fax. 233-1850 Tel. 256-7898, Fax. 256-7898
c) Compañía Nacional de Fuerza y Luz (CNFYL)	<ul style="list-style-type: none"> • De Radiográfica en San Jose, 50 sur. P.O.Box 1026-1000 San Jose Tel. 222-1779, 295-5000 ext. 5261, Fax. 221-4601 Tel. 295-5000 ext. 5125, Fax. 257-3770
d) Empresa de Servicios Públicos de Heredia (ESPH)	<ul style="list-style-type: none"> • Calle 10, avenida 14 P.O.Box 26-3000 Heredia Tel. 260-0833 ext. 739, Fax. 237-6566
e) Instituto Costarricense de Acueductos y Alcantarillados (AYA)	<ul style="list-style-type: none"> • Edificio La Llacuna, contiguo al Cine Variedades P.O.Box 5120-1000 San Jose Tel. 257-9222 ext. 206, Fax. 233-7552, 223-6103
f) Instituto Costarricense de Electricidad (ICE)	<ul style="list-style-type: none"> • ICE, Sabana Norte P.O.Box 1032-1000 San Jose Tel. 220-7720, Fax. 231-4737 • ICE, Sabana Norte, Sext. o piso. P.O.Box 1032-1000 San Jose Tel. 220-752, Fax. 220-8206 • ICE, Sabana Norte. 2do piso del bloque A. P.O.Box 1032-1000 San Jose Tel. 220-7309, 220-7531, Fax. 220-8004
	<ul style="list-style-type: none"> • ICE, Sabana Norte, 2do piso del bloque A. P.O.Box 1032-1000 San Jose Tel. 220-7307, Fax. 220-8204 • ICE, Sabana Norte, 2do piso del bloque A. P.O.Box 1032-1000 San Jose Tel. 220-7599, Fax. 220-1555
g) Instituto Costarricense de Pesca y Acuicultura (INCOPECA)	<ul style="list-style-type: none"> • Frente al INA en Puntarenas P.O.Box 333-54 Puntarenas Tel. 220-3952, Fax. 296-2662
h) Instituto Nacional de Vivienda y Urbanismo (INVU)	<ul style="list-style-type: none"> • Barrio Amon, San Jose P.O.Box 22534-1000 San Jose Tel. 256-5265, Fax. 223-4006

Name of Organization	Contact Address
	<ul style="list-style-type: none"> Barrio Amon, San Jose P.O.Box 22534-1000 San Jose Tel. 256-5265 ext. 270, Fax. 223-4006
i) Refinadora Costarricense de Petroleo (RECOPE)	<ul style="list-style-type: none"> Detras del Centro Comercial El Pueblo, en San Francisco de Goicoechea P.O.Box 4351-1000 San Jose Tel. 257-6544 ext. 1024, Fax. 255-2049
j) Servicio Nacional de Aguas Subterraneas, Riego y Avenamiento (SENARA)	<ul style="list-style-type: none"> De la Clinica Moreno Canas, 100 este y 25 norte, Barrio Cuba. P.O.Box 5262-1000 San Jose Tel. 257-97-33 ext. 12, Fax. 222-87-85
k) Instituto Nacional de Seguros	<ul style="list-style-type: none"> Frente al Parque Espana, en San Jose Centro P.O.Box 1061-1000 San Jose Tel. 223-5800, Fax. 222-2310

Source: a)

6.3 Academic

Name of Organization	Contact Address
a) Centro Agronomico Tropical de Investigacion y Ensenanza (CATIE)	<ul style="list-style-type: none"> CATIE, Turrialba, Cartago P.O.Box 7170-CATIE Turrialba Tel. 556-6431 ext. 200, 556-6081, Fax. 556-6166 Tel. 556-0232, 556-6431 ext. 382, Fax. 556-6480 Tel. 556-8514, 556-6431 ext. 214, Fax. 556-1533 Tel. 556-0401, 556-6431 ext. 318, Fax. 556-2430 Tel. 556-7830, 556-6431 ext. 340, Fax. 556-1576 Tel. 556-1933, 556-6431 ext. 374, Fax. 556-7766
b) Escuela de Agricultura de la Region Tropical Humeda (EARTH)	<ul style="list-style-type: none"> Las Mercedes de Guacimo Limon. P.O.Box 4442-1000 San Jose Tel. 255-2000, Fax. 255-2726
c) Instituto Tecnologico de Costa Rica (ITCR)	<ul style="list-style-type: none"> Instituto Tecnologico de Costa Rica P.O.Box 159-7050 Cartago Tel. 552-5333, Fax. 551-5348 Instituto Tecnologico de Costa Rica Tel. 552-5333 ext. 2279, Fax. 591-4182 Instituto Tecnologico de Costa Rica Tel. 552-5333 ext. 2568, Fax. 591-5147 Instituto Tecnologico de Costa Rica Tel. 552-5333 ext. 2489, 591-3315, Fax. 591-3315 Instituto Tecnologico de Costa Rica Tel. 552-5333 ext. 2423, 2309, 2422 551, 8220 Fax. 551-6663
d) Universidad de Costa Rica (UCR)	<ul style="list-style-type: none"> Ciudad Universitaria Rodrigo Facio. San Pedro de Montes de Oca P.O.Box 2060-1000 UCR-Rectoria Tel. 207-4000, Fax. 207-5225 Ciudad Universitaria Rodrigo Facio. San Pedro de Montes de Oca P.O.Box 2060-1000 UCR Att: CIA Tel. 207-5491, 5490, 5263, Fax. 234-16-27 Ciudad de Investigacion UCR. P.O.Box 2060-1000 UCR Att: CBCYM Tel. 253-5661, Fax. 224-6749 Ciudad de Investigacion UCR. P.O.Box 2060-1000 UCR, Att: CIMAR Tel. 253-5661 ext. 3401, Fax. 253-3480 Ciudad Universitaria Rodrigo Facio. San Pedro de Montes de Oca P.O.Box 2060-1000 UCR Att: CICIMA Tel. 207-4705, Fax. 225-5511 Ciudad Universitaria Rodrigo Facio. San Pedro de Montes de Oca P.O.Box 2060-1000 UCR Att: CICA Tel. 207-4479, Fax. 253-1363 De la Farmacia la Paulina 50 metros oeste, 25 m. norte y una cuadra al oeste. Esc. Ing. Civil, U.C.R. Att: CIEDES Tel. 283-9705, Fax. 225-1684 Ciudad Universitaria Rodrigo Facio. San Pedro de Montes de Oca P.O.Box 2060-1000 UCR Att: CIPRONA Tel. 207-4474, Fax. 225-9866 Ciudad Universitaria Rodrigo Facio. San Pedro de Montes de Oca P.O.Box 2060-1000 UCR Att: CITA Tel. 207-4701, Fax. 253-3762

Name of Organization	Contact Address
	<ul style="list-style-type: none"> • Ciudad Universitaria Rodrigo Facio. San Pedro de Montes de Oca P.O.Box 2060-1000 UCR Escuela de Geologia Tel. 225-7141, Fax. 234-2347 • Ciudad Universitaria Rodrigo Facio. San Pedro de Montes de Oca P.O.Box 2060-1000 UCR Escuela de Biologia Tel. 207-5392, 4308, Fax. 207-4216 • Ciudad Universitaria Rodrigo Facio. San Pedro de Montes de Oca P.O.Box 2060-1000 UCR Escuela de Quimica Tel. 207-5370, 5371, Fax. 253-5020 • Ciudad de Alajuela, Barrio San Jose P.O.Box 183-4050 Alajuela Tel. 433-8284 433-9111, Fax. 443-9086 • Ciudad Universitaria Rodrigo Facio. San Pedro de Montes de Oca P.O.Box 2060-1000 UCR, Att:Facultad de Agronomia Tel. 207-4204, 4709, Fax. 225-9694 • Paraiso de Cartago, 40 m sur y 100 m este de la Entrada del Campo Ayala P.O.Box 1031-7050 Cartago Tel. 552-3247, Fax. 552-3151 • Ciudad Universitaria Rodrigo Facio. San Pedro de Montes de Oca P.O.Box 3620 San Pedro De Montes de Oca Tel. 207-5354, 5621, Fax. 224-2619 • 2do Piso Edificio Lachner, Altos de la Pops, Frente a la Facultad de Derecho P.O.Box 2060-1000 UCR Att: OdD Tel. 283-7619, 7483, Fax. 283-7563 • De la Farmacia la Paulina 50 metros oeste, 25 m. norte y una cuadra al oeste. P.O.Box Esc.Ing Civil, U.C.R. Att: ProDUS Tel. 224-8838, Fax. 283-7634 • Ciudad Universitaria Rodrigo Facio. San Pedro de Montes de Oca P.O.Box 2060-1000 UCR Att: SIBDI Tel. 253-6152, Fax. 234-2809
e) Universidad Estatal a Distancia (UNED)	<ul style="list-style-type: none"> • De la Farmacia La Paulina en Sabanilla de Montes de Oca, 200 m al este P.O.Box 474-2050 San Pedro Tel. 253-2121 ext. 2505, Fax. 253-4990 • De la Farmacia La Paulina en Sabanilla de Montes de Oca, 200 m al este. P.O.Box 474-2050 San Pedro Tel. 253-2121 ext. 2254, 2244, Fax. 234-6547
	<ul style="list-style-type: none"> • De la Farmacia La Paulina en Sabanilla de Montes de Oca, 200 m al este. P.O.Box 474-2050 San Pedro Tel. 253-2121 ext. 2381, Fax. 224-9216 • De la Farmacia La Paulina en Sabanilla de Montes de Oca, 200 m al este. P.O.Box 474-2050 San Pedro Tel. 253-2121 ext. 2260, 2261, Fax. 234-1631
f) Universidad Nacional (UNA)	<ul style="list-style-type: none"> • UNA, Heredia. P.O.Box 86-3000 Heredia, UNA Tel. 261-0101 ext. 401, Fax. 237-7593 Tel. 277-3181, Fax. 237-5144 Tel. 261-0101 ext. 292, Fax. 277-3290 Tel. 277-3324, Fax. 237-6427 Tel. 261-0101 ext. 584, 277-3584, Fax. 277-3583 Tel. 261-0102 ext. 357, Fax. 277-3350 • De la Esquina norte de la UNA, 25 este. P.O.Box 86-3000 Heredia; UNA Tel. 261-0101 ext. 304, 305, 261-0781 Fax. 261-0303 • UNA, Heredia. P.O.Box 86-3000 Heredia, UNA Tel. 261-0101, 237-5134, Fax. 237-6427 Tel. 261-0101 ext. 440, 237-7039 Fax. 237-7036 Tel. 277-3329, Fax. 237-6427 Tel. 261-0102 ext. 349-357, 277-3357 Fax. 277-3350

Source: a)

6.4 No Governmental (National/International)

Name of Organization	Contact Address
a) Asociacion Conservacionista "YISKI".	• De la esquina sureste del club La Guaria, 250 sur, casa crema de alto a mano derecha P.O.Box 1038-2150 Moravia Tel. 236-3823, 297-0970, Fax. 235-8425
b) Asociacion Nacional de Agricultura Organica (ANAO)	• Vargas Araya en Montes de Oca, contiguo al Colegio Monte Rey P.O.Box 132-2020 Zapote Tel. 224-0911, Fax. 224-0911
c) Asociacion Palmarena para la recuperacion del Ambiente (APRA)	• Frente al costado norte del Parque de Palmares, Bufette Campos y Sagot P.O.Box 200-4300 Palmares, Alajuela Tel. 453-0009, Fax. 453-1415
d) Asociacion Ramonense para la Conservacion Ambiental (ARCA)	• Planta Baja del Palacio Municipal de San Ramon P.O.Box 172-4250 San Ramon, Alajuela Tel. 445-5490, Fax. 445-5718
e) Asociacion Ramonense para el Desarrollo de la Agricultura Organica (ARDAO)	• Agencia de ext. ension Agricultura del MAG en San Ramon P.O.Box 245-4250 San Ramon, Alajuela Tel. 445-5490, Fax. 445-5718
f) Biomass Users Network (BUN-CR)	• Lourdes de Montes de Oca, de Supermercado Pali 100 sur, contiguo al parqueo. P.O.Box 573-2050 Montes de Oca Tel. 283-8835, Fax. 283-8845
g) Centro Cientifico Tropical (CCT)	• Del Antiguo Higueron en San Pedro 100 sur y 125 este P.O.Box 83-870-1000 San Jose Tel. 225-2649, Fax. 253-4963
h) Centro de Derecho Ambiental y de los Recursos Naturales (CEDARENA)	• Del Higueron en San Pedro, 100 suroeste y 450 al este P.O.Box 134-2050 San Pedro Tel. 253-7239, 224-8239, Fax. 225-5111
i) Centro de Gestion Tecnologica e Informatica Industrial(CEGESTI)	• Del costado noroeste de la Iglesia Santa Teresita 450 este P.O.Box 1082-2050 San Pedro Tel. 280-8511, Fax. 280-2494
j) Centro de Investigacion en Cafe (CICAFE)	• San Pedro de Barba de Heredia P.O.Box 37-1000 San Jose Tel. 260-1875, Fax. 237-1975
k) Cruz Roja Costarricense (CRC)	• Avenida 8, calle 14, frente a funeraria Polini P.O.Box 1025-1000 San Jose Tel. 233-70-33 ext. 208, Fax. 221-3243
l) Direccion de Investigacion y ext. ension de la Cana de Azucar (DIECA)	• Barrio Toumon, del Complejo Kamakiri 200 este P.O.Box 2330-1000 San Jose Tel. 221-0252, Fax. 223-0839
m) Federacion Costarricense para la Conservacion del Ambiente (FECON)	• Barrio Los Yoses, Altos de Soda Spoon, 3 Piso San Pedro P.O.Box 1948-1002 Paseo de los Estudiantes Tel. 283-6046, 283-6128, Fax. 283-6046
n) Fundacion Ambio (AMBIO)	• De Casa Matute Gomez, 100 este y 50 sur. Casa 1053 P.O.Box 1487-1002 Paseo de Estudiantes Tel. 258-1212, Fax. 222-3182
o) Fundacion Neotropica (FN)	• Frente al Colegio de Ingenieros y Arquitectos en Curridabat. P.O.Box 236-1002 San Jose Tel. 253-2130 ext. 211 o 215, Fax. 253-4210
p) Fundacion Parques Nacionales (FPN)	• De la Iglesia Santa Teresita, 300 norte y 150 este. P.O.Box 1108-1002 Paseo de los Estudiantes Tel. 257-2239, Fax. 222-4732
q) Instituto Interamericano de Cooperacion para la Agricultura (IICA)	• Carretera de Guadalupe hacia Coronado, contiguo a la Clinica del Seguro Social P.O.Box 55-2200 Coronado Tel. 229-0222, Fax. 229-4741
r) Instituto Nacional de Biodiversidad (INBio)	• 200 norte y 400 oeste del Cementerio de Santo Domingo de Heredia. P.O.Box 22-3100 Santo Domingo Heredia Tel. 244-0690, Fax. 244-4654
s) Junta Administrativa de Servicios Electricos de Cartago (JASEC)	• Avenida 1, calles 3 y 5, Costado sur del Banco Credito Agricola de Cartago P.O.Box 179-7050 Cartago Tel. 551-2828 ext. 213, Fax. 551-4529
t) Oficina Regional para Centroamerica de la Union Mundial para la Naturaleza (UICN)	• De la Iglesia de Moravia, 200 sur casa esquinera blanca con verde P.O.Box 0146-2150 Moravia Tel. 236-2733 ext. 37, Fax. 240-9934
u) Organizacion para Estudios Tropicales (OET)	• 650 oeste del Colegio Lincoln en Moravia P.O.Box 676-2050 San Pedro Tel. 240-66-96 766-6565, Fax. 766-65-35

Source: a)

6.5 State of the Environment

Expert / Experto	Center, Program / Centro, Programa, Escuela, Institution / Institucion	Phone / FAX - Telefono/Fax, E-mail / correo electronico
1- Atmospheric Pollution / Contaminacion del Aire		
Lluvia Acida-Contaminacion Costera/Marina	CIMAR, UCR	Tel: 253-5661 ext. 3401 Fax: 253-5661 ext. 3480 E-mail: jacuna@cariari.ucr.ac.cr
Contaminacion Aire	Escuela de Ciencias Ambientales, Programa Contaminantes, UNA Facultad de Tierra y Mar.	Tel: 261-0101 ext 292, 277-3292 / Fax: 237-7032 E-mail: malfarog@una.ac.cr
Calidad de Aire	CICA, UCR	Tel: 253-1363/225-0064 Fax: 253-1363/234-6164 E-mail: abaniche@cariari.ucr.ac.cr
Programa Ozono	Laboratorio de Investigaciones Atmosfericas y Planetarias y en el Laboratorio Fisica Nuclear., UCR Facultad de Ciencias, Escuela de Fisica.	Tel: 224-2619, Fax: 223-9359
Contaminacion atmosferica y sonica	Proceso de Normalizacion de la Unidad Tecnica Especializada de la Dir. de Proteccion al Amb. Humano, Ministerio Salud	Tel: 255-3711, Fax: 257-6028 E-mail: aincer@ns.netsalud.sa.cr
Contaminacion Aire	Escuela de Quimica, UNA Facultad de Ciencias Exactas y Naturales.	Tel: 277-3576, Fax: 277-3349
Contaminacion Aire	CICA, UCR	Tel: 253-1363/225-0064, Fax: 253-1363/234-6164 E-mail: malvarez@cariari.ucr.ac.cr
Contaminacion atmosferica y sonica	Proceso de Control Estatal de la Direccion de Proteccion al Ambiente Humano, Ministerio Salud	Tel: 233-1081, Fax: 222-9625
2- Water Pollution / Contaminacion del Agua		
Microbiologia	Lab. de Microbiologia, UCR	Tel: 385-5497/207-4361, Fax: 225-2374 E-mail: mlarias@cariari.ucr.ac.cr
Soil Pollution, Plaguicidas	Centro de Investigaciones para Contaminacion Ambiental, UCR Facultad de Agronomia, Escuela de Fitotecnia.	Tel: 253-1363/225-0064 Fax: 253-1363/234-6164
Contaminacion agua	Instituto Regional de Estudios en Sustancias Toxicas. (IRET), UNA	Tel: 277-3584, Fax: 277-3583 261-0101 ext.584 E-mail: iret@una.ac.cr
Quimico	Centro Cientifico Tropical, CCT	Tel: 253 3267, Fax: 253-4963 E-mail: ccarazo@cariari.ucr.ac.cr
Manejo de Aguas Residuales y Contaminacion del Agua	Proceso de Control Estatal de la Dir. de Proteccion al Amb. Humano, Ministerio Salud	Tel: 233-1081, Fax: 222-9625
Calidad de Aguas	CICA	Tel: 253-1363 Fax: 253-1363/234-6164
Contaminacion agua	Servicio Nacional de Aguas Subterraneas SENARA	Tel: 257-9733
Contaminacion agua	CICA, UCR	Tel: 261/0101 ext 292, 277-3292 Fax: 237-7032 E-mail: rsolorzano@ns.minae.go.cr
Agua	CIMAR, UCR Facultad de Ciencias,	Tel: 2535661 ext 3401, Fax: ext 3480 E-mail: javargas@cariari.ucr.ac.cr
3- Other Pollution / Otros tipos de Contaminacion		
Contaminacion Sonica	CICIMA, Escuela de Fisica., UCR Facultad de Ciencias,	Tel: 225-5511, Fax: 225-5511 E-mail: jaraya@cariari.ucr.ac.cr
Contaminacion Sonica	Instituto Geografico Nacional (IGN), MOPT	Tel: 257-7798 ext. 2627
Plaguicidas en el cultivo de cafe.	CICAFE (Centro de Investigacion del Cafe)	Tel: 260-1875 E-mail: icafe@sol.raesa.co.cr
Plaguicidas en el cultivo de la cana.	DIECA (Direccion de Investigacion y Extension de la Cana de Azucar)	Tel: 221-0252, Fax: 223-0839
Plaguicidas	Escuela de Biologia, UCR Facultad de Ciencias	Tel: 207-4215, Fax: 225-6454
Control Biologico de Plagas	Escuela de Biologia, UCR Facultad de Ciencias.	Tel: 207-4234/207-5318 Fax: 224-9367 E-mail: aincer@ns.netsalud.sa.cr
Contaminacion Sonica	Proceso de Normalizacion de la Unidad Tecnica Especializada de la Dir. de Proteccion al Amb. Humano, Ministerio Salud	Tel: 255-3711, Fax: 257-6028
Plaguicidas en el cultivo de frutales	Estacion Fabio Baudrit, UCR	Tel: 433-9111/433-8430 Fax: 4339086 E-mail: jlobo@cariari.ucr.ac.cr

Expert / Experto	Center, Program / Centro, Programa, Escuela, Institution / Institucion	Phone /FAX - Telefono/Fax, E-mail / correo electronico
Plaguicidas	CICA, UCR	Tel: 261/0101 ext 292 Fax: 277-3292 / 237-7032
Fertilizantes y Plaguicidas en el cultivo de verduras	Estacion Fabio Baudrit, UCR	Tel: 433-9111/433-8430 Fax: 4339086 E-mail: mmoreira@cariari.ucr.ac.cr
Detergentes	Unidad de Servicio a la Industria UCR, Escuela de Quimica.	Tel: 207-5370, Fax: 207-5020
Sustancias Radiactivas	CICA, UCR	Tel: 261/0101 ext 292 Fax: 277-3292 / 237-7032 E-mail: asalzar@cariari.ucr.ac.cr
Plaguicidas	CICA, UCR	Tel: 261/0101 ext 292 Fax: 277-3292 / 237-7032 E-mail: msegnini@cariari.ucr.ac.cr
4- Waste Management / Manejo de Desechos		
Desechos Solidos	Escuela de Ciencias Geograficas., UCR	Tel: 277-3283, Fax: 237-2857 E-mail: oarrieta@irazu.una.ac.cr
Desechos Solidos Analisis Quimicos	Escuela de Quimica, UCR. Escuela de Quimica, Caja Costarricense del Seguro Social	Tel: 207-5038 Tel: 222-0898, Fax: 253-5020
Desechos solidos y peligrosos	Unidad Tecnica Especializada de la Direccion de Proteccion al Ambiente Humano, Ministerio Salud	Tel: 255-3711, Fax: 257-6028
Desechos agricolas, conservacion suelos	Escuela de Ciencias Agrarias, UNA, Facultad Tierra y Mar	Tel: 277-3303
Manejo de Desechos	Escuela de Ingenieria Civil, ProDUS, UCR Facultad de Ingenieria,	Tel: 224-8838/283-7634 E-mail: rpujol@cariari.ucr.ac.cr
5- Energy Conservation and Alternativy Energy / Conservacion de Energia y Energia Alterna		
Conservacion de la Energy	Programa de Conservacion de Energia, CNFYL	Tel: 295-5000 ext 5393 E-mail: henrychi@sol.racsa.co.cr
Energia	CNFyL ARESEP	Tel: 255-3711, Fax: 257-6028 Tel: 220-0102, Fax: 220-0374 E-mail: dmora@sol.racsa.co.cr
Hidrograficas	ACOPE, Asociacion Costarricense de Productores de Energia	Tel: 228-8003 E-mail: spaniagu@cariari.ucr.ac.cr
Energia	ITCR, Instituto Tecnologico	Tel: 552-5333
Generacion de Energia	Programa de Generacion de Energia, CNFYL.	Tel: 295-5000
Energia Eolica	Departamento de Energia Alterna, ICE	
Energia Solar	Programa Energia Solar, UNA	Tel: 261-0101, Fax: 277-3344 E-mail: camind@sol.racsa.co.cr
Energia Eolica	Proyecto Eolico Tejona, ICE	Tel: 220-7275, Fax: 220-8234
Energia Geotermica	Departamento de Sismologia, vulcanologia y exploracion Geofisica, UCR	Tel: 225-7941/234-2347
Fuentes alterna energia y eficiencia energetica	Area de Energia, Camara de Industrias	Tel: 256-2826
Generacion de Energia	Programa de Generacion de Energia, CNFYL	Tel: 221-3027/233-7095
Energia	Direccion Sectorial de Energia, MINAE	E-mail: jaoroz@msmail.ice.go.cr
6- Water Supply / Abastecimiento de Agua		
Aguas Subterraneas y Acueductos Rurales	Division de Aguas Subterraneas de la Direccion de Obras Rurales, AyA	Tel: 257-922 ext 268
Agua Potable y aguas residuales	Estudios Basicos de la Direccion de Diseno y Supervision de Obras Urbanas, AyA	Tel: 257-9222 ext 275
Acueductos Rurales	Division de Informacion, Control y Evaluacion de la Direccion de Obras Rurales, AyA	Tel: 257-9222 ext 263-264
Calidad del agua	Laboratorio Central, AyA	Tel: 279-5118, Fax: 279-5173
Perdidas en Acueductos	Programa de Control de Perdidas, AyA	Tel: 255-3963, Fax: 255-3394
Manejo de Cuencas	Estudios Basicos de la Direccion de Diseno y Supervision de Obras Urbanas, AyA	Tel: 257-922 ext 331
Operacion de Acueductos	Centro de Operaciones del Acueducto Metropolitano, AyA	Tel: 257-1497, Fax: 223-5935
Hidrogeologia, acuíferos del Valle Central	Estudios Basicos de la Direccion de Diseno y Supervision de Obras Urbanas, AyA	Tel: 257-9222 ext. 282
Contaminacion agua	Servicio Nacional de Aguas Subterraneas, SENARA	Tel: 257-9733 no tiene
Acueductos Urbanos	Direccion de Diseno y Supervision de Obras, AyA	Tel: 257-9222 ext 282
7- Waste Water Management / Manejo de Aguas Servidas		
Tratamiento de Aguas Servidas y Contaminacion del Agua	Proceso de Permisos de Construccion de la Direccion de Proteccion al Ambiente Humano, Ministerio Salud	Tel: 233-0903, Fax: 223-6689
Manejo de Aguas Residuales	Direccion de Aguas Residuales, AyA	Tel: 257-9222 ext 234-235

Expert / Experto	Center, Program / Centro, Programa, Escuela, Institution / Institucion	Phone / FAX - Telefono/Fax, E-mail / correo electronico
Tratamiento de Aguas Servidas Manejo de Aguas Residuales Tratamiento de Aguas Servidas y Contaminacion del Agua Tratamiento de Aguas Servidas y Contaminacion del Agua	Laboratorio Ingenieria Ambiental, UCR Facultad de Ingenieria Direccion de Aguas Residuales, AyA Proceso de Normalizacion de la Unidad Tecnica Especializada de la Direccion de Proteccion al Ambiente Humano, Ministerio Salud Dir. de Proteccion al Amb. Humano, Ministerio Salud	Tel: 207-5063, Fax: 253-4942 E-mail: alorena@terraaba.fing.ucr.ac.cr Tel: 223-5555 ext 218 Tel: 255-3711, Fax: 257-6028 E-mail: aincer@ns.netsalud.sa.cr Telefax: 233-2149
Tratamiento de Aguas Servidas y Contaminacion del Agua	Unidad de Permisos y Controles de la Direccion de Proteccion al Ambiente Humano, Ministerio Salud	Telefax: 223-66-89
8- Forest Conservation / Conservacion de Bosques		
Forestal Fertilidad de Suelo Fertilidad de Suelo Fertilidad de Suelo Ecologia Forestal Forestal Forestal Forestal	Centro de Investigacion en Integracion Bosque Industria (CIBI), ITCR Centro de Investigaciones Agronomicas, Escuela de Fitotecnica, UCR Facultad de Agronomia, Centro de Investigaciones Agronomicas, Escuela de Fitotecnica, UCR Facultad de Agronomia Centro Cientifico Tropical, CCT UNA. Facultad de Tierra y Mar Centro de Investigacion y Proteccion Ambiental, ITCR Area Humedales, UICN Departamento de Ingenieria Forestal, ITCR	Tel: 552-5333 ext 2489/591-3315 E-mail: fbertsch@cariari.ucr.ac.cr Tel: 224-3712, Fax: 234-1627 Tel: 224-3712, Fax: 234-1627 Tel: 225-4963 Tel: 277-3293/277-3291 Fax: 260-0303 Tel: 552-5333 ext 2568 Tel: 236-2733, Fax: 240-9934 Tel: 552-5333 ext 2279
9- Biological Diversity / Biodiversidad		
Biologia Marina- Arrecifes de Coral Biodiversidad Pesca Orquideas Biodiversidad Vida Silvestre Agua Dulce, humedales	CIMAR, UCR Escuela de Biologia. Instituto Nacional de Biodiversidad, InBIO INCOPECA, Instituto Costarricense de Pesca y Acuicultura Jardin Lankester, UCR Escuela de Biologia, UCR Facultad de Ciencias, Oficina Regional para Centroam., UICN Escuela de Biologia, UCR Facultad de Ciencias,	Tel: 253-5661 ext 3401 Fax: 253-5661 ext 3480 Tel: 244-0690 Tel: 220-3952 Tel: 552-3247 Tel: 207-4043, Fax: 224-6793 E-mail: ojrocha@cariari.ucr.ac.cr Tel: 236-2733, Fax: 240-9934 E-mail: vsolis@uicn.icr.co.cr Tel: 224-3710, Fax: 224-9367 E-mail: gumana@cariari.ucr.ac.cr
10- Natural Resource Management / Manejo de Recursos Naturales		
Suelos Recursos Naturales Oceanografia Recursos Naturales Oceanografo Hidrologia Bioquimica de procesos post-cosecha. Recursos Naturales Agua Oceanografia Recursos Naturales	Centro de Investigaciones Agronomicas, Escuela de Fitotecnica, UCR Facultad de Agronomia Centro Cientifico Tropical CCT Centro Operativo del Instituto Internacional del Oceano., UNA Facultad de Ciencias Exactas y Naturales. Observatorio del Desarrollo, UCR Facultad de Ciencias Economicas. Centro de Investigaciones Geofisicas, UCR Escuela de Geologia Maestria Regional en Manejo de Recursos Hidricos, UCR Facultad de Ciencias Escuela de Quimica UCR Facultad de Ciencias, Departamento Administracion de Prestamos y Proyectos., ICE CIMAR, UCR Facultad de Ciencias, Escuela de Biologia. Instituto de Investigaciones en Ingenieria, UCR Facultad de Ciencias CIEDES, UCR Escuela de Ingenieria Civil	Tel: 224-3712, Fax: 234-1627 Tel: 253 3267, Fax: 253-4963 E-mail: jcalvo@cct.or.cr Tel: 277-3347, Fax: 260-1197 E-mail: gechever@irazu.una.ac.cr Tel: 283-7619, 283-7483 E-mail: egutierr@cariari.ucr.ac.cr Tel: 207-53201, Fax: 207-5096 Tel: 225-7941, Fax: 234-2347/236-0326 E-mail: mlosilla@cariari.ucr.ac.cr Tel: 207-5048, Fax: 253-5020 Tel: 220-7275, Fax: 220-1409 Tel: 253-5661 ext 3401, Fax: 253-5661 ext 3480 E-mail: hmolina@cariari.ucr.ac.cr Tel: 224-2619, Fax: 223-9359 E-mail: Imurillo@cariari.ucr.ac.cr Tel: 283-9705, Fax: 253-4942 E-mail: cquesada@cariari.ucr.ac.cr
Cuencas Hidrograficas Manejo Suelos Agronomo Humedales	Escuela de Fitotecnica, Sede Regional del Atlantico., UCR Facultad de Agronomia, Escuela de Fitotecnica, UCR Facultad de Agronomia, Despacho Viceministro, MINAE Area de Humedales, UICN	Tel: 556-1044, Fax: 234-6164/556-0318 E-mail: wrodrig@cariari.ucr.ac.cr Tel: 224-3712, Fax: 234-1627 E-mail: fsancho@cariari.ucr.ac.cr Tel: 233-4533, Fax: 257-0697 Tel: 236-2733, Fax: 240-9934
11- Natural Disasters / Desastres Naturales		

Expert / Experto	Center, Program / Centro, Programa, Escuela, Institution / Institucion	Phone / FAX - Telefono/Fax, E-mail / correo electronico
Climatologia-Desastres	Escuela de Fisica, UCR Facultad de Ciencias, .	Tel: 207-5394/207-5142, Fax: 224-9367 E-mail: vcastro@cariari.ucr.ac.cr
Meteorologo-Pronostico.	MINAE, Departamento Informacion y Comercializacion., IMN	Tel: 222-5616, Fax: 223-1837
Desastres Naturales Meteorologia	Escuela de Fisica, UCR Facultad de Ciencias,	Tel: 207-5394, Fax: 234-2703/224-9367 E-mail: wfer@atmos.efis.ucr.ac.cr wfernand@cariari.ucr.ac.cr
Sismologia	OVSICORI, UNA	Tel: 261-0781, Fax: 261-0303 E-mail: jprotti@una.ac.cr
Ingenieria Estructural	LANAME, UCR	Tel: 207-4677/207-4678 Fax: 253-4911
Impactos Sociales	Facultad Latinoamericana de Ciencias Sociales, FLACSO	Tel: 253-9621/234-6646
Oceanografo Vulcanologia	Centro de Investigaciones Geofisicas, UCR OVSICORI, UNA	Tel: 207-5320, Fax: 207-5096 Tel: 261-0781, Fax: 261-0303 E-mail: jprotti@una.ac.cr
Deslizamientos Riesgos Naturales	ICE Escuela de Geologia., UCR Facultad de Ciencias	Tel: 220-5320 Tel: 225-7941/253-8407, Fax: 234-2347/253-2586 E-mail: spaniagu@cariari.ucr.ac.cr
Ingenieria Estructural	Laboratorio Nacional de Materiales y Modelos Estructu., UCR, LANAME	Tel: 207-4677/207-4678 Fax: 253-4911
Ciencias de la Tierra y Geofisica. Ingenieria Sismica	OVSICORI, UNA Laboratorio Nacional de Materiales y Modelos Estructu., UCR, LANAME	Tel: 261-0781, Fax: 261-0303 E-mail: jprotti@una.ac.cr Tel: 207-4677/207-4678 Fax: 253-4911
12- Environmental Education / Educacion Ambiental		
Educacion de Manejo de Recursos Naturales	Manejo de Recursos Naturales, UNED	Tel: 253-2121, Fax: 2249216
Educacion Ambiental	UCR Programa Educacion Ambiental, UCR, Facultad de Educacion	
Educacion Ambiental	Limnologia, UNA	Tel: 277-3536 telfax E-mail: acharpem@una.ac.cr
Educacion Ambiental	Programa Educacion Ambiental, UNA, Escuela de Ciencias Biologicas	Tel: 261-0101/277-3322 Fax: 2376427 E-mail: rmendoz@una.ac.cr
Educacion Ambiental	Departamento de Educacion Ambiental, Ministerio de Educacion	Tel: 221-0731, Fax: 255-4527 E-mail: jmolina@sol.racs.co.cr
Estudios de Impacto Ambiental	Escuela de Geologia., UCR Facultad de Ciencias	Tel: 225-7441, Fax: 223-1609 E-mail: amongeu@cariari.ucr.ac.cr
Educacion Ambiental	PRINSOPAZ, UCR, Facultad de Educacion	Tel: 224-3066
Educacion Ambiental	Departamento de Biologia, ITCR	Tel: 552-5333 ext 2285/ 551-5348 E-mail: imoreira@mimas.cie.itcr.ac.cr
Educacion Ambiental Comision Ambiental	Programa Educacion Ambiental, UNED CONARE	Tel: 253-2121 ext 2254-2244 Tel: 224-5035/224-3066
13- Environmental NGO's / Organizaciones Ambientales No Gubernamentales		
	Asociacion Conservacionista "YISKI".	P.O.Box 1038-2150, Moravia Tel: 236-3823/297-0970 Fax: 235-8425
	Asociacion Nacional de Agricultura Organica (ANAO)	P.O.Box 132-2020, Zapote Tel: 224-0911, Fax: 224-0911
	Asociacion Palmarena para la recuperacion del Ambiente (APRA) Asociacion Ramonence para la Conservacion Ambiental (ARCA) Asociacion Ramonence para el Desarrollo de la Agricultura Organica (ARDAO) Biomass Users Network (BUN-CR) Centro Cientifico Tropical (CCT) Centro de Derecho Ambiental y de los Recursos Naturales (CEDARENA)	P.O.Box 200-4300, Palmares, Alajuela Tel: 453-0009, Fax: 453-1415 P.O.Box 172-4250, San Ramon, Alajuela Tel: 445-5490, Fax: 445-5718 P.O.Box 245-4250, San Ramon, Alajuela Tel: 445-5490, Fax: 445-5718 P.O.Box 573-2050, Montes de Oca Tel: 283-8835, Fax: 283-8845 P.O.Box 83-870-1000, San Jose Tel: 225-2649, Fax: 253-4963 P.O.Box 134-2050, San Pedro Tel: 253-7239/224-8239, Fax: 225-5111

Expert / Experto	Center, Program / Centro, Programa, Escuela, Institution / Institucion	Phone / FAX - Telefono/Fax, E-mail / correo electronico
	<p>Centro de Gestion Tecnologica e Informatica Industrial(CEGESTI)</p> <p>Centro de Investigacion en Cafe (CICAFE)</p> <p>Cruz Roja Costarricense (CRC)</p> <p>Direccion de Investigacion y Extension de la Cana de Azucar (DIECA)</p> <p>Federacion Costarricense para la Conservacion del Ambiente (FECON)</p> <p>Fundacion Ambio (AMBIO)</p> <p>Fundacion Neotropica (FN)</p> <p>Fundacion Parques Nacionales (FPN)</p> <p>Instituto Interamericano de Cooperacion para la Agricultura (IICA)</p> <p>Instituto Nacional de Biodiversidad (INBio)</p> <p>Junta Administrativa de Servicios Electricos de Cartago (JASEC)</p> <p>Oficina Regional para Centroamerica de la Union Mundial para la Naturaleza (UICN)</p> <p>Organizacion para Estudios Tropicales (OET)</p>	<p>P.O.Box 1082-2050, San Pedro Tel: 280-8511, Fax: 280-2494</p> <p>P.O.Box 37-1000, San Jose Tel: 260-1875, Fax: 237-1975</p> <p>P.O.Box 1025-1000, San Jose Tel: 233-70-33 ext 208 Fax: 221-3243</p> <p>P.O.Box 2330-1000, San Jose Tel: 221-0252, Fax: 223-0839</p> <p>P.O.Box 1948-1002, Paseo de los Estudiantes Tel: 283-6046/283-6128 Fax: 283-6046</p> <p>P.O.Box 1487-1002, Paseo de Estudiantes Tel: 258-1212, Fax: 222-3182</p> <p>P.O.Box 236-1002, San Jose Tel: 253-2130 ext 211 o 215 Fax: 253-42-10</p> <p>P.O.Box 1108-1002, Paseo de los Estudiantes Tel: 257-2239, Fax: 222-4732</p> <p>P.O.Box 55-2200, Coronado Tel: 229-0222, Fax: 229-4741</p> <p>P.O.Box 22-3100, Santo Domingo Heredia Tel: 244-0690, Fax: 244-4654</p> <p>P.O.Box 179-7050, Cartago Tel: 551-2828 ext 213 Fax: 551-4529</p> <p>P.O.Box 0146-2150, Moravia Tel: 236-2733 ext 37 Fax: 240-9934</p> <p>P.O.Box 676-2050, San Pedro Tel: 240-66-96/766-6565 Fax: 766-65-35</p>
Others/ Otros : -Environmental Economics / Economia Ambiental		
Economia Ambiental	UCR, Instituto de Investigacion en Ciencias Economicas.	Tel: 207-5613, Fax: 280-5835/224-3682 E-mail: madamson@cariari.ucr.ac.cr
Economia Ambiental	UNA Facultad de Ciencias Sociales, Maestria en Politica Economica.	Tel: 260-1600, Fax: 237-6868
Economia Ambiental, Economia Ecologica	UNA Facultad de Ciencias Sociales, Maestria en Politica Economica	Tel: 260-1600, Fax: 237-6868
Environmental Legislation / Legislacion Ambiental		
Derecho Ambiental	CEDARENA	Tel: 253-7239, Fax: 225-511
Derecho Ambiental	UCR, Facultad de Derecho.	Tel: 207-5668
Derecho Ambiental	Fundacion AMBIO	Tel: 258-1212 E-mail: funambio@sol.racsca.co.cr
Ley de Patentes y Biodiversidad	UCR, Vicerrectoria de Investigacion	Tel: 207-5006
Derecho Ambiental	UCR Facultad de Derecho	Tel: 223-8463, Fax: 233-8256
Territorial Planning / Ordenamiento Territorial		
Ordenamiento Territorial	Escuela de Ciencias Geograficas, Escuela de Fitotecnia, UNA Facultad de Tierra y Mar.	Tel: 277-3285, Fax: 237-2857
Ordenamiento Territorial	Centro de Investigaciones Agronomicas, UCR Facultad de Agronomia	Tel: 224-3712, Fax: 234-1627
Ordenamiento Territorial	Escuela de Ingenieria Civil, ProDUS, UCR	Tel: 283-7634 E-mail: rpujol@cariari.ucr.ac.cr
Ordenamiento Territorial	Maestria Centroamericana en Geografia, Escuela de Historia y Geografia., UCR Facultad de Ciencias Sociales	Tel: 234-7246, Fax: 234-7246 E-mail: gv@cariari.ac.cr

Source: a)

6.6 Embassy

Name of Organization	Person in Charge	Contact Address
Embajada del Japón	no information	• Barrio Rohrmoser, Sabana Oeste de la Primera Entrada, 500 Mts. Oeste y 100 Mts. Norte, San Jose, Costa Rica
Embassy of Costa Rica	no information	• Room 901 Kowa 38 Bld., 4-12-24 Nishiazabu, Minato-ku, Tokyo 106-0031 Tel: 03-3486-1812

Source: d)

List of Abbreviation			
ANAO	Asociación Nacional de Agricultura Orgánica	FECON	Federación Costarricense para la Conservación del Ambiente
AMBIO	Fundación AMBIO	FN	Fundación Neotrópica
ARC	Asociación Ramonense para la Conservación Ambiental	FONAFIFO	Fondo Nacional de Financiamiento Forestal (MINAE)
ARESEP	Autoridad Reguladora de los Servicios Públicos	ICE	Instituto Costarricense de Electricidad
APRA	Asociación Palmareña para la Recuperación del Ambiente	IGN	Instituto Geográfico Nacional (MOPT)
A Y A	Instituto Nacional de Acueductos y Alcantarillados	IICA	Instituto Interamericano de Cooperación para la Agricultura
BUN	Biomass Users Network	IMN	Instituto Meteorológico Nacional (MINAE)
CATIE	Centro Agronómico Tropical de Investigación y Enseñanza	INBio	Instituto Nacional de Biodiversidad
CCT	Centro Científico Nacional	IRET	Instituto Regional de Estudios en Sustancias Tóxicas (UNA)
CEDARENA	Centro de Derecho Ambiental y de los Recursos Naturales	ITCR	Instituto Tecnológico de Costa Rica
CEDIA	Centro de Documentación e Información Ambiental (UNED)	LPF	Laboratorios de Productos Forestales (UCR)
CEGESTI	Centro de Gestión Tecnológica e Informática Industrial	MAG	Ministerio de Agricultura y Ganadería
CIA	Centro de Investigaciones Agronómicas (UCR)	MIDEPLAN	Ministerio de Planificación Nacional y Política Económica
CIBCVM	Centro de Investigación en Biología Celular y Molecular (UCR)	MINAE	Ministerio del Ambiente y Energía
CIBI	Centro de Investigación del Bosque y la Industria (ITCR)	MNCR	Museo Nacional de Costa Rica
CICA	Centro de Investigaciones en Contaminación Ambiental (UCR)	MOPT	Ministerio de Obras Públicas y Transportes
CICIMA	Centro de Investigaciones en Ciencias en Ingeniería de Materiales (UCR)	OJD	Observatorio del Desarrollo (UCR)
CIEDES	Centro de Investigación en Desarrollo Sostenible (UCR)	OET	Organización para Estudios Tropicales
CIMAR	Centro de Investigación en Ciencias del Mar y Limnología (UCR)	OVSICORI	Observatorio Vulcanológico y Sismológico (UNA)
CIPA	Centro de Investigación y Protección Ambiental (ITCR)	ProdUS	Programa de Investigación en Desarrollo Urbano Sostenible (UCR)
CIPRONA	Centro de Investigaciones en Productos Naturales (UCR)	SENARA	Servicio Nacional de Aguas Subterráneas, Riego y Avenamiento
CITA	Centro de Investigaciones en Tecnología de Alimentos (UCR)	SETENA	Secretaría Técnica Nacional Ambiental (MINAE)
CIVCO	Centro de Investigación en Vivienda y Construcción (ITCR)	SINAC	Sistema Nacional de Areas de Conservación (MINAE)
CNE	Comisión Nacional de Emergencias (MOPT)	SINADES	Sistema Nacional de Desarrollo Sostenible (MIDEPLAN)
CNFL	Compañía Nacional de Fuerza y Luz	UCR	Universidad de Costa Rica
CRC	Cruz Roja Costarricense	UICN	Oficina Regional para Centroamérica de la Unión Mundial para la Naturaleza
DECAFOR	Desarrollo Campesino Forestal (MINAE)	UNA	Universidad Nacional
EARTH	Escuela de Agricultura de la Región Tropical Húmeda	UNED	Universidad Estatal a Distancia
		YISKI	Asociación Conservacionista _Yiski_

Source: a)

7. REFERENCE

a) Programa de Investigación en Desarrollo Urbano Sostenible Universidad de Costa Rica (ProDUS-UCR), 1998. Costa Rica
Environmental Profile

Following references numbered by a-O are referred in a).

1. General

- a-1) Comisión Nacional de Estadísticas Ambientales (CONEA), 1996, Memoria Primer Taller Nacional sobre Estadísticas Ambientales
- a-2) Dirección General de Estadística y Censos, Ministerio de Economía y Comercio (MEIC), 1997, Encuesta de Hogares. Publicación Anual
- a-3) Dirección Sectorial de Energía, Ministerio de Planificación y Política Económica (MIDEPLAN), Balance Energetico. (Publicación Anual)
- a-4) Harsthorn, G; Quesada, Carlos y otros, 1982, Costa Rica. Country Environmental Profile. A field Study
- a-5) Hartshorn, G., 1982, Costa Rica Perfil Ambiental
- a-6) Ministerio de Planificación y Política Económica (MIDEPLAN), 1998, Costa Rica. Panorama Nacional 1997: Balance Anual, Social, Económico y Ambiental (Publicación Anual: 1994, 1995, 1996 y 1997)
- a-7) Programa para el Desarrollo Legislativo (PRODEL), 1995, Directorio de Especialistas
- a-8) Proyecto Estado de la Nación, 1996, Estado de la nación en Desarrollo Humano Sostenible (Publicación Anual: 1994, 1995, 1996 y 1997)
- a-9) Quesada, Carlos (Coordinador), 1990, Estrategia de Conservación para el Desarrollo Sostenible de Costa Rica. Impacto Físico y financiero en la generación de desechos
- a-10) Sistema de Indicadores sobre Desarrollo Sostenible (SIDES). Ministerio de Planificación y Política Económica (MIDEPLAN), 1996, Principales Indicadores de Costa Rica

2. Atmospheric pollution / Contaminación de aire

- a-11) Abarca, Luis; Araya, José; Merlo, Horacio y Saavedra, José, Contaminación Sonica en el Área Metropolitana
- a-12) Banichevich Begovich, Antonio, 1994, Una biosfera en convulsión. El potencial cambio Global
- a-13) Grütter, Jürg (Coordinador) y otros, 1997, Memorias Congreso Mundial sobre Contaminación del Aire en Países en Vías de Desarrollo Vol. I y II
- a-14) Instituto Meteorológico Nacional (IMN), 1996, National inventory of sources and sinks of greenhouse gases in Costa Rica.
- a-15) Jiménez E, Creivin, 1997, Analisis del Impacto del Ecomarchamo. Informe de Trabajo de Graduación.
- a-16) Mc. Gregor, Douglas y Weaver, Christopher, 1994, Implementing Vehicle Inspection and on road Enforcement Programs in Costa Rica

3. Water Pollution / Contaminación de agua

- a-17) Astorga, Y. Y Coto, J., 1995, Toxicidad biológica de efluentes industriales en Costa Rica.
- a-18) Astorga, Yamileth, 1997, Estudio Binacional de Contaminación por plaguicidas en el Río San Juan-Parte Costa Rica.
- a-19) BUN, 1997, Producción más limpia y Sostenibilidad en la industria beneficiadora de café
- a-20) Flowers, W; Astorga, Y., 1995, Aquatic insects and water quality. Studies in Costa Rica.
- a-21) Vazquez Morera, Rolando, 1996, Descontaminación de las Aguas Residuales en el Beneficiado del Café en Costa Rica
- a-22) Zamora, Luis y Pujol, Rosendo, 1998, Contaminación en los ríos de la Cuenca del Río Grande

4. Other pollution / Otros tipos de contaminación

- a-23) Acuna, J., 1993, Contaminación por petróleo de la costa Caribe de Costa Rica. "El manejo de ambientes y recursos costeros en América Latina y el Caribe"
- a-24) Carazo, Elizabeth, 1992, Efecto de los plaguicidas en la salud. Congreso Técnico Agropecuario. Instituto Nacional de Aprendizaje
- a-25) Carazo, Elizabeth, 1993, Modo de acción de los insecticidas. En Taller de Capacitación sobre Insecticidas.
- a-26) Chacón, Bernardo; Mata, Jiménez y Rodríguez, Alexis, 1982, Contaminación ambiental: un enfoque multidisciplinario. I Simposio Nacional sobre Contaminación Ambiental (1980)
- a-27) García, Jaime E., 1997, Introducción a los Plaguicidas
- a-28) Instituto Centroamericano de Agronomía-UCR, 1994, Impacto Ambiental del procesamiento del café en Costa Rica. En Revista Agronomía Costarricense. Vol 18. No2
- a-29) Secretaría Ejecutiva Ambiental del Gran Área Metropolitana (SEAGAM-MINAE), 1996, Serie de documentos del Sistema de Ordenamiento Ambiental del Gran Área Metropolitana (SOGAM)
- a-30) Vargas, Gilbert, 1996, Contaminación y deterioro de calidad de vida en Costa Rica. En revista Herencia Vol. 6 No1 /2

5. Waste Management / Manejo de desechos

- a-31) Pujol, Rosendo; Solano, Eric y Monzon Juan Pablo, 1995, Reciclaje de desechos de empaques y embalajes de Costa Rica. Informe Final
- a-32) Pujol, Rosendo, 1993, Aspectos económicos del Manejo de Desechos Sólidos en Costa Rica. Presentado en el Seminario de celebración del Cincuenta Aniversario de la facultad de Ciencias Sociales-UCR
- a-33) Varios, 1994, Manejo de Desechos Sólidos y Peligrosos

6. Energy conservation and alternative energy / Conservación de energía y energía alterna

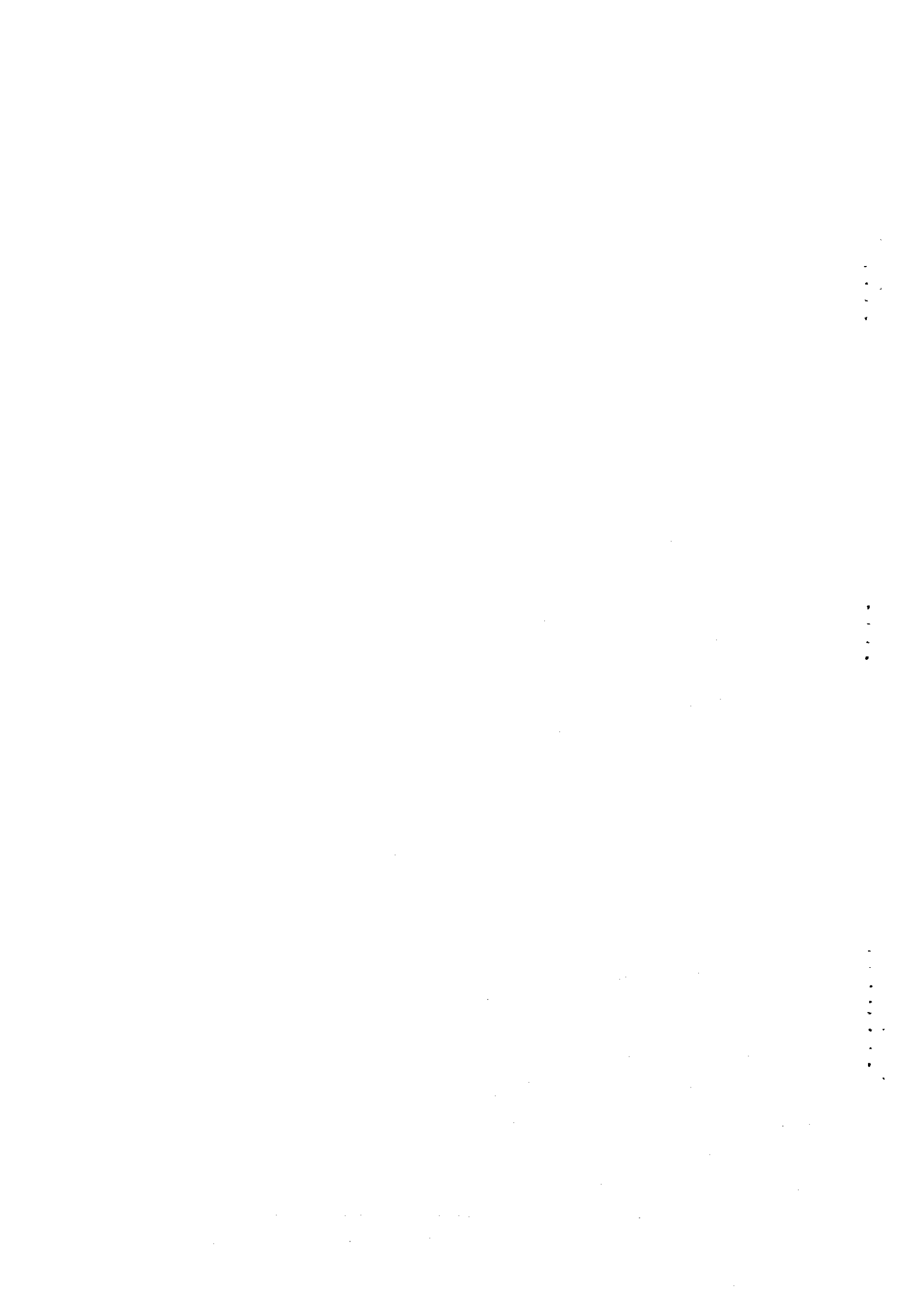
- a-34) Biomass Users Network (BUN), 1997, Diagnostico del Potencial de cogeneración a partir de la caña de azúcar en Centroamérica.
- a-35) Instituto Costarricense de Electricidad (ICE), 1985, Non-conventional Energy Sources. Incineration and biomass

7. Water Supply / Abastecimiento de agua

- a-36) Geotecnia, 1998, Presentación de Estudios Finales. Estudios de Acueductos de la GAM. Borrador del Informe Final
- a-37) Instituto Costarricense de Acueductos y Alcantarillados (A y A), 1997, Dictamen de cobertura y vigilancia de la calidad de agua de Costa Rica y su comparación con América Latina y el resto del mundo.

8. Waste water management / Manejo de aguas servidas

- a-38) Arias, Ana Lorena, 1995, Quebada Negritos: ejemplo de recuperación integral de ríos urbanos.
- a-39) Arias, Ana Lorena, 1995, Sistemas de tratamiento anaerobios para aguas residuales del beneficiado de café. En Revista Ingeniería. Vol 3 No 3
- a-40) Balkema, Annelies y Anbers, Herberts, Workshop on sustainable municipal waste water
- a-41) Geotecnia, 1998, Presentación de Estudios Finales. Estudios de Alcantarillados Sanitarios de la GAM. Borrador del Informe Final



9. Forest conservation / Conservación de bosques

- a-42) Adamsom, Marcos, 1996, Deforestación, producción agrícola y ganadería en Costa Rica. En medio Ambiente en Latinoamérica: Desafíos y Propuestas
- a-43) Calvo, J.; Watson, V.; Bolanos, R.; Quesada, C.; Sanchez y A.; Gonzalez, 1998, Estudio de cobertura forestal actual (1995/97) y el cambio de cobertura para el periodo entre 1985/87 y 1995/97 para Costa Rica

10. Biological diversity / Biodiversidad

- a-44) Boza, Mario A., 1988, Parques Nacionales. Costa Rica
- a-45) Bussing, William A., 1987, Peces de aguas continentales de Costa Rica
- a-46) Calvo, Julio; Bolanos, Rafael; Cervantes, Sonia; Gonzalez, Orlan y Villalobos, Leonidas., 1992, Plan Maestro: Proyecto AMISCONDE (Area de amortiguamiento de la Reserva de la Biosfera La Amistad)
- a-47) Carpio, Isabel, 1997, Maderas de Costa Rica: 150 especies forestales
- a-48) Cortes, Jorge, 1985, Comunidades Coralinas y Arrecifes del Pacifico de Costa Rica
- a-49) Gomez Pignataro, Luis, Vegetación de Costa Rica
- a-50) Hanson, P.E.; Gauld, I.D., 1995, Costa Rica: it's geography, climate and life zones.
- a-51) Jansen, Daniel E. (Editor), 1983, Costa Rica's Natural History
- a-52) Mora, Jose Manuel y Moreira, Ileana, Mamíferos de Costa Rica
- a-53) SINAC/MINAE y UICN/NORMA, 1998, Inventario de Humedales de Costa Rica

11. Natural resource management / Manejo de recursos naturales

- a-54) Castillo, Rolando, 1998, Recursos Minerales de Costa Rica
- a-55) Centro Científico Tropical (CCT) y Centro Internacional de Política Económica (CINPE), 1997, Evaluación de los recursos hídricos en Costa Rica: disponibilidad y utilización.
- a-56) Centro Científico Tropical (CCT), 1998, Plan de acción para la Cuenca del Río Tempisque
- a-57) Pujol, Rosendo y Incer, Ana, 1997, Plan Estratégico Territorial de Grecia
- a-58) Solorzano, Raul y otros, 1991, La Depreciación de los Recursos Naturales en Costa Rica y su Relación con el Sistema de Cuentas Nacionales
- a-59) Tyler, Rome, 1997, Natural Areas conservation in Costa Rica. In: Natural Areas Journal

12. Natural disasters / Desastres naturales

- a-60) Aguilar, Ileana, 1997, Análisis de Vulnerabilidad de la Carretera Interamericana. Tramo la Georgina-San Isidro de El General. Informe de Trabajo de Graduación.
- a-61) Lavelle, Allan, 1994, Viviendo en Riesgo. Comunidades vulnerables y prevención de desastres en América Latina
- a-62) Pujol, Rosendo, 1995, Manejo de Amenazas Naturales: Paradojas sociales e institucionales. En Revista Ingeniería. Octubre
- a-63) Rodríguez, Alexis; Ugarte, Joaquín; Álvarez, Milton y Klockow, Dieter, 1995, Influencia de la actividad del Volcán Poás sobre la química de las aguas de lluvia en la región de Tacares, Costa Rica. En Ingeniería y Ciencia Química. Vol. 15 No. 2

13. Environmental education/Educación ambiental

- a-64) Mora, Eduardo, 1994, Claves del Discurso Ambiental
- a-65) Programa de Educación Ambiental de la UNED y Fundación de Parques Nacionales, Los Recursos Naturales y su Conservación

14. Others/Otros

Environmental Impact Studies / Estudios de Impacto Ambiental

- a-66) Rodríguez, Alexis, 1990, Impacto de los vertidos a la atmósfera de las turbinas generadoras del Proyecto Moín
- a-67) Rodríguez, Alexis, 1991, Estudios de Impacto Ambiental, Proyecto Hidroeléctrico Angostura, Turrialba: Calidad de Aguas.
- a-68) Secretaría Técnica Nacional Ambiental (SETENA), 1997, Guía Básica para la Elaboración de Estudios de Evaluación de Impacto Ambiental en Actividades de Desarrollo

Environmental legislation / Legislación ambiental

- a-69) República de Costa Rica, 1992, Ley de Conservación de la Vida Silvestre y su Reglamento
- a-70) República de Costa Rica, 1997, Código Municipal
- a-71) República de Costa Rica, 1997, Ley de Tránsito
- a-72) República de Costa Rica, 1997, Ley Forestal y su Reglamento
- a-73) República de Costa Rica, 1992, Código Urbano
- a-74) República de Costa Rica, 1992, Código Ecológico
- a-75) República de Costa Rica, 1996, Ley Orgánica del Ambiente

Clean production / Producción más limpia

- a-76) CEGESTI, 1995, 50 sugerencias para una mayor eficiencia ambiental en la industria de alimentos

Land use / Uso de suelo

- a-77) Sánchez Azofeifa, Gerardo Arturo, 1996, Assessing land use/cover change in Costa Rica (Doctoral Tesis)
- a-78) Tesi, J. 1985, Manual para la determinación de la capacidad de usos de las tierras de Costa Rica

- b) World Resource Institute, United Nations Environmental Program, United Nations Development Program, 1996. World Resources 1996-97 A Guide to the Global Environment.
- c) United Nations Development Program, 1997. Human Development Report 1997.
- d) Syueisha, 1996. The Asia & World Data Book.

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