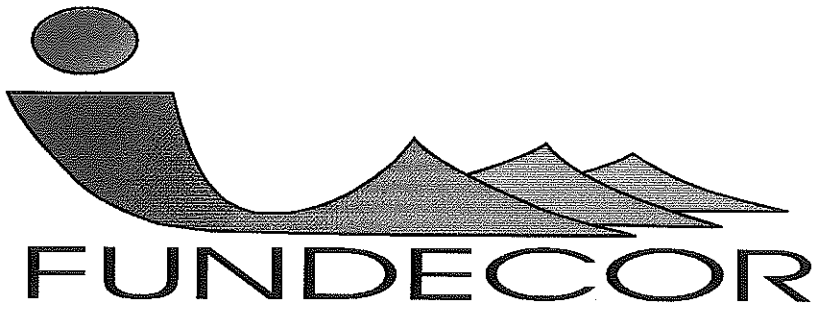


PROJECT CARFIX

FUNDECOR:
FOUNDATION FOR THE DEVELOPMENT OF THE CENTRAL VOLCANIC MOUNTAIN RANGE

COSTA RICA, OCTOBER, 1994.

FUNDECOR

FUNDACION PARA EL DESARROLLO
DE LA CORDILLERA VOLCANICA CENTRAL

November 3, 1994

USIJI Evaluation Panel
Attn: Mr. Ted Williams and Mr. Dennis Tirpak
Room 4G-036, DOE
Forrestal Building
1000 Independence Avenue, S.W.
Washington, D.C. 20585

Dear Mr. Williams and Mr. Tirpak,

Enclosed you will find FUNDECOR's application for Project CAR-FIX to the USIJI Evaluation Panel.

Another package has been sent today by DHL couriers that includes the proposal in its entirety: the application, a complete description of the project, all of the relevant financial tables, and the necessary maps.

Included in the package that we are sending you are: one original version of the proposal and three copies of the same.

Thank you for your time and consideration.

Sincerely yours,

Sr. Franz Tattenbach C.
DIRECTOR EJECUTIVO

Maravia, San José • Teléfono / Fax 240-2624 • Apdo. 549-2150
Puerto Viejo de Sarapiquí • Tels.: 766-6147 / 766-6183 • Fax: 766-6203 • Apdo. 54-3069

FUNDECOR

FUNDACION PARA EL DESARROLLO
DE LA CORDILLERA VOLCANICA CENTRAL

November 3, 1994

USIJI Evaluation Panel
Attn: Mr. Ted Williams and Mr. Dennis Tirpak
Room 4G-036, DOE
Forrestal Building
1000 Independence Avenue, S.W.
Washington, D.C. 20585

Dear Mr. Williams and Mr. Tirpak,

Enclosed you will find FUNDECOR's application for Project CAR-FIX to the USIJI Evaluation Panel, a complete description of the project, all of the relevant financial tables, and the necessary maps.

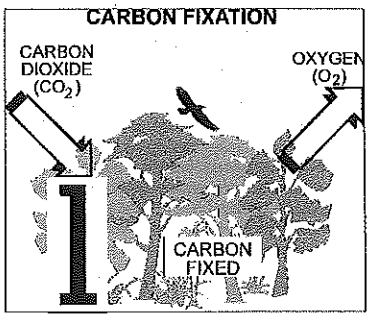
Thank you for your time and consideration.

Sincerely yours,

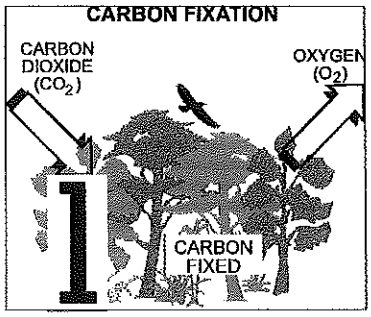
Sr. Franz Tattenbach C.
DIRECTOR EJECUTIVO

Moravia, San José • Teléfono / Fax 240-2624 • Apdo. 549-2150
Puerta Vieja de Sarapiquí • Tels.: 766-6147 / 766-6183 • Fax: 766-6203 • Apdo. 54-3069

USIJI PROJECT PROPOSAL



USIJI PROJECT PROPOSAL



Contents

USIJI PROJECT PROPOSAL

Project CARFIX: FUNDECOR/ACCVC-SPN Costa Rica

I. PROJECT PARTICIPANTS

A. DOMESTIC PARTICIPANTS

1. Organization	Wachovia Timberland Investment Management
2. Location	Atlanta, Georgia, USA
3. Responsible	Robert G. Chambers
4. Contact	as above
5. Address & Telephone	191 Peach Tree St. NE., Atlanta, Georgia, 30303 (404)332-6381
6. Eligibility	POSSIBLE timberland investor

B. FOREIGN PARTICIPANTS

1. Name	Foundation for the Development of the Central Volcanic Mountain Range (FUNDECOR).
2. Location	Costa Rica
3. Responsible	Franz Tattenbach, Executive Director, FUNDECOR
4. Contact	as above
5. Address & Telephone	P.O. Box 549-2150 Moravia, San José COSTA RICA Tel: (506)240-2624 Fax:(506)297-1044
6. Eligibility:	Environmental Non-governmental Organization recognized by laws of Costa Rica. United States registry as a foreign PVO (Public Volunteer Status).
	Project Executor

1. Name	Ministry of Natural Resources (MIRENEM), Area de Conservación Cordillera Volcánica Central (ACCVC)
2. Location	Costa Rica, Jurisdiction for protected areas involved in the project
3. Responsible	Carlos Herrera, Director National Park System
4. Contact	Adalberto Gorbitz, Director ACCVC-SPN
5. Address & Telephone	MIRENEM, San José, COSTA RICA Tel: (506)253-6279
6. Eligibility:	Government of Costa Rica.

AGENCIA PARA EL DESARROLLO INTERNACIONAL
MISION ECONOMICA DE LOS ESTADOS UNIDOS EN COSTA RICA

USAID

Apartado Postal 825-1200
San José, Costa Rica
[redacted]
Teléfono: (506) 220-4545
Fax: (506) 220-3434

3 de Noviembre de 1994

A quien interese:

Por este medio se hace constar que FUNDECOR (Fundación para el Desarrollo de la Cordillera Volcánica Central), quien es la unidad ejecutora del Proyecto FORESTA (NO. 515-0243), se encuentra debidamente registrada ante la AID como Organización Privada Voluntaria Local (Local PVO) desde el 24 de mayo de 1991. Actualmente la Misión gestiona la continuación de este registro para el año de 1995.

Atentamente,

Michael Maxey
Oficial del Proyecto FORESTA

November 3, 1994

To whom it may concern:

Through this letter it should be made clear that FUNDECOR (The Foundation for the Development of the Central Volcanic Mountain Range Conservation Area), who is the executing body of the FORESTA project (NO. 515-0243), has been duly registered by AID as a Local Private Voluntary Organization (Local PVO) since the 24th of May, 1991. Currently, the Mision is in the process of obtaining a continuance of this registration for the year 1995.

Sincerely,

Michael Maxey
FORESTA Project Oficial

*Note-- This is a translation of the original written by Mr. Michael Maxey on the USAID stationary.

II. PROJECT INFORMATION

A. DESCRIPTION AND MILESTONES

1. Project Summary

A complete description of the proposed project is appended.

The project that is proposed is one of carbon sequestration. The main objectives are to stabilize the existing natural forest, and create additional forest cover, in the 218.636 Ha Buffer Zone (known as ACCVC) surrounding the World Biosphere Reserve of Braulio Carrillo National Park.

This area is experiencing heavy rates of deforestation, and forest conversion to pasture for cattle raising. There is approximately 100,000 Ha. of remaining natural forest. At current rates, this will reduce to 30,000 Ha in the next 25 years.

Through reforestation (5,553 Ha), sustainable management of natural forest (20,502 Ha), and natural forest regeneration (10,670 Ha), the project will conserve the existing carbon sinks and increase carbon sequestration in the Buffer Zone. The project will involve 1,878 individual farmers/private forest owners and community organizations.

Activities will also be undertaken which will guarantee continued total protection of 71,551 hectares of the national parks in the project area.

Buffer zone activities will be undertaken based on two-prong strategy of (1) strong technical direction to ensure complete adherence to sustainable forestry practices, and (2) financial incentives for farmers/private forest owners to ensure a sufficient annual income from forestry activities that competes favorably with alternative land use leading to deforestation.

The lack of adequate yearly income to private land holders is, perhaps, the number one discentive to sustainable forestry in the buffer zona. Unable to realize a timely income flow from forestry, land holders often prefer to clear-cut convert land into pasture.

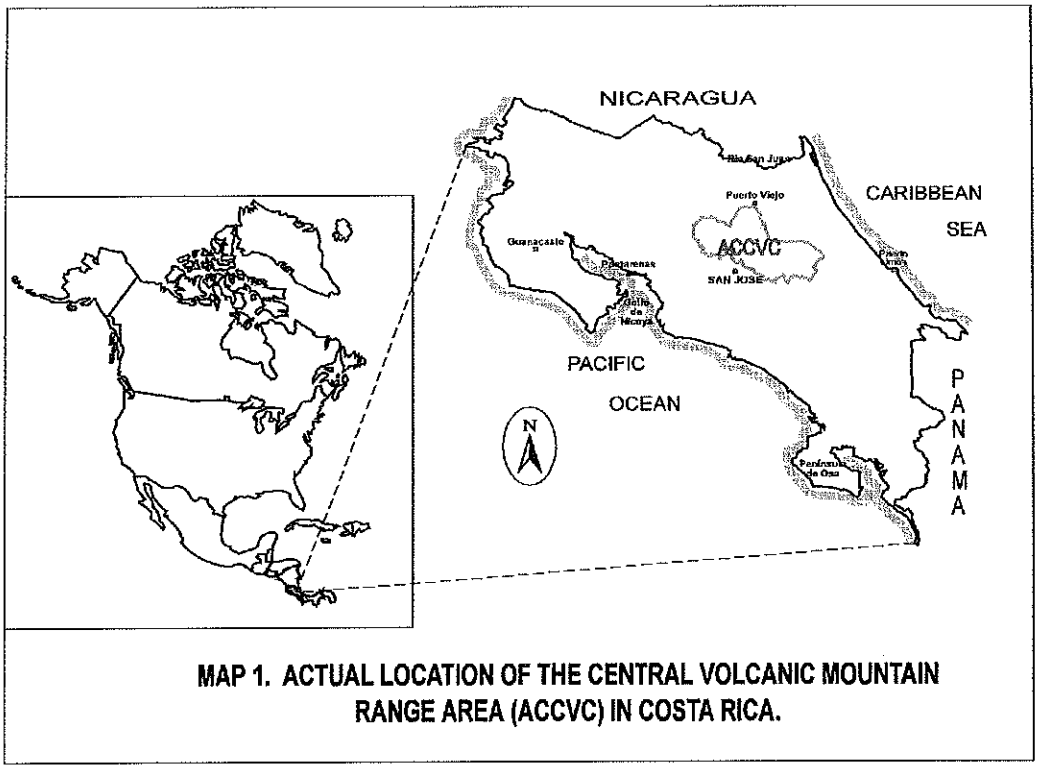
The carbon sequestered, or the carbon sink saved, from the project activities can be used measured: the farmers will retrieve its value on a yearly basis as an income flow. Other sources of yearly income include Costa Rica government incentives, and income from future forestry yields. The additional value provided by carbon fixation to farmers income is crucial to an adequate income flow to discourage deforestation.

Within in the buffer zone, the project proposed is of a size that, when combined with the targeting and management techniques used by FUNDECOR, will reverse current trends, and restore forest cover to 1992 levels in 5 years.

Locating a interested partner/investor in the United States is crucial to project implement ability. USIJI status will make it possible for FUNDECOR to find the party to value the carbon off-sets thus making the project possible.

2. Precise Location of the Project

Central Volcanic Conservation Area in Costa Rica (ACCVC). The ACCVC covers 290,187 Ha (6% of the national territory), and contains 10% of Costa Rica's forest. Approximately 25% of ACCVC is currently declared national parks. See map 1.



MAP 1. ACTUAL LOCATION OF THE CENTRAL VOLCANIC MOUNTAIN RANGE AREA (ACCVC) IN COSTA RICA.

3. Sources and sinks of Green House Gas Emissions

Carbon sinks involved in the project are:

- Natural forest in the national parks (71,551 Ha)
- Natural forest in private hands (20,502 Ha)

4. Specific Measures to Sequester Co_2

a. Project carbon sinks from expected loss in national parks

Protect against illegal logging and land use.
Purchase private land in-holdings in the national parks.

Up to eighty percent of the value of the carbon offset traceable to parks will be invested in purchasing the (substantial) unpaid portion of the land within designated park areas still legally belonging to the private individuals, and on improving the protection programs that police illegal logging in the parks.

The remaining value of the carbon offset generated by the parks will be distributed to the farmers/forest owners in the buffer zones.

b. Project carbon sinks from expected loss in the buffer zone

Stop land use conversion from natural forest to pastures in 20,522 Ha by providing a viable economic activity to the private owners based on sustainable use of their forest that will value both the carbon sink being saved, and the carbon being sequestered through growth, as well as the wood obtained from sustainable yields.

An intensive outreach and educational program to encourage landowners and those residing in the natural forest to promote forest conservation has been initiated by FUNDECOR and has gained widespread popular support in the project area. FUNDECOR is involved in all aspects of the sustainable management including the development of management plans, contracting of professional foresters, facilitating of government permits, supervision of harvesting and compliance with sustainable forestry practices, implementation of silvicultural practices, etc. This practice will continue with those farmers that will be included under the proposed project. Additionally, farmers will receive the value of the carbon off.-set as an income stream to encourage participation and alleviate the cash flow problems which makes sustainable forestry a less-attractive alternative to cattle activities and traditional logging practices. 71% of the yearly income that will be proposed to the farmers will come from carbon off-set valuation, and be paid by FUNDECOR from project funds.

c. Sequester CO_2 through reforestation

Reforest 5,533 Ha of land currently marginally used for cattle production

Management techniques include supervision, training and assistance to farmers in reforestation management and techniques. A government fund that supports farm forestry will be paid to the farmers over the first five years of the project to defray tree-establishment costs in the project. Additionally, farmers will receive an annual income from the carbon offsets payable by FUNDECOR from the project funds. Carbon off-set payments will represent 53% of the annual income from reforestation. The other 47% comes from advanced payment against future sustainable harvests. As in sustainable forest management, yearly carbon off-set payments and advances on harvest address the cash flow/income stream problem faced by farmers, and increases the attractiveness of this activity compared to other alternatives.

d. Sequester CO_2 through natural forest regeneration

Facilities 10,670 Ha. of natural forest regeneration in abandoned pastures adjacent to natural forests.

Management techniques are similar to those utilized in primary forest tracts. The income received from carbon off-set represents 37% of the yearly income from regeneration activities.

5. Specific Milestones

a. Dates and Circumstances of Project

January 1993 Self-evaluation of sustainable forestry management operations by a combined committee of FUNDECOR and the Ministry of Natural Resources reveals that in order to consolidate sustainable forestry as a widespread activity in the region, an additional source of income directly tied to the natural forest must accrue to the land owners between the first and subsequent harvests. The evaluation also revealed that natural forest regeneration activities were handicapped by the inability to offer farmers adequate economic incentives; and that reforestation would continue restricted in scope if the small and medium holders (the majority of land holders in the project area) were unable to obtain a more frequent cash flow from this activity, particularly in light of an expected lowering of government incentives for this activity.

Carbon fixation is identified as a possible remedy for these situations.

June 1993 Pre-feasibility study concluded.

June 1993 Executive director of FUNDECOR presents project concept to an interested investor, Mr Chambers, Head of the Wachovian Forestry Investment Fund, in Atlanta, Georgia. Meeting results in more detailed feasibility study, and definition of the minimum feasible investment size of between US$ 3 to 5 million for future harvest payments.

July 1994 FUNDECOR presents proposal at the World Resource Institute Seminar on the use of the LUCS model for estimating carbon off-sets. As a consequence World Resource Institute modifies LUCS model to include sustainable forest management as an activity.

August 1994 Feasibility study completed.

October 1994 Project presented to Dr. René Castro, Minister of Natural Resources, and Mr. Carlos Herrera, Director of National Parks.

October 1994 Project receives endorsement by the Ministry of Natural Resources.

b. Agreement with Host Countries

Endorsement by Ministry of Natural Resources. October, 1994.

Financing and interested parties in the carbon off-sets are actively being sought.

c. Project Dates

Pre-feasibility Study	Completed June, 1993		
Feasibility study	Completed August, 1994		
Project Set-up	All infrastructure is already in place, including Geographic Information System (GIS) data analysis, and monitoring capability. Required administrative and technical supervision personnel in place. Additional field staff recruitment for project implementation will occur over a period of 5 months as the project involves more farmer participants. Basic field staff is capable of initiating project.		
Beginning of Operations	January, 1996		
Incorporation and phasing-in of land owners	Jan 1996 - Jan 1997	542 farmers	8569 Ha.
	Jan 1997 - Jan 1998	334 farmers	7034 Ha
	Jan 1998 - Jan 1999	334 farmers	7034 Ha
	Jan 1999 - Jan 2000	334 farmers	7034 Ha
	Jan 2000 - Jan 2001	334 farmers	7034 Ha
Management & growth period	Phased, in five 20-year growth periods to the year 2021		
Project end	January, 2021		

d. Date of First Carbon-fixation Benefits Realized

January, 1997

e. Project Lifetime and Carbon-fixation Benefit Realized

	Metric Tons of Carbon Fixed	
	Incremental	Cumulative
Jan 1996-Jan 2001	457,141	457,141
Jan 2001-Jan 2006	494,730	951,871
Jan 2006-Jan 2011	463,929	1,415,800
Jan 2011-Jan 2016	505,475	1,921,275
Jan 2016-Jan 2021	244,822	2,166,097

National parks contribution: 48%
Buffer zone contribution: 52%

B. SOURCES OF FUNDING FOR THE SPECIFIC MEASURES TO REDUCE GREENHOUSE GAS EMISSIONS

1. Possible Sources of Funding

- Government of Costa Rica, US$ 3.8 million (forestry incentives)
- US Utility Companies, US$12.6 million
- Wachovian Timberland Investment Fund, US$ 5.0 million
- FUNDECOR, project-capability installed infrastructure and indirect overhead costs

2. Multilateral Sources

Financial support from the Global Environmental Fund will be sought to support bio-diversity monitoring studies, and carbon offset values attributable to the parks.

C. ASSIGNMENT OF EMISSION REDUCTIONS

All carbon sequestered will be attributed to financing Utility Companies; 2,166,097 tons of carbon over the life of the project.

D. ADDITIONALITY

In 3 ½ years of operation, FUNDECOR has become the most trusted organization of its type in the ACCVC among farmers/forest owners and community organizations. By the end of 1995, FUNDECOR will have established 1000 Ha of reforestation projects, and incorporated into sustainable management programs, approximately 15,000 Ha of natural forest; 2,000 hectares will have been subject to a first harvest under these programs. Currently, FUNDECOR has 13,000 Ha under agreement for sustainable management.

By the end of 1995, however, FUNDECOR will no longer have the funds available to increase its outreach and incorporate more farmer/land owners into forestry programs. The sustainability of its past activities is also clearly in jeopardy; unless funds are found to increase the income generation activities from the forest accruing to forest owners, it is highly unlikely that those land owners already participating in sustainable management and/or reforestation activities will continue to do so. Unable to guarantee farmer participation during the long periods involved to the second harvest, there is very real threat of a high rate of drop-out on the part of the farmers already involved.

The proposed project will provide the income sources necessary to be able to guarantee continued land-owner participation in forest activities, and avoid drop-out between first and second harvest. The proposed project will also permit more land holders to become involved in activities, increasing the land area under direct supervision by FUNDECOR from an estimated 15,000 Ha. It will also permit natural forest regeneration activities; although attempts have been made, there is currently virtually no natural forest regeneration activities due to the inability of FUNDECOR to offer any financial incentives during the 20 year wait to first harvest.

The project proposed has been calculated using the usual acceptable standards for ex-ante project evaluation wherein benefits refer to net incremental benefits. All figures, therefore, refer to project additionally. The 2,166,097 tons of carbon will be fixed over the life of the project, if implementable, also indicates the total amount of carbon fixation that will be lost if not implemented.

Locating interested partners/investors in the United States is crucial to project implementability. USIJI status will make it possible for FUNDECOR to find the party to value the carbon off-sets thus making the project possible.

Costa Rica has recently signed a Statement of Intent with the United Stated for Bilateral *Sustainable Development, Cooperation and Joint Implementation of Measures to Reduce Emissions of Greenhouse Gases Between the Government of the Republic of Costa Rica and the Government of the United States of America.* The project proposal is in keeping with this agreement.

Traditional forestry techniques in Costa Rica are based on pure extraction and no consideration is given to preserving the forest for possible future harvests. Management plans and extraction is virtually entirely in the hands of loggers, and forest owner participation is minimal to non-existent. The sustainable management techniques proposed by FUNDECOR are based on selective harvesting, and low-impact logging techniques, and is done In conjunction with the farmers who are also trained in the need for proper silvicultural management to protect their forests.

Increasing the income obtainable from the forest is a widely accepted means to forest conservation. Existing practices in Costa Rica in forest areas often include agricultural intercropping to increase incomes, however, they have only met with limited success. This is also a very limited option in the project because of the poor nature of the soils, run-off problems and the specific socio-economic characteristics of the project area. This leaves cattle grazing the leading alternative for farmers/forest owners. FUNDECOR's approach, where maintaining and increasing the forest, is a direct income producing activity, and not an indirect result if other activities is novelle in this field in Costa Rica. The spectacular rates of participation that FUNDECOR has achieved, however, testifies to the effectiveness of this approach. For the first time, sustainable forestry is being practiced by small, medium and large farmers.

E. ACCEPTANCE BY TH NATIONAL GOVERNMENT OF THE HOST COUNTRY

See attached letter from the Minister of Natural Resources.

F. TECHNICAL ASSISTANCE

United States investors are being actively sought. Assistance from the USIJI in identifying potential investors is requested.

The Wachovian Forestry Timberland Fund has expressed a definite interest in investing in future harvests in the project. Investors are required for the carbon sequestration component.

REPUBLICA DE COSTA RICA

Ministerio de Recursos Naturales, Energía y Minas

Despacho del Ministro

November 3, 1994

USIJI Evaluation Panel
Attn: Mr. Ted Williams and Mr. Dennis Tirpak
Room 4G-036, DOE
Forrestal Building
1000 Independence Avenue, S.W.
Washington, D.C.

Dear Mr. Williams and Mr. Tirpak,

Costa Rica strongly supports the enclosed application for FUNDECOR's Project CARFIX to the United States Initiative on Joint Implementation (USIJI) Evaluation Panel. The Government of Costa Rica considers this project a good candidate for joint implementation, because it fulfills the following criteria:

- meets the standards set by the USIJI Guidelines;
- contributes to national sustainable development priorities;
- is consistent with existing Costa Rican investment laws and regulations.

In accordance with the principles established by the USIJI, Project CARFIX proposes to use carbon offsets to provide the necessary additional resources to finance FUNDECOR's ambitious forest management plan in the Central Volcanic Range Conservation Area (ACCVC). The CARFIX project would set an important precedent for cost-effective, long-term, and mutually beneficial North-South cooperation to promote sustainable development and greenhouse gas reduction. With USIJI certification, the CARFIX project would enhance international efforts to mitigate the effects of global warming and to conserve the world's remaining natural forest resources.

FUNDECOR's past record and present successes prove that Project CARFIX's potential is real and implementable. If selected by the USIJI Evaluation Panel, this project would continue to show that the combination of development with conservation makes good environmental sense.

I believe Project CARFIX would make an excellent contribution to United States and Costa Rican cooperation on sustainable development and joint implementation.

Sincerely,

René Castro S.
MINISTER

III. GREENHOUSE GAS SEQUESTRATION

A. BASELINE ESTIMATES OF SEQUESTRATION OF CO_2 WITHOUT MEASURES

Table One and the accompanying footnotes provide a detailed explanation of the baseline estimates without measures. The following provides a general overview of the methodology used to estimate CO_2 sequestration.

The methodology to estimate greenhouse gas sequestration without measures, is based on calculates rates of deforestation in the buffer zone and in the national parks, and a standardized measure of biomass and carbon content.

With the use of satellite imagery (LANDSAT) and GIS, FUNDECOR analyzed land use change in the ACCVC between 1986 and 1992. A 6% constant annual deforestation rate was estimated in the natural forest in the buffer zone.

In the National Parks the rate of deforestation was calculated based on a model of critical areas developed by FUNDECOR. This model determines the expected deforestation for a square Ha land, depending on the spatial attributes of that land (proximity to a road, population density, slope, proximity to a recent logging operation and proximity to a land redistribution program).
An estimate of the expected deforestation that would occur in the National Parks lands, were park lands to behave like those in private hands, was estimated for each of the 24 years of the project. The spatial attributes of the park land are such that the expected rate of deforestation is much lower than in the buffer zone. Five categories of land were calculated and 5 different rates applied to these areas according to their risk of deforestation. Deforestation in the parks occurs because not all lands falling within park boundaries are clearly titled to the Government of Costa Rica. The overall resulting rates for the parks diminish from 4.1% to 2.8% through the life of the project.

The carbon values estimates were estimated based on the assumption that the natural forest average, holds a biomass in excess of that on pasture land of 116 cubic meters, with a total 225 kg of carbon per cubic meter:

> In the buffer zone, no carbon is fixed until that Ha is incorporated into the project, and then it only fixes 6% applied to a diminishing sink (for a total of 361,747 metric tons)
>
> In National Parks, the sink is incorporated all in year 1. The carbo id adds is estimated by the deforestation expected each year keeping the rate constant per each of the 5 categories of park land, but lowering the sink yearly.

B. ESTIMATES OF SEQUESTRATION OF CO_2 WITH MEASURES

A reversal of the baseline to zero deforestation in the case of the National Parks as money to purchase the private inholdings and demarcate boundaries is made available.

In the case of the buffer zone natural forest, depending on the sequence of farmer participation, each Ha of natural forest also reverses the baseline and is assumed to contribute in 5.8 m^3 of biomass or 1.305 mt of carbon per year by avoiding the 5% deforestation it would face if not in the project. Additionally, to these value, a growth rate of 1 m^3 /yr is estimated to occur after the first sustainable yield harvest of commercial timber of 20 m^3. This add 0.225 mt of carbon per year.

TABLE 1: CARBON SINKS BASELINE: EXPECTED LEVEL OF CARBON SINKS WITHOUT PROJECT MEASURES: 1996-2020
(metric tons of carbon)

	NO LAND USE CHANGE			NET GROWTH				ALL SOURCES OF CARBON SEQUESTRATION				
YEAR	NFMGT	NPARK	TOTAL	REFOR	NFMGT	SFREG	TOTAL	REFOR	NFMGT	SFREG	NPARK	TOTAL
1996	535,102	1,867,481	2,402,583	0	0	0	0	0	535,102	0	1,867,481	2,402,583
1997	502,996	1,790,220	2,293,216	0	0	0	0	0	502,996	0	1,790,220	2,293,216
1998	472,816	1,717,805	2,190,622	0	0	0	0	0	472,816	0	1,717,805	2,190,622
1999	444,447	1,649,831	2,094,278	0	0	0	0	0	444,447	0	1,649,831	2,094,278
2000	417,780	1,585,938	2,003,718	0	0	0	0	0	417,780	0	1,585,938	2,003,718
2001	392,714	1,525,793	1,918,507	0	0	0	0	0	392,714	0	1,525,793	1,918,507
2002	369,151	1,469,101	1,838,252	0	0	0	0	0	369,151	0	1,469,101	1,838,252
2003	347,002	1,415,594	1,762,595	0	0	0	0	0	347,002	0	1,415,594	1,762,595
2004	326,182	1,365,025	1,691,206	0	0	0	0	0	326,182	0	1,365,025	1,691,206
2005	306,611	1,317,173	1,623,784	0	0	0	0	0	306,611	0	1,317,173	1,623,784
2006	288,214	1,271,837	1,560,051	0	0	0	0	0	288,214	0	1,271,837	1,560,051
2007	270,921	1,228,916	1,499,837	0	0	0	0	0	270,921	0	1,228,916	1,499,837
2008	254,666	1,188,004	1,442,670	0	0	0	0	0	254,666	0	1,188,004	1,442,670
2009	239,386	1,149,188	1,388,574	0	0	0	0	0	239,386	0	1,149,188	1,388,574
2010	225,023	1,112,249	1,337,272	0	0	0	0	0	225,023	0	1,112,249	1,337,272
2011	211,522	1,077,061	1,288,582	0	0	0	0	0	211,522	0	1,077,061	1,288,582
2012	198,830	1,043,512	1,242,342	0	0	0	0	0	198,830	0	1,043,512	1,242,342
2013	186,900	1,011,495	1,198,395	0	0	0	0	0	186,900	0	1,011,495	1,198,395
2014	175,686	980,911	1,156,597	0	0	0	0	0	175,686	0	980,911	1,156,597
2015	165,145	951,674	1,116,819	0	0	0	0	0	165,145	0	951,674	1,116,819
2016	155,236	923,702	1,078,939	0	0	0	0	0	155,236	0	923,702	1,078,939
2017	145,922	896,921	1,042,844	0	0	0	0	0	145,922	0	896,921	1,042,844
2018	137,167	871,262	1,008,429	0	0	0	0	0	137,167	0	871,262	1,008,429
2019	128,937	846,661	975,597	0	0	0	0	0	128,937	0	846,661	975,597
2020	121,201	823,058	944,259	0	0	0	0	0	121,201	0	823,058	944,259
FINAL	121,201	823,058	944,259	0	0	0	0	0	121,201	0	823,058	944,259

Major assuptions:

On carbon sinks:

1. Natural forest of the ACCVC holds additional biomass to marginal pasture land equivalent to 116 cubic meters of wood.
2. There are 450 kg of biomass in a cubic meter of wood, 50% of which is carbon.
3. From 1 and 2 above it is estimated that 1 ha of average natural forest of the ACCVC holds 26 metric tons of carbon in comercial wood.
4. The two sinks considered are 71,551 ha of natural forest in the parks and the 20,502 ha of natural forest that will take part in the project.

On expected rates of change:

1. The carbon sink in the buffer zone (NFMGT) is expected to diminish at a 6% anual rate. Satelite imagery from 1986 and 1992 showed that 36.4 % of the natural forest in the buffer zone (privatly held) was converted to mostly pasture during this 6 year period.
2. The carbon sink in the national parks (NPARKS) is expected to diminish at a varying anual rate between 4.1 % to 2.8 %. The rate varies because the model used to estimate the expected posible loss divides the national parks into 5 categories according to their risk of of deforestation. Five spatial variables were used to build a model that predicts deforestation at anual rates that vary from 2 % to 13 %. The mentioned model has been tested against observed deforestation: it descriminated areas with highly different deforestation rates (from 2 to 13 percent yearly) according to the predicted categories of risk.
3. Deforestation is minimal in the park lands where these clearly belong to the parks system. However, up to 80 % of the land does not yet have a clear goverment land title. It is clear from GIS analysis that private inholdings in the the national parks have the same risk of deforestation as in buffer zone, if land titles are not secured. The carbon off-sets being claimed for the park lands will serve to finance the purchase, titling, demarcation and protection to avoid the very real expected deforestation.

TABLE 2: CARBON SINKS AND SEQUESTRATION EXPECTED LEVEL WITH PROJECT MEASURES: 1996-2020
(metric tons of carbon)

	NO LAND USE CHANGE			NET GROWTH				ALL SOURCES OF CARBON SEQUESTRATION				
YEAR	NFMGT	NPARK	TOTAL	REFOR	NFMGT	SFREG	TOTAL	REFOR	NFMGT	SFREG	NPARK	TOTAL
1996	535,102	1,867,481	2,402,583	0	0	0	0	0	535,102	0	1,867,481	2,402,583
1997	510,034	1,867,481	2,377,515	0	607	0	607	0	510,640	0	1,867,481	2,378,121
1998	492,736	1,867,481	2,360,217	0	1,754	0	1,754	0	494,490	0	1,867,481	2,361,971
1999	482,744	1,867,481	2,350,225	2,159	3,441	2,707	8,308	2,159	486,185	2,707	1,867,481	2,358,533
2000	479,618	1,867,481	2,347,100	5,929	5,668	7,427	19,024	5,929	485,287	7,427	1,867,481	2,366,124
2001	482,947	1,867,481	2,350,429	11,309	8,436	14,158	33,904	11,309	491,384	14,158	1,867,481	2,384,332
2002	482,947	1,867,481	2,350,429	18,300	11,204	22,902	52,406	18,300	494,151	22,902	1,867,481	2,402,834
2003	482,947	1,867,481	2,350,429	26,901	13,972	33,657	74,530	26,901	496,919	33,657	1,867,481	2,424,959
2004	482,947	1,867,481	2,350,429	35,503	16,739	44,412	96,655	35,503	499,687	44,412	1,867,481	2,447,083
2005	482,947	1,867,481	2,350,429	44,104	19,507	55,168	118,779	44,104	502,455	55,168	1,867,481	2,469,208
2006	482,947	1,867,481	2,350,429	52,705	22,275	65,923	140,904	52,705	505,222	65,923	1,867,481	2,491,332
2007	482,947	1,867,481	2,350,429	61,307	25,043	76,679	163,028	61,307	507,990	76,679	1,867,481	2,513,456
2008	482,947	1,867,481	2,350,429	69,908	27,811	87,434	185,152	69,908	510,758	87,434	1,867,481	2,535,581
2009	482,947	1,867,481	2,350,429	81,208	30,578	100,220	212,006	81,208	513,526	100,220	1,867,481	2,562,435
2010	482,947	1,867,481	2,350,429	94,522	33,346	114,515	242,383	94,522	516,294	114,515	1,867,481	2,592,811
2011	482,947	1,867,481	2,350,429	109,848	36,114	130,319	276,281	109,848	519,061	130,319	1,867,481	2,626,710
2012	482,947	1,867,481	2,350,429	127,188	38,882	147,632	313,702	127,188	521,829	147,632	1,867,481	2,664,130
2013	482,947	1,867,481	2,350,429	149,240	41,649	165,777	356,666	149,240	524,597	165,777	1,867,481	2,707,095
2014	482,947	1,867,481	2,350,429	173,305	44,417	183,419	401,141	173,305	527,365	183,419	1,867,481	2,751,570
2015	482,947	1,867,481	2,350,429	199,384	47,185	200,558	447,126	199,384	530,132	200,558	1,867,481	2,797,555
2016	482,947	1,867,481	2,350,429	227,475	49,953	217,194	494,622	227,475	532,900	217,194	1,867,481	2,845,050
2017	482,947	1,867,481	2,350,429	250,022	52,114	229,266	531,402	250,022	535,061	229,266	1,867,481	2,881,830
2018	482,947	1,867,481	2,350,429	266,933	53,735	238,319	558,987	266,933	536,682	238,319	1,867,481	2,909,415
2019	482,947	1,867,481	2,350,429	278,206	54,815	244,355	577,377	278,206	537,763	244,355	1,867,481	2,927,805
2020	482,947	1,867,481	2,350,429	283,843	55,355	247,373	586,572	283,843	538,303	247,373	1,867,481	2,937,000
FINAL	482,947	1,867,481	2,350,429	283,843	55,355	247,373	586,572	283,843	538,303	247,373	1,867,481	2,937,000

Major assuptions:

On carbon sinks:

1. In the national parks it was assumed that the project will start an agressive land titling and purchase of the critical lands coupled with protection activities and boundary demarcation. The expected funds from project to parks will enable undertaking these tasks. Minor land use change that may occur in the phasing of the project will be compensated by the recovery taking place on newly adquired lands not yet totally regenerated.
2. The buffer zone sink considered (the 20,502 ha of natural project under the project) are phased into a zero deforestation situation according to the following sequence: 4494 ha in yr. 1, and 4002 ha on each subsecuent yr to yr. 5. It takes 5 yrs to bring 20,502 ha of natural forest under sustainable management arrengements with zero deforestation expected.

On net growth:

1. Natural forest (NFMGT) under sustainable management practices is assumed to grow 1 cubic meter/yr. per ha. Our estimates assume this on only 70% of the area. FUNDECOR's experince indicates that up to 30% of the forest area need to be left for total protection. Growth is also phased in as in 2. above. Growth figures refer to commercial timber growth only.
2. The 10,670 ha of secundary forest regeneration is phased into the project in the following sequence: 2,686 ha in yr. 1 and 1,996 ha/yr for years 2-5. The estimated anual growth rates are 0 m3 yrs 1-2, 4 m3 yrs 3-12, 7 m3 yrs 13-16 and 6 m3 yrs 17-20. Total volume to commercial estimate is 1.6.
3. The 5,533 ha of reforestation is phased into the project in the following sequence: 1,389 ha in yr. 1 and 1,036 ha/yr for years 2-5. The estimated anual growth rates are 0 m3 yrs 1-2, 4.6 m3 yrs 3-12, 10.4 m3 yrs 13-16 and 16.1 m3 yrs 17-20. Total volume to commercial volume estimate is 1.0.

TABLE 3: INCREMENTAL LEVEL IN CARBON SINKS AND SEQUESTRATION EXPECTED WITH PROJECT MEASURES: 1996-2020
(metric tons of carbon)

	NO LAND USE CHANGE			NET GROWTH				ALL SOURCES OF CARBON SEQUESTRATION				
YEAR	NFMGT	NPARK	TOTAL	REFOR	NFMGT	SFREG	TOTAL	REFOR	NFMGT	SFREG	NPARK	TOTAL
1996	0	0	0	0	0	0	0	0	0	0	0	0
1997	7,038	77,261	84,299	0	607	0	607	0	7,644	0	77,261	84,906
1998	19,920	149,676	169,596	0	1,754	0	1,754	0	21,674	0	149,676	171,349
1999	38,297	217,651	255,947	2,159	3,441	2,707	8,308	2,159	41,738	2,707	217,651	264,255
2000	61,838	281,543	343,381	5,929	5,668	7,427	19,024	5,929	67,506	7,427	281,543	362,406
2001	90,234	341,688	431,922	11,309	8,436	14,158	33,904	11,309	98,670	14,158	341,688	465,826
2002	113,797	398,380	512,177	18,300	11,204	22,902	52,406	18,300	125,001	22,902	398,380	564,582
2003	135,946	451,888	587,833	26,901	13,972	33,657	74,530	26,901	149,917	33,657	451,888	662,363
2004	156,766	502,456	659,222	35,503	16,739	44,412	96,655	35,503	173,505	44,412	502,456	755,877
2005	176,337	550,308	726,645	44,104	19,507	55,168	118,779	44,104	195,844	55,168	550,308	845,424
2006	194,733	595,644	790,377	52,705	22,275	65,923	140,904	52,705	217,008	65,923	595,644	931,281
2007	212,026	638,565	850,591	61,307	25,043	76,679	163,028	61,307	237,069	76,679	638,565	1,013,619
2008	228,281	679,477	907,758	69,908	27,811	87,434	185,152	69,908	256,092	87,434	679,477	1,092,911
2009	243,561	718,293	961,854	81,208	30,578	100,220	212,006	81,208	274,140	100,220	718,293	1,173,861
2010	257,925	755,232	1,013,157	94,522	33,346	114,515	242,383	94,522	291,271	114,515	755,232	1,255,540
2011	271,426	790,420	1,061,846	109,848	36,114	130,319	276,281	109,848	307,540	130,319	790,420	1,338,127
2012	284,117	823,969	1,108,086	127,188	38,882	147,632	313,702	127,188	322,999	147,632	823,969	1,421,788
2013	296,047	855,986	1,152,033	149,240	41,649	165,777	356,666	149,240	337,696	165,777	855,986	1,508,699
2014	307,261	886,570	1,193,831	173,305	44,417	183,419	401,141	173,305	351,678	183,419	886,570	1,594,972
2015	317,802	915,807	1,233,609	199,384	47,185	200,558	447,126	199,384	364,987	200,558	915,807	1,680,736
2016	327,711	943,779	1,271,490	227,475	49,953	217,194	494,622	227,475	377,664	217,194	943,779	1,766,111
2017	337,025	970,560	1,307,585	250,022	52,114	229,266	531,402	250,022	389,139	229,266	970,560	1,838,987
2018	345,780	996,219	1,341,999	266,933	53,735	238,319	558,987	266,933	399,515	238,319	996,219	1,900,986
2019	354,011	1,020,821	1,374,831	278,206	54,815	244,355	577,377	278,206	408,826	244,355	1,020,821	1,952,208
2020	361,747	1,044,423	1,406,170	283,843	55,355	247,373	586,572	283,843	417,102	247,373	1,044,423	1,992,741
FINAL	361,747	1,044,423	1,406,170	283,843	55,355	247,373	586,572	283,843	417,102	247,373	1,044,423	1,992,741

Note: Estimated as table 2. minus table 1. for each corresponding cell entry.

TABLE 4: YEARLY INCREMENTS IN CARBON SINKS LEVEL DUE TO PROJECT BY TYPE OF LAND / ACTIVITY: 1996-2020.
(values expresed metric tons of carbon)

	NO LAND USE CHANGE			NET GROWTH				ALL SOURCES OF CARBON SEQUESTRATION				
YEAR	NFMGT	NPARK	TOTAL	REFOR	NFMGT	SFREG	TOTAL	REFOR	NFMGT	SFREG	NPARK	TOTAL
1996	0	0	0	0	0	0	0	0	0	0	0	0
1997	7,038	77,261	84,299	0	607	0	607	0	7,644	0	77,261	84,906
1998	12,882	72,414	85,297	0	1,147	0	1,147	0	14,029	0	72,414	86,444
1999	18,377	67,975	86,352	2,159	1,687	2,707	6,554	2,159	20,064	2,707	67,975	92,905
2000	23,541	63,893	87,434	3,770	2,228	4,719	10,717	3,770	25,769	4,719	63,893	98,151
2001	28,396	60,145	88,541	5,380	2,768	6,731	14,879	5,380	31,164	6,731	60,145	103,420
2002	23,563	56,692	80,255	6,991	2,768	8,743	18,502	6,991	26,331	8,743	56,692	98,757
2003	22,149	53,508	75,657	8,601	2,768	10,755	22,124	8,601	24,917	10,755	53,508	97,781
2004	20,820	50,569	71,389	8,601	2,768	10,755	22,124	8,601	23,588	10,755	50,569	93,513
2005	19,571	47,852	67,423	8,601	2,768	10,755	22,124	8,601	22,339	10,755	47,852	89,547
2006	18,397	45,336	63,732	8,601	2,768	10,755	22,124	8,601	21,164	10,755	45,336	85,857
2007	17,293	42,921	60,214	8,601	2,768	10,755	22,124	8,601	20,061	10,755	42,921	82,339
2008	16,255	40,912	57,167	8,601	2,768	10,755	22,124	8,601	19,023	10,755	40,912	79,291
2009	15,280	38,816	54,096	11,300	2,768	12,786	26,854	11,300	18,048	12,786	38,816	80,950
2010	14,363	36,939	51,302	13,314	2,768	14,295	30,376	13,314	17,131	14,295	36,939	81,679
2011	13,501	35,188	48,689	15,327	2,768	15,804	33,898	15,327	16,269	15,804	35,188	82,588
2012	12,691	33,549	46,240	17,340	2,768	17,313	37,420	17,340	15,459	17,313	33,549	83,661
2013	11,930	32,017	43,947	22,052	2,768	18,145	42,965	22,052	14,698	18,145	32,017	86,911
2014	11,214	30,584	41,798	24,065	2,768	17,642	44,475	24,065	13,982	17,642	30,584	86,273
2015	10,541	29,237	39,778	26,078	2,768	17,139	45,985	26,078	13,309	17,139	29,237	85,763
2016	9,909	27,971	37,880	28,091	2,768	16,636	47,495	28,091	12,676	16,636	27,971	85,375
2017	9,314	26,781	36,095	22,547	2,161	12,072	36,780	22,547	11,475	12,072	26,781	72,875
2018	8,755	25,659	34,414	16,910	1,621	9,054	27,585	16,910	10,376	9,054	25,659	61,999
2019	8,230	24,602	32,832	11,274	1,081	6,036	18,390	11,274	9,311	6,036	24,602	51,222
2020	7,736	23,602	31,338	5,637	540	3,018	9,195	5,637	8,276	3,018	23,602	40,533
TOTA	361,747	1,044,423	1,406,170	283,843	55,355	247,373	586,572	283,843	417,102	247,373	1,044,423	1,992,741

Note: Based on TABLE 3 yr t minus yr t-1 for each cell.

See tables 2, 3 and 4 and the accompanying footnotes for a more detailed explanation:

Table 2 provides the estimate sink levels with project measures.

Table 3 displays the difference between baseline and with-project measures.

Table 4 calculates the yearly additions to the sinks resulting from project execution.

After 25 years of sustainable forestry in the buffer zone, it is anticipated that the market will support the activities established, and no loss of sequestration is envisioned.

C. MONITORING GREENHOUSE SEQUESTRATION

1. Monitoring Processes

FUNDECOR will be responsible for monitoring CO_2 sequestration on tri-annual basis using satellite imagery for the buffer zone and those land areas specifically included in the project. This will satisfy claims of no deforestation fundamental to carbon sink preservation.

Annual measures of growth will be undertaken by FUNDECOR to monitor additions to carbon sequestration. These measures will also by the basis of payments to the farmers. Lands participating in the project will also be subject to a minimum of two thorough inspections per year.

1 Ha for every 100 Ha of forest is the sample size used to monitor natural forest growth. The sample size is double for reforestation.

The above procedures for monitoring are already used by FUNDECOR and have been tested as effective.

2. Baseline and Projects Projection Updates

LANDSAT imagery and field measures will be used to update baselines and modify project projections. A learning effect in the buffer zone is possible as a result of the project: overall deforestation rates may decline in those areas not directly incorporated in the project.

D. EXTERNAL VERIFICATION

FUNDECOR has included in the project a "green seal" cost for all forestry activities to allow for external audits for bodies such as the Rainforest Alliance or Greencross. This can be determined jointly with the USIJI panel at a later date.

A "green seal" audit is renewed yearly and thoroughly inspected every 3 years.

IV. OTHER CONSIDERATIONS

A. NONGREENHOUSE GAS ENVIRONMENTAL IMPACTS OF THE PROJECT

The proposed project will positively impact biodiversity.

Various fauna species in the project area are endangered because of the reduction in rain forest available to them. National parks, in and of themselves, are not large enough to maintain healthy wildlife populations, and the additional space provided to them by increase forest coverage in the buffer zone is of vital importance, especially in terms of biological corridors between parks.

B. DEVELOPMENT IMPACTS OF THE PROJECT

The project is expected to have a significant development impact in terms of income distribution in the buffer zone. Over 66% of the land holders in the buffer zone area small and medium farmers, who eke out a marginal existence from agriculture on lands unsuitable for this activity. The forestry programs that will be established will supply a steady source of income for these people. The multiplier effects of an increase income in the region is expected to bring positive effects to other activities In the region and in the country.

Direct beneficiaries of the project include about 10,500 people (approximately 2000 individual land holders, as an average family size of 5.2). The indirect beneficiaries from the project, however, are much larger. Another 40,000 inhabitants of the ACCVC region and approximately 400,000 annual visitors to the area's national parks and conservation tourism sited will also benefit indirectly. Other indirect beneficiaries include Costa Rica's wood products industry, and the 80% of Costa Rica's population who reside in the Central Valley and depend on water from the project region (this is the major watershed for the urban populations in the country).

Because the project involves a large number of farmer/land holders it is expected to provide a strong demonstration effect to others not necessarily included in the project. This has already been experienced by FUNDECOR program are willing to wait to be incorporated, and sign agreements without any immediate benefit, instead of proceeding to clear their land with private loggers.

C. OTHER INFORMATION

1. Project Need

Modern paradigms indicate that as more and more rainforest is disappearing, the regret by the populations increases, and so does the value to them of maintaining the rainforest.

How can it be that sometimes of such value can be used? It is because those that regret and value the forest are not the same individuals who are actually making the decision to destroy it; the value for these individuals is other. The value that the population at large has for the rainforest must internalized by those who own the forest In order to protect it. Only to the extent that the value that others place on the rainforest is internalized will the rainforest be preserved.

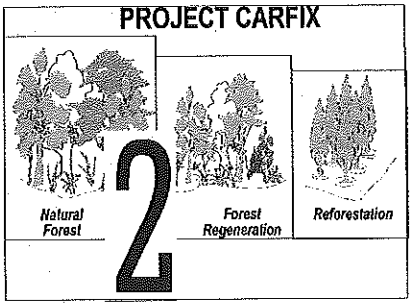
This project goes a long way in internalizing to the forest owners the value that the population at large has for the rainforest. It must be given a chance, because it may point the way to rainforest conservation and sustainable development.

Other alternatives have been tried. Their effectiveness is evident in the increasing rates of deforestation we observe.

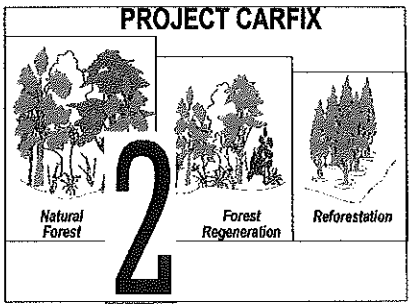
2. Project Design Flexibility

Although the project would greatly benefit from the inclusion of a national park component, adequate implementation and very substantial carbon sequestration is possible without national parks. FUNDECOR will definitely consider this modification to the project proposal.

COMPLETE PROJECT DESCRIPTION



COMPLETE PROJECT DESCRIPTION



Contents

COMPLETE PROJECT DESCRIPTION

I. GLOBAL WARMING-- AN INTERNATIONAL CONCERN

In response to a growing awareness of global warming, resulting from increasing amounts of "greenhouse gases" (GHG's) in the atmosphere, and to the increasing need for sustainable forest management in Costa Rica, FUNDECOR has developed Project CARFIX. It is a benefit sharing program that effectively allows private forest owners to internalize the value given to the rainforest by the wider population, and thus increase the value of the forest, and decrease the rate of deforestation.

According to recent studies, the high concentration of atmospheric carbon dioxide (CO_2) could be responsible for over fifty percent of global warming within the next several decades. General Circulation Models (GCM's) have estimated that by the year 2030 the average temperature of the earth could rise anywhere from 3 to 9 degrees Fahrenheit; a climatic change that has not been experienced since the Ice Age. This kind of equilibriatic disruption could have devastating effects on global ecosystems that are sensitive to change. Flora and fauna in the highly biodiversified tropical forests have such a complex survival strategy and dependence on their ecosystem that, if disturbed in such a relatively short period of time, the global warming issue could pose a serious threat to the survival of many species.

The carbon cycle has naturally removed and replaced carbon in the atmosphere for millions of years. However, due to current trends, the level of carbon in the atmosphere has been exceeding the rate at which the earth can sequester it through "sinks" such as trees, oceanic plankton, and other carbon fixing organisms. With an increase in deforestation and poor forest management, these crucial "sinks" are disappearing; while at the same time the combustion of fossil fuels such as coal and oil is releasing unprecedented amounts of carbon into the atmosphere. Fossil fuel burning in energy production is the number one contributor to carbon emissions; the U.S. being the leading energy producer in the world, having emitted almost five million metric tons of CO_2 in 1991. The fact that carbon dioxide is a flow pollutant, giving it the ability to spread uniformly throughout the atmosphere, makes it an international concern.

Government regulations, penalties on environmental pollution, incentives for energy efficiencies, and expanding consumer concern have all provided a market for pollution control technology and have opened the way for new approaches to carbon sequestration. Although various regulatory techniques have been offered to the producers of GHG's, many of which are costly and impractical, a relatively new technique has been developing in the form of carbon offsets through tropical forest management. A tested alternative to on-site "scrubbers", forests naturally remove carbon from the atmosphere and replace it with clean oxygen. The objective then, in terms of the global warming issue, is to provide forest "sinks" that can be conserved or placed under sustainable management programs to: a) measurably fix carbon for a determined period of time to compensate for a large percentage of the carbon being released through fossil fuel emissions, and b) to displace that same amount of carbon that would otherwise be released through deforestation.

It is essentially for the conservation and regeneration of natural forest that FUNDECOR developed CARFIX; having recognized that carbon offsets are a potentially valuable resource for the implementation of a large-scale sustainable management program. Carbon offsets are: 1) cost-effective; 2) viable as a long-term investment; and 3) appeal to the concerns of today's environmental conscience through achieving measurable results.

II. ISSUE-- COSTA RICA AND ITS NATURAL RESOURCE SITUATION

Costa Rica right now is one of the world's leading countries in conservation, with more than 12% of its territory protected as national parks. Unfortunately, it also has the highest rate of deforestation in Central America which has reduced the country's forest area by more than one-half since 1970. The value that standing natural forest has for most private forest holders is low compared to the greater profitability from land clearing and conversion to pasture for cattle grazing or other agricultural activities. It is precisely this comparative lack of value that standing natural forest has for most private land owners that has been causing such a high rate of deforestation. Therefore, sustainable management projects that provide these incentives and assign the needed value to the forests are an important focus for conservation.

Although reforestation is an important part of the overall goal of sustainable development and conservation in Costa Rica, the protection and preservation of the remaining standing forests are a primary concern to the project strategy. Sustainable management of standing forests is less expensive than is the cost of reforestation, the quality of native wood harvested from standing forests is high in comparison to the timber grown on plantations, and the financial return and environmental benefits are greater for natural forests than reforestation. Therefore, an offset project in a country such as Costa Rica could provide a more beneficial investment than in a country where natural standing forest is insufficient. Not only are the primary benefits of forest preservation important to consider but also the secondary benefits which result in wildlife protection and the conservation of biodiversity.

Since the idea of using forests as carbon offsets was first proposed by Dyson in 1977, many have argued that the risks involved are too high due to a variety of factors including economic and political stability, demographic variability, natural predictability, and measurability. However, Costa Rica has become an increasingly beneficial country to invest in due to a relatively strong and centralized democratic government, a stable developing economy, and a wealth of natural resources. The Central Volcanic Mountain Range Conservation Area (ACCVC), in particular, includes the globally recognized biosphere reserve Braulio-Carrillo National Park. This reserve is both ecologically and economically important to Costa Rica, and is an area in which FUNDECOR has been playing a major role in the conservation of its buffer zones through sustainable management activities.

The ACCVC covers 290,187 Ha which is 6 percent of the national territory. Over 25% percent, or 76,696 Ha, of the ACCVC is currently protected in National Parks. It is home to 550 species of bird, 150 species of mammal, and 100 species of amphibian/reptile. According to 1992 statistics, it also holds close to 10% of all Costa Rican forest content. Some advantages to investing in ACCVC forests, as in other tropical forests, are: a) the high potential tree-growth rates which yield a productive turnover for commercial timber and carbon sequestration, and b) the increasing need for low-impact forestry and sustainable management activities in developing countries which opens up market opportunities for projects such as CARFIX.

According to a 1992 FUNDECOR survey, within just six years, primary forests in the ACCVC had been reduced by over 47,369 Ha due specifically to deforestation. In comparison, only 15,875 Ha had been reforested or regenerated. Since the majority of the ACCVC is in private hands, and because the rate of deforestation is exceeding the rate of forest growth by 3:1, the future survival of ACCVC forests and the fragile buffer zones is in danger.

Through sustainable management practices, FUNDECOR is working to raise the rate of preservation and reduce the rate of deforestation in the ACCVC, and to raise the rate of both natural regeneration and reforestation; such that by 1998, net forest loss is equal to zero.

III. THE ROLE OF FUNDECOR

A. BACKGROUND

FUNDECOR is an endowed non-profit organization that is responsive, dedicated, and technologically capable. It has proven successful as the executive body, and has developed reputable relationships with people at a community level within the sector.

Founded in 1991, FUNDECOR was given responsibility over almost 300 square kilometers of conservation area in the ACCVC that included four national parks, two forest reserves, critical watersheds, and a national monument. FUNDECOR has become the most trusted organization of its type in the ACCVC. Seventy-five land owners with close to 11,000 hectares of natural forest have entrusted FUNDECOR with technical management for sustainable intervention. It has also maintained a close working relationship with the Ministry of Natural Resources, Energy, and Mines (MIRENEM) and has received wide support from local communities throughout the ACCVC. In this way, FUNDECOR leads a strong alliance between the people and today's conservation concerns.

B. TECHNICAL CAPABILITY

In order to reduce risk and maintain a steady assessment of the project, FUNDECOR has developed sophisticated in-house monitoring and analytical capabilities. LANDSAT TM (satellite topographic images) and IDRISI (geographical information systems) are used to monitor the changes in forest composition and land use in the ACCVC. It has also been using a number of high-tech software programs to develop a Data Base that facilitates classification, filing, and retrieval of project information which can provide a source for natural resource identification. This includes: physical and geographical composition of the region; forests and forest inventories; land tenure; biodiversity; and land capability. The Data Base is very important in the localization of needs and in its ability to allow FUNDECOR to adjust to uncalculated situations for maximum project impact.

C. MANAGEMENT STRATEGY

1. Activities

The proposed FUNDECOR Natural Forest Management project, Project CARFIX, has been designed according to existing and proven management practices that FUNDECOR has been developing and promoting in three types of silvicultural activities. Building on these skills guarantees implementability and minimal project start-up costs.

a. Sustainable Management in Natural or Primary Forests

According to 1992 FUNDECOR imagery analysis, 112,945 Ha of primary forest exist in the ACCVC. This forest has great potential for multiple uses, including long-term timber and other forest production. While some of the remaining primary forest continues to be inaccessible to settlement, much is in danger of deforestation. FUNDECOR considers these primary forest tracks top priority for a forest management initiative before further degradation occurs. Deforestation is occurring at a rate of at least 5% per year in these areas.

An intensive outreach and education program to encourage landowners and those residing in natural forest to promote forest conservation has been initiated and has gained popular support. In terms of the project, this program will include management plans, harvesting schedules, distribution of forest income, and potential for carbon fixation. In order to sell timber from primary and secondary forests without causing ecological damage, FUNDECOR has introduced and is able to enforce sustainable management practices and ensure that benefits of good silviculture are not reduced by poor logging and road construction practices.

Economic benefits of this project component to the forest owner are based upon volumes of timber and growth rates for the different tree types; on the amount of carbon fixed per hectare; on revenue generated from conservation tourism programs; and on government incentives for the sustainable use of natural forest. All of these measures increase the value of the natural forest to the private holder; and are payable to the holder in an annual income stream, which will compete favorably with alternative land uses that lead to deforestation.

Adequate market price to the forest holder is the most important component of forestry income under the present project. Good market prices maximize the forest holders returns on sustainable management, and allows sustainable management to reasonably compete with traditional lower-cost logging practices. Addressing market concerns is another aspect of FUNDECOR's management strategy. A public bidding system instituted by FUNDECOR in the region has increased the price of wood for the forest owner; even up to 100% in many cases.

b. Secondary Forest or Natural Forest Regeneration

Secondary forest results from natural regrowth after clear-cutting primary forest, as well as from natural growth of abandoned agriculture and grazing land. 1992 imagery shows that 13,976 Ha of secondary forest exist in the ACCVC.

Secondary forests are a promising source of forest cover in the ACCVC, and can be converted into an increasingly valuable asset for future forest production with adequate management. Species consumption, level of stocking, growth rate, and potential to produce salable products vary considerably within secondary forests, primarily as a result of past use. With protection from repeated agricultural clearing and with good management (including early thinning and selection of trees) many secondary forests can produce merchantable timber in a short period of time.

FUNDECOR outreach encourages landowners to commit secondary forest lands to management techniques similar to those utilized in primary forest tracts. In order to ensure that forests are not prematurely felled during the life of the project, FUNDECOR will make payments between the time of commitment to the timber harvest at the end of the 20-year period. These incentives will derive from different income sources including the value of carbon sequestration, and a fraction of future harvests.

c. Plantation Forestry or Reforestation with Native Species

Areas such as marginal pasture with scattered tree cover, *charrales,* or depleted agriculture lands can be converted to forest by establishing tree plantations. Since 1986, 3,443 Ha of the ACCVC have been placed under some sort of reforestation management. FUNDECOR has achieved considerable success in other parts of the conservation area with reforestation of pasture by utilizing fast growing native species. These are expected to yield substantial timber crops for the land holders involved and provide important forest cover.

The potential for traditional agroforestry involving inter-cropping with annual food crops is limited by poor soils, heavy rainfall, and lack of markets; and makes reforestation a viable alternative to these types of activities with appropriate incentives that provide farms with a reasonable income stream.

An outreach program to assist farmers in reforestation management and technique has been undertaken by FUNDECOR. A government fund that supports farm forestry will be paid to the land holders over the first five years of the project to defray tree establishment costs; in addition to the annual income from the carbon offsets, and advanced harvest payments.

2. Additional training

The project will provide field training to farmers, forest landowners, and timber harvesting contractors. Training sessions for each of these groups will be scheduled at the community level over the life of the project. Farmers will be trained in simple forest management and agroforestry technologies, emphasizing production systems which will provide economic benefits. Forest holders will be sensitized to recognize the economic and environmental benefits of maintaining and improving their forest resources.

Training sessions will focus on forestry practices that can be undertaken by the landowner with professional guidance, on small-scale forest plantations, and on the cash cropping values of timber, other wood products, and non-timber products.

D. GOALS AND OBJECTIVES

FUNDECOR's overall goal is to maintain and enhance biodiversity in Costa Rica by building and conserving reserves; while at the same time utilizing forested and other lands for socio-economic development.

More specifically, FUNDECOR aims to stabilize the existing natural forest and create additional forest cover in the buffer zone around the Braulio-Carrillo World Biosphere Reserve.

In terms of Project CARFIX, the most important objectives are to: 1) provide short and medium term, reliable, benefit sharing opportunities for foreign investors and local farmers, 2) conserve and protect the carbon sinks from the loss that is expected without the project, and 3) augment carbon sequestration.

IV. THE OPPORTUNITY-- PROJECT CARFIX

A. DISTRIBUTION

The project is broken down into one 5-year incorporation period and five 20-year management/growth periods for a total of 25 years of involvement. Because the project is based on a strong partnership with local farmers, and because the farms under contract vary both in size and forest content, FUNDECOR has carefully analyzed the specific requirements and the individual needs of each type of farm in order to best represent them in a universal model. CAR-FIX was designed to meet the demands of a large-scale forest management project while at the same time responding to the actual land tenure situation in the project area, and agroecological conditions of the region.

The following displays the average land use distribution on six different types of holdings under contract with FUNDECOR, and represents a typical profile of CARFIX project participants:

MODEL	REFORESTATION	PRIMARY	SECONDARY	(*)OTHER	AVG SIZE
FORST MNG (sml)	3 ha.	37 ha.	3 ha.	5 ha.	48 ha.
FORST MNG (med)	3 ha.	109 ha.	14 ha.	10 ha.	136 ha.
FORST MNG (lrg)	15 ha.	182 ha.	54 ha.	36 ha.	287 ha.
REFORST (sml)	5 ha.	17 ha.	11 ha.	2 ha.	35 ha.
REFORST (med)	20 ha.	30 ha.	2 ha.	10 ha.	62 ha.
IDA600	100 ha.	103 ha.	226 ha.	171 ha.	600 ha.

(*) Other land use; including agriculture, farm buildings, etc.

N = 100 Calculated land use distribution based on farm boundaries superimposed on LANDSAT TM imagery.

The total area by farm type and the activity in hectares is presented in the following table. As can be seen, Project CARFIX includes 5,533 Ha of reforestation; 20,502 Ha of sustainable forest management; and 10,670 Ha of natural forest regeneration.

MODEL	REFORESTATION	PRIMARY	SECONDARY	(*)OTHER
FORST MNG (sml)	222 ha.	2,738 ha.	222 ha.	3,182 ha.
FORST MNG (med)	96 ha.	3,488 ha.	448 ha.	4,032 ha.
FORST MNG (lrg)	495 ha.	6,006 ha.	1,782 ha.	8,283 ha.
REFORST (sml)	1,220 ha.	4,148 ha.	2,684 ha.	8,052 ha.
REFORST (med)	1,100 ha.	1,650 ha.	110 ha.	2,860 ha.
IDA600	2,400 ha.	2,472 ha.	5,424 ha.	10,296 ha.
Activity Totals	**5,533 ha.**	**20,502 ha.**	**10,670 ha.**	----------
TOTAL AREA OF ACTIVITY INCORPORATED INTO PROJECT = 36,705 Ha.				

GRAND TOTAL (including "OTHER") = 43,725 Ha.

The first five years of the project will be spent incorporating farms to the CARFIX project as follows:

YEAR OF INCORPORATION

MODEL	YR 1	YR 2	YR 3	YR 4	YR 5
FORST MNG (sml)	10	16	16	16	16
FORST MNG (med)	8	6	6	6	6
FORST MNG (lrg)	9	6	6	6	6
REFORST (sml)	20	56	56	56	56
REFORST (med)	15	10	10	10	10
IDA600 (*)	8	4	4	4	4
TOTAL (fam)	542	334	334	334	334
TOTAL NUMBER OF FAMILIES UNDER CONTRACT = 1,878 families					

(*) Each IDA600 farm is composed of sixty 10-hectare family plots of land.

Within these five years, FUNDECOR will be: 1) identifying the specific farmers and forests that will be placed under contract for the 20-year period, 2) surveying the sites to ensure quality and productivity, 3) establishing the tree plantations in the designated areas, and 4) developing management plans. As farmers are incorporated into the project, within one year they will receive land title (if not already possessing one-- 40% of land holders in the region do not); a management plan will also be developed for all three activities, and reforestation activities will have commenced. A first sustainable harvest yield may also be underway. All farms incorporated into the project will be legally secured throughout the life of the project.

The following twenty years of the project will be spent managing and developing the farms which involves: 1) low-impact harvesting of primary forest, 2) management supervision, 3) project/growth surveillance, and 4) additional planning for site-specific harvests. Harvesting occurs in year 12 and year 20 on reforestation plots; in natural forests it occurs in year 1, year 11 and year 20; and in secondary forests up through year 20.

Carbon fixation measurement will occur yearly throughout the life of the project, to guarantee investors that payments are made against real growth.

B. TYPES OF FOREST

The cash flow (in colones), Net Present Values, Percentages, Internal Rate of Return, and activity variables of **one hectare** of each type of forest can be referred to in pages 1-3 of the attached "Financial Tables".

1. Primary forest

The growth rate of primary forest biomass is calculated at 1 cubic meter per hectare per year and remains at that constant throughout the entire growth period for a project total of 20 cubic meters/Ha. Statistics show that approximately 225 Kg of carbon can be fixed in every cubic meter of wood. In this case, the amount of carbon fixed during the life of the project is measurable, totaling at 55,355 metric tons of carbon. The going price for natural forest timber is $.09 per PMT (Pulgada Madera Tica). 100% of the biomass harvested will be used for sales in various markets such as timber, artisan, and energy production. In terms of deforestation, primary forest biomass will be saved during the management period at a rate of 5.8 cubic meters/Ha/yr under the assumption that those farmers that enter the project will have zero deforestation; as they have chosen natural forest management activity. This accounts for an additional 535,102 metric tons of carbon. Only conservative low-impact logging and selective harvesting techniques will be enforced so as not to over-utilize the resources on each farm; most of which already contain an average of 30% of the forest that cannot be harvested due either to previous protection or to natural barriers such as steep inclinations and important watersheds.

Page 1 of the "Financial Tables" refers to one hectare of primary forest over the 20-year period. As the project is set up, primary forest hectares will be harvested a total of three times; during years 1, 11, and 20. 100% of the revenue from the first harvest and 25% of the second and third harvests will belong to the farmer under the contract agreement. FUNDECOR has reserved all of the first harvest revenue for the farmer in order to establish and guarantee ownership rights in the distribution of income. The agreement has been reached on terms that the farmer is willing to cede a fixed percentage of the proceeding two harvests to the investor. In addition, the farmer will receive incentives from years 2-6; and then a constant annual income from the fixed carbon and small advanced harvest payments for the remaining fourteen years. Farmers will be earning 90% of the net benefit distribution for a net present total of 116,896 colones per hectare of primary forest (which is equal to $730.60 at an exchange rate of 160 col/$). Investors, on the other hand, will be earning 10% of the net benefits.

Included in the income section is a proposed conservation tourism plan which has not yet been calculated as part of the total income due to its present state of development. However, eventual FUNDECOR programs may be considered part of the income generating variables.

2. Secondary forest

The growth rate of secondary forest biomass varies throughout the 20-year period; reaching a peak of 7 cubic meters/Ha from years 13-16 and a project total of 92 cubic meters/Ha. Like primary forest, 225 Kg of carbon can be fixed in every cubic meter bringing the total carbon fixed in secondary forests to 247,373 metric tons of carbon. The price of wood is also the same, $.09/PMT, but in this case only 62.5% of the biomass harvested will be used for sales (most of that being tree trunks for the hardwood timber industry). The area affected by the project will also be 70% of the total area. Like primary forest, an average of 30% of these forests will be restricted from use and the remaining 70% will undergo low-impact logging and selective harvesting techniques.

Page 2 of the "Financial Tables" refers to one hectare of secondary forest over the 20-year period. As the project is set up, secondary forest hectares will be harvested once in year 20. 25% of the harvest will be

received by the farmer as part of his total income. In addition, he will receive incentives from years 2-6; and then a constant annual income from the fixed carbon and substantial advanced harvest payments for the remaining fourteen years. Farmers will be earning 72% of the net benefit distribution for a net present total of 84,121 colones per hectare of secondary forest (which is equal to $525.75 at an exchange rate of 160 col/$). Investors, on the other hand, will be earning 28% of the net benefits.

3. Reforestation

The growth rate of reforestation biomass increases substantially over the 20-year period due to the fact that 100% of the plantation biomass consists of trees. Therefore, one is only to calculate the growth rate of these trees without considering variables such as undergrowth and other woody biomass. The total commercial volume available at the end of the project will be 132 cubic meters/Ha of storage value wood. With the same carbon fixation rate as natural forests, 225 Kg/cubic meter, reforestation biomass will sequester a total of 283,843 metric tons of carbon from the atmosphere. The price of the wood is higher than natural forest timber because of the lower cost of extraction due to volume and homogeneity of size; in this case $.125/PMT. The percentage of total biomass volume sold will be equivalent to the volume of tree trunk biomass which is 66.6%.

Page 3 of the "Financial Tables", refers to one hectare of reforestation over the 20-year period. As the project is set up, reforested hectares will be harvested a total of two times; during years 12 and 20. 30% of each of the harvests will be received by the farmer as part of his total income. In addition, he will receive a constant annual income from the fixed income for all twenty years and substantial advanced harvest payments from years 3-20. They will be earning 54% of the net benefit distribution for a net present total of 208,409 colones per hectare of reforested land (which is equal to $1302.56 at an exchange rate of 160 col/$). Investors, on the other hand, will be earning 46% of the net benefits.

C. TYPES OF FARMS

The global model has been divided into three groups of farms according to specific qualifications such as forest/land use distribution, type of management proposed, and number of farmers/owners involved. These groups have then been subdivided according to size. In this way, FUNDECOR can best represent the various farmers at a more specific level.

In addition to the three categories of silvicultural activity, a fourth category has been added to the model listed as "OTHER". These numbers correspond to other land uses that exist on the farms such as pastures, *charrales*, ranches, or cultivated land. This land is calculated as an allowance to the farmers for current use. It may be maintained in its current state for subsistence agriculture, cattle grazing, small cash crops, or farm family use; or, as proposed, some of the land may be turned over to reforestation (as calculated in the model on page 7). On average, land classified as "OTHER" only covers 13% of the total managed land area which does not restrict management, rather it maximizes land utility while remaining considerate to current land use patterns.

The annual income of each type of farm will be competitive with alternative income sources from livestock production, clear-cutting, or agriculture.

1. Forest Management (FORST MNG)

The forest management group consists of small, medium, and large farms that range anywhere from 17 to over 160 hectares. The majority of the land cover consists of primary forest, an average of 73% of the total

group area, which classifies it mostly under sustainable natural forest management. The secondary forest and reforestation area, at an average of 11% and 4% respectively, are clearly not as central to these farms as sources of income.

The farmer's income generally is at its highest the first five years, during years 11-12, and at year 20 because of incentives and percentages of the harvests. In between these years the farmers maintain a somewhat steady income from advanced harvest payments and carbon offsets.

a. Small Forest Management Farms (MBpeq, Financial Tables)

These farms range between 17 and 69 hectares with an average of 48 hectares. They will constitute 33% of all forest management farms under contract with FUNDECOR and will be composed of 10% of the total hectareage.

b. Medium Forest Management Farms (MBmed, Financial Tables)

These farms range between 70 and 159 hectares with an average of 136 hectares. They will constitute 35% of all forest management farms under contract with FUNDECOR and will be composed of 30% of the total hectareage.

c. Large Forest Management Farms (MBgra, Financial Tables)

These farms range over 160 hectares with an average of 287 hectares. They will constitute 32% of all forest management farms under contract with FUNDECOR and will be composed of 60% of the total hectareage.

2. Reforestation Management (REFORST MNG)

The reforestation management consists of small and medium size farms that range anywhere from 7 to 100 hectares. Like the forest management farms, the majority of the land cover also consists of primary forest at an average of 48% of the total group area. However, its reforestation and secondary forest land area are significantly larger percentages of the total group area than are those in the forest management farm group; at an average of 23% and 17% respectively. Therefore, it is the smaller relative size of the land and the land composition that qualifies these farms for a different management group. Another difference exists in the use of the land listed under the "OTHER" category; where, unlike the forest management group, most of the "OTHER" land in the reforestation management group has been proposed for reforestation under contract with FUNDECOR. In this case, income is more evenly distributed between the three categories of silvicultural activity.

The farmer's income is generally at its highest in year 1 and year 20, with the greatest fluctuations during years 11-12 due to harvesting schedules. In between those years the farmers maintain a somewhat steady income from advanced harvest payments and carbon offsets.

a. Small Reforestation Management Farms (REFpeq, Financial Tables)

These farms range between 7 and 49 hectares with an average of 35 hectares. They will constitute 56% of all reforestation management farms under contract with FUNDECOR and will be composed of 41% of the total hectareage.

b. Medium Reforestation Management Farms (REFmed, Financial Tables)

These farms range between 50 and 100 hectares with an average of 62 hectares. They will constitute 44% of all reforestation management farms under contract with FUNDECOR and will be composed of 59% of the total hectareage.

3. IDA600 Management Farms (IDA600, Financial Tables)

IDA600 was part of a land distribution program that developed in the 1980's as a way to displace population from urban centers and as an effort to increase agricultural production and boost government socio-economic aid. The program places 60 families in a 600 hectare farm, giving each family a 10 hectares plot to manage. Current land use indicates that presently most of the land is kept as an asset and not as an income generating resource due to the small size of each plot. The land exists in a somewhat abandoned state because most of the farmers do not want to work the land. However, they would like to see it put to some kind of productive use. The land does have a lot of potential for management and, as a whole, the unit could serve as an integrated cooperative and income source for these families.

Under the proposal, the land use will consist of 103 of the 132 primary forest hectares under sustainable management (29 becoming secondary forest); all of the 126 secondary forest hectares under regeneration management; and of the "OTHER" hectares, 171 hectares will remain as "OTHER", 100 hectares will be reforested, and 71 hectares will be regenerated. Therefore, the majority of the land, 226 hectares, is placed under natural forest regeneration management. Much of this regeneration is already underway due to current abandonment.

The family's income is generally at its highest in year 1 and year 20, with the greatest fluctuations during years 11-12 due to harvesting schedules. In between those years the farmers maintain a somewhat steady income from the fixed carbon and advanced harvest payments. These families will be earning 66% of the net benefit distribution for a total net present income of 864,876 colones each (which is equal to $5405 at an exchange rate of 160 col/$). The investors will be earning 34% of the net benefits.

D. GLOBAL PROJECT

Page 10 of the "Financial Tables" gives a thorough analysis of the global project in terms of the entire 25-year period. The model is expressed in U.S. dollars at the current exchange rate of 160 col/$.

Project CARFIX, as can be seen from the model, is a very real and implementable project with measurable environmental and financially beneficial results. FUNDECOR is confident that what it has achieved in the last three years can be achieved to an even greater extent over the long-term projection of 25 years. However, in order to realize itself, the project is in need of an investor or financier who is willing to make an initial investment of $ 4,795,417 with a negative cash flow for 16 of the 25 years (yrs. 0-11, 16-19). During these years, the investor is essentially paying the difference between the total net benefit and the farmers' income as incentives for sustainable forest management and as rent on the carbon offset "sinks". In addition to the 36,705 Ha that will be under buffer zone management, FUNDECOR will also be including the National Parks in the ACCVC as part of the entire proposed "sink" to be offered to carbon buyers. At 76,696 hectares, the National Parks will be fixing a total of 1,044,423 metric tons and will be generating a net present income of $6,728,243; 20% of which will be received by the investor as part of his return.

The way the model is set up, a total of $45,282,229 will be generated as project income; 21% of which is earned through incentives in the first 10 years, 13% through annual carbon fixation, and 66% as the largest

source of income through wood sales. The carbon income from offsets takes into account both the growth of forest biomass under management and the forest biomass that is saved from deforestation. This income is spread over the entire 25 years. Wood sales, on the other hand, produce income between years 1-5, 11-16, and 20-24 due to the "staggered" incorporation process; the last period producing the highest income from final cuts to make the cash flows positive. In this way, carbon offsets provide the initial investment needed to implement and help finance the project, while the money produced in the sales of wood will provide the necessary income to yield positive returns.

The project costs, on the other hand, come to a total of $12,499,765 which includes the 9% FUNDECOR administration fee. The first five years of the project has the highest percentage of costs due to operational variables that are needed during the period of incorporation. Note that the security costs are equal to zero for the global model because these costs have been indirectly assumed by the farmers. A Green Seal fee has also been included as an expected cost.

This leaves a net benefit grand total of $32,782,465; 77% to be equitably distributed between the farmers and a 23% share to go to the investor as return on his investment.

Assuming that all of the carbon is sold, and that the project is consistent with the model, the economic benefits of all involved actors will be divided as follows:

ACTOR	INCOME	PERCENTAGE
Investor/Financier	$ 8,749,243	22%
Farmers (1,878 fam)	$ 25,378,871	62%
FUNDECOR	$ 1,136,342	3%
National Parks	$ 5,382,595	13%
Total	**$ 40,647,051**	**100%**

The environmental benefits will be as follows:

ISSUE	AMOUNT
Forests conserved:	113,401 Ha.
Buffer Zones	36,705 Ha.
National Parks	76,696 Ha.
Carbon fixed:	2,166,097 Metric Tons

The investor/financier, in this case, has invested with an 11% internal rate of return (IRR) and with a 2.8 benefit/cost ratio. This proves to be a strong, low risk, long-term investment that has assisted in the socio-economic development of the ACCVC; and has helped FUNDECOR protect and conserve both the ACCVC buffer zone forests, the National Parks, and the Costa Rican biodiversity through sustainable management.

V. POSSIBLE SCENARIOS

The following is an analysis of the project's basic activities for five different scenarios in terms of Net Present Value (NPV) and Internal Rate of Return (IRR). Scenarios A-E have been provided to show the range of possibilities:

1) **Scenario A** has Government Incentives that are fixed at the current levels and the price of carbon is set at $10 per metric ton. **NOTE:** It is within the parameters of this scenario that the attached Financial Tables have been set and from which the results have been determined.

2) **Scenario B** has zero Government Incentives and the price of carbon is set at $10 per metric ton.

3) **Scenario C** has zero Government Incentives and the price of carbon is set at $21 per metric ton.

4) **Scenario D** has declining Government Incentives as part of a new government proposal which states that the incentives will decrease from 100% to 80% to 60% to 40% to 20% respectively between the years 1997 and 2001. The price of carbon in this scenario has been set at $10 per metric ton.

5) **Scenario E** has declining Government Incentives as part of a new government proposal as stated in scenario D. The price of carbon in this case is set at $15 per metric ton.

ACTIVITY	SCENARIOS				
	(A)	(B)	(C)	(D)	(E)
NFMgt					
NPV	$ 809	$ 512	$ 710	*	**
IRR	316%	287%	309%	*	**
RNFst					
NPV	$ 734	$ 497	$ 640	*	**
IRR	43%	14%	18%	*	**
REFOR					
NPV	$ 2,404	$ 1,769	$ 2,062	*	**
IRR	17%	11%	12%	*	**

* These results range between those of A - B depending on the year of incorporation

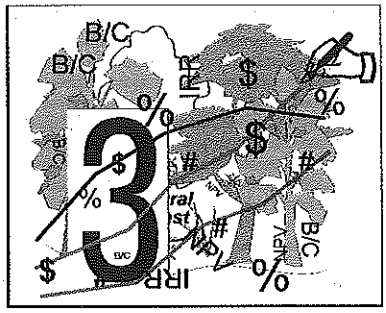
** These results range between those of A - C depending on the year of incorporation.

The following is an analysis of the Global Project in terms of Net Present Value (NPV), Internal Rate of Return (IRR), and Benefit Cost (B/C) ratio.

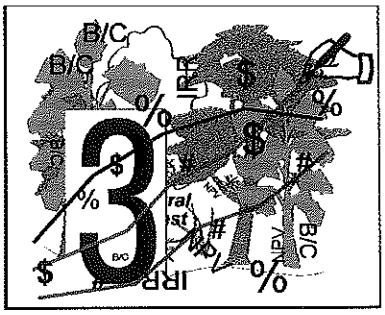
	SCENARIOS				
	(A)	(B)	(C)	(D)	(E)
GLOBAL PROJECT W/O NP					
NPV	$ 32.8M	$ 23.4M	$ 29.9M	$ 29.7M	$ 32.7M
IRR	145%	24%	37%	132%	141%
B/C	3.6	2.9	3.4	3.4	3.6
INVESTOR W/O NP					
NPV	$ 7.4M	$ 1.9M	$ 3.8M	$ 4.4M	$ 5.2M
IRR	10%	6%	7%	7%	8%
B/C	2.3	1.2	1.4	1.5	1.6
INVEST	$ 5.9M	$ 11.3M	$ 9.8M	$ 8.9M	$ 8.1M
INVESTOR W/ NP					
NPV	$ 8.7M	$ 3.3M	$ 6.6M	$ 5.7M	$ 7.2M
IRR	11%	7%	9%	8%	10%
B/C	2.8	1.3	1.9	1.7	2.1
INVEST	$ 4.8M	$ 10.3M	$ 7.8M	$ 7.8M	$ 6.7M

NOTE: Scenario E could be made equivalent to A for the Investor.
NP refers to the NATIONAL PARKS component.

FINANCIAL TABLES AND PROJECT PARAMETERS



FINANCIAL TABLES AND PROJECT PARAMETERS



Contents

CASH FLOW FOR NATURAL FOREST MANAGEMENT ACTIVITY
1 HA
NUMBERS EXPRESSED IN COLONES

INCOME, EXPENSES AND DISTRIBUTION	YEAR 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	NPV	%
INCOME:																							
Gov't Incentives			13,223	18,032	10,928	7,451	6,774															47,454	28%
Carbon fix. from no land use change		2,088	2,088	2,088	2,088	2,088	2,088	2,088	2,088	2,088	2,088	2,088	2,088	2,088	2,088	2,088	2,088	2,088	2,088	2,088	2,088	26,021	15%
Carbon fix. from biomass growth		216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	216	2,692	2%
Wood sales		64,800										32,400									32,400	92,869	55%
FUNDECOR's ecotourism plan																							0%
TOTAL		67,104	15,527	20,336	13,232	9,755	9,078	2,304	2,304	2,304	2,304	34,704	2,304	2,304	2,304	2,304	2,304	2,304	2,304	2,304	34,704	169,036	100%
DIRECT COSTS:																							
Ident. of land holders	6,068																					6,068	17%
Forst Mngmt or Reforst plan	5,000										1,750									1,750		6,767	19%
Topography & land titling	3,000																					3,000	8%
Plantation establishment																							0%
Forst Mngmt supervision		4,000										2,000									2,000	5,733	16%
Posterior mngmt				10,000		0			0													8,638	24%
Survey of project growth / return		1,000	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	3,254	9%
Security		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Infrastructure development		1,000				0			0													952	3%
Green Seal fee		500	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1,627	5%
TOTAL	14,068	6,500	300	10,300	300	300	300	300	300	300	2,050	2,300	300	300	300	300	300	300	300	2,050	2,300	36,040	91%
ADMINISTRATIVE COST	1,407	650	30	1,030	30	30	30	30	30	30	205	230	30	30	30	30	30	30	30	205	230	3,604	9%
TOTAL COST	15,475	7,150	330	11,330	330	330	330	330	330	330	2,255	2,530	330	330	330	330	330	330	330	2,255	2,530	39,644	100%
NET INCOME	-15,475	59,954	15,197	9,006	12,902	9,425	8,748	1,974	1,974	1,974	49	32,174	1,974	1,974	1,974	1,974	1,974	1,974	1,974	49	32,174	129,391	100%
ACCUMULATED NPV AS A %	-12%	32%	43%	49%	57%	63%	68%	69%	70%	71%	71%	85%	86%	87%	88%	89%	89%	90%	91%	91%	100%		
ACTIVITY NPV	129,391																						
BENEFIT / COST RATIO	4.3																						
ACTIVITY IRR	316%																						
NPV DISTRIBUTION																							
HOLDER INCOME																							
Carbon income	0	0	0	0	0	0	0	2,304	2,304	2,304	2,304	2,304	2,304	2,304	2,304	2,304	2,304	2,304	2,304	2,304	2,304	17,019	15%
Income from incentives (50% forest)	0	0	6,612	9,016	5,464	3,726	3,387	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23,727	20%
Wood sales income	0	64,800	0	0	0	0	0	0	0	0	0	8,100	0	0	0	0	0	0	0	0	8,100	69,503	59%
Advanced harvest payments								900	900	900	900	900	900	900	900	900	900	900	900	900	900	6,648	6%
NET HOLDER INCOME	0	64,800	6,612	9,016	5,464	3,726	3,387	3,204	3,204	3,204	3,204	11,304	3,204	3,204	3,204	3,204	3,204	3,204	3,204	3,204	11,304	116,896	90%
NET INVESTOR INCOME	-15,475	-4,846	8,586	-10	7,438	5,700	5,361	-1,230	-1,230	-1,230	-3,155	20,870	-1,230	-1,230	-1,230	-1,230	-1,230	-1,230	-1,230	-3,155	20,870	12,495	10%
ACCUMULATED NPV AS A %	-124%	-161%	-98%	-99%	-50%	-14%	18%	11%	5%	-2%	-17%	80%	75%	70%	65%	60%	55%	51%	47%	37%	100%		
INVESTOR NPV	12,495																						
BENEFIT / COST RATIO	1.6																						
INVESTOR IRR	13%																						

CASH FLOW FOR FOREST REGENERATION ACTIVITY
1 HA
NUMBERS EXPRESSED IN COLONES

INCOME, EXPENSES AND DISTRIBUTIO	YEAR 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	NPV	%
INCOME:																							
Gov't Incentives			10,579	14,425	8,743	5,961	5,419															37,963	25%
Carbon fix. from no land use change																						0	0%
Carbon fix. from biomass growth		0	0	1,613	1,613	1,613	1,613	1,613	1,613	1,613	1,613	1,613	1,613	2,822	2,822	2,822	2,822	2,419	2,419	2,419	2,419	20,799	14%
Wood sales																					243,432	91,747	61%
FUNDECOR's ecotourism plan																							0%
TOTAL		0	10,579	16,038	10,355	7,574	7,032	1,613	1,613	1,613	1,613	1,613	1,613	2,822	2,822	2,822	2,822	2,419	2,419	2,419	245,851	150,508	100%
DIRECT COSTS:																							
Ident. of land holders		6,068																				5,779	19%
Forst Mngmt or Reforst plan		5,000																				4,762	16%
Topography & land titling		3,000																				2,857	10%
Plantation establishment																							0%
Forst Mngmt supervision																						0	0%
Posterior mngmt							14,000						0									10,447	35%
Survey of project growth / return	1,000	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	3,492	12%
Security	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Infrastructure development		1,000									0											952	3%
Green Seal fee	500	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1,746	6%
TOTAL	1,500	15,368	300	300	300	300	14,300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	30,037	91%
ADMINISTRATIVE COST	150	1,537	30	30	30	30	1,430	30	30	30	30	30	30	30	30	30	30	30	30	30	30	3,004	9%
TOTAL COST	1,650	16,905	330	330	330	330	15,730	330	330	330	330	330	330	330	330	330	330	330	330	330	330	33,040	100%
NET INCOME	-1,650	-16,905	10,249	15,708	10,025	7,244	-8,698	1,283	1,283	1,283	1,283	1,283	1,283	2,492	2,492	2,492	2,492	2,089	2,089	2,089	245,521	117,468	100%
ACCUMULATED NPV AS A %	-1%	-15%	-7%	4%	11%	16%	11%	11%	12%	13%	14%	14%	15%	16%	17%	18%	19%	20%	21%	21%	100%		
ACTIVITY NPV	117,468																						
BENEFIT / COST RATIO	4.6																						
ACTIVITY IRR	43%																						
NPV DISTRIBUTION																							
HOLDER INCOME																							
Carbon income	0	0	0	0	0	0	0	1,613	1,613	1,613	1,613	1,613	1,613	2,822	2,822	2,822	2,822	2,419	2,419	2,419	2,419	15,611	19%
Income from incentives (50% forest)	0	0	5,289	7,213	4,371	2,980	2,709	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18,981	23%
Wood sales income	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60,858	22,937	27%
Advanced harvest payments								3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	26,591	32%
NET HOLDER INCOME	0	0	5,289	7,213	4,371	2,980	2,709	5,213	5,213	5,213	5,213	5,213	5,213	6,422	6,422	6,422	6,422	6,019	6,019	6,019	66,877	84,121	72%
NET INVESTOR INCOME	-1,650	-16,905	4,959	8,495	5,654	4,263	-11,408	-3,930	-3,930	-3,930	-3,930	-3,930	-3,930	-3,930	-3,930	-3,930	-3,930	-3,930	-3,930	-3,930	178,644	33,347	28%
ACCUMULATED NPV AS A %	-5%	-53%	-40%	-18%	-4%	6%	-19%	-28%	-36%	-43%	-50%	-57%	-64%	-70%	-76%	-82%	-87%	-92%	-97%	-102%	100%		
INVESTOR NPV	33,347																						
BENEFIT / COST RATIO	2.0																						
INVESTOR IRR	12%																						

CASH FLOW FOR REFORESTATION ACTIVITY
1 HA
NUMBERS EXPRESSED IN COLONES

INCOME, EXPENSES AND DISTRIBUTIO	YEAR 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	NPV	%
INCOME:																							
Gov't Incentives		65,455	19,835	13,524	8,196	3,726																101,673	18%
Carbon fix. from no land use change																							0%
Carbon fix. from biomass growth				2,487	2,487	2,487	2,487	2,487	2,487	2,487	2,487	2,487	2,487	5,596	5,596	5,596	5,596	8,705	8,705	8,705	8,705	42,612	7%
Wood sales													72,000								1,022,400	425,424	75%
FUNDECOR's ecotourism plan																						0	0%
TOTAL		65,455	19,835	16,011	10,683	6,213	2,487	2,487	2,487	2,487	2,487	2,487	74,487	5,596	5,596	5,596	5,596	8,705	8,705	8,705	1,031,105	569,709	100%
DIRECT COSTS:																							
Ident. of land holders	6,068																					6,068	4%
Forst Mngmt or Reforst plan	6,000																					6,000	4%
Topography & land titling																						0	0%
Plantation establishment		75,000	24,000	18,000	12,000	6,000																123,320	73%
Forst Mngmt supervision																						0	0%
Posterior mngmt							10,000						7,000									11,360	7%
Survey of project growth / return			300	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	2,393	1%
Security		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Infrastructure development		20,000																				19,048	11%
Green Seal fee				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
TOTAL	12,068	95,000	24,300	18,200	12,200	6,200	10,200	200	200	200	200	200	7,200	200	200	200	200	200	200	200	200	168,189	91%
ADMINISTRATIVE COST	1,207	9,500	2,430	1,820	1,220	620	1,020	20	20	20	20	20	720	20	20	20	20	20	20	20	20	16,819	9%
TOTAL COST	13,275	104,500	26,730	20,020	13,420	6,820	11,220	220	220	220	220	220	7,920	220	220	220	220	220	220	220	220	185,007	100%
NET INCOME	-13,275	-39,045	-6,895	-4,009	-2,737	-607	-8,733	2,267	2,267	2,267	2,267	2,267	66,567	5,376	5,376	5,376	5,376	8,485	8,485	8,485	1,030,885	384,701	100%
ACCUMULATED NPV AS A %	-3%	-13%	-15%	-16%	-16%	-16%	-18%	-18%	-17%	-17%	-16%	-16%	-7%	-6%	-5%	-4%	-4%	-3%	-2%	-1%	100%		
ACTIVITY NPV	384,701																						
BENEFIT / COST RATIO	3.1																						
ACTIVITY IRR	17%																						
NPV DISTRIBUTION																							
HOLDER INCOME																							
Carbon income		3,419	3,419	3,419	3,419	3,419	3,419	3,419	3,419	3,419	3,419	3,419	3,419	3,419	3,419	3,419	3,419	3,419	3,419	3,419	3,419	42,612	20%
Income from incentives (50% forest)																							0%
Wood sales income		0	0	0	0	0	0	0	0	0	0	0	21,600	0	0	0	0	0	0	0	306,720	127,627	61%
Advanced harvest payments				3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	38,170	18%
NET HOLDER INCOME	0	3,419	3,419	7,019	7,019	7,019	7,019	7,019	7,019	7,019	7,019	7,019	28,619	7,019	7,019	7,019	7,019	7,019	7,019	7,019	313,739	208,409	54%
NET INVESTOR INCOME	-13,275	-42,465	-10,315	-11,028	-9,756	-7,627	-15,752	-4,752	-4,752	-4,752	-4,752	-4,752	37,948	-1,643	-1,643	-1,643	-1,643	1,466	1,466	1,466	717,146	176,292	46%
ACCUMULATED NPV AS A %	-8%	-30%	-36%	-41%	-46%	-49%	-56%	-58%	-60%	-61%	-63%	-65%	-53%	-53%	-53%	-54%	-54%	-54%	-54%	-53%	100%		
INVESTOR NPV	176,292																						
BENEFIT / COST RATIO	2.6																						
INVESTOR IRR	11%																						

MBpeq
CASH FLOW FOR SMALL FOREST MANAGEMENT FARM (MBpeq)
NUMBERS EXPRESSED IN COLONES

LAND USE (ha)		
TYPE OF USE	ACTUAL	PROPOSED
Reforestation		3
Forest Mngmt	37	37
Forest Regen.	3	3
Other uses	8	5
TOTAL	48	48

INCOME, EXPENSES AND DISTRIBUTIO	YEAR 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	VAN	%
INCOME:																							
Gov't Incentives	0	196,364	580,496	751,014	455,160	304,748	266,883	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,174,686	26%
Carbon fix. from no land use change	0	77,256	77,256	77,256	77,256	77,256	77,256	77,256	77,256	77,256	77,256	77,256	77,256	77,256	77,256	77,256	77,256	77,256	77,256	77,256	77,256	962,781	11%
Carbon fix. from biomass growth	0	7,992	7,992	20,262	20,292	20,292	20,292	20,292	20,292	20,262	20,292	20,292	20,292	33,248	33,248	33,248	33,248	41,366	41,366	41,366	41,366	289,830	3%
Wood sales	0	2,397,600	0	0	0	0	0	0	0	0	0	1,199,800	216,000	0	0	0	0	0	0	0	4,986,295	4,987,670	59%
FUNDECOR's ecotourism plan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
TOTAL	0	2,679,212	665,744	848,562	552,708	402,296	364,431	97,548	97,548	97,548	97,548	1,296,348	313,548	110,504	110,504	110,504	110,504	118,622	118,622	118,622	5,114,818	8,414,967	100%
DIRECT COSTS:																							
Ident. of land holders	242,735	18,205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	260,073	13%
Forst Mngmt or Reforst plan	203,000	15,000	0	0	0	0	0	0	0	0	64,750	0	0	0	0	0	0	0	0	64,750	0	282,860	15%
Topography & land titling	111,000	9,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	119,571	6%
Plantation establishment	0	225,000	72,000	54,000	36,000	18,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	369,960	19%
Forst Mngmt supervision	0	148,000	0	0	0	0	0	0	0	0	0	74,000	0	0	0	0	0	0	0	0	74,000	212,108	11%
Posterior mngmt	0	0	0	370,000	0	0	72,000	0	0	0	0	0	21,000	0	0	0	0	0	0	0	0	385,041	20%
Survey of project growth / return	3,000	37,600	8,900	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	138,066	7%
Security	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Infrastructure development	0	100,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	95,238	5%
Green Seal fee	1,500	18,800	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	65,444	3%
TOTAL	561,235	571,605	84,900	436,600	48,600	30,600	84,600	12,600	12,600	12,600	77,350	86,600	33,600	12,600	12,600	12,600	12,600	12,600	12,600	77,350	86,600	1,928,162	91%
ADMINISTRATIVE COST	56,123	57,161	8,490	43,660	4,860	3,060	8,460	1,260	1,260	1,260	7,735	8,660	3,360	1,260	1,260	1,260	1,260	1,260	1,260	7,735	8,660	192,816	9%
TOTAL COST	617,358	628,766	93,390	480,260	53,460	33,660	93,060	13,860	13,860	13,860	85,085	95,260	36,960	13,860	13,860	13,860	13,860	13,860	13,860	85,085	95,260	2,120,979	100%
NET INCOME	-617,358	2,050,446	572,354	368,302	499,248	368,636	271,371	83,688	83,688	83,688	12,463	1,201,088	276,588	96,644	96,644	96,644	96,644	104,762	104,762	33,537	5,019,658	6,293,988	100%
ACCUMULATED NPV AS A %	-10%	21%	29%	35%	41%	46%	49%	50%	51%	52%	52%	63%	65%	66%	67%	68%	68%	69%	70%	70%	100%		
ACTIVITY NPV	6,293,988																						
BENEFIT / COST RATIO	4.0																						
ACTIVITY IRR	264.19%																						
NPV DISTRIBUTION																							
HOLDER INCOME																							
Carbon income	0	10,258	10,258	10,258	10,258	10,258	10,258	100,344	100,344	100,344	100,344	100,344	100,344	103,973	103,973	103,973	103,973	102,764	102,764	102,764	102,764	804,356	15%
Income from incentives (50% forest)	0	0	260,496	355,222	215,286	148,786	133,442	0	0	0	0	0	0	0	0	0	0	0	0	0	0	934,834	18%
Wood sales income	0	2,397,600	0	0	0	0	0	0	0	0	0	299,700	64,800	0	0	0	0	0	0	0	1,402,434	3,023,303	58%
Advanced harvest payments	0	0	0	10,800	10,800	10,800	10,800	54,900	54,900	54,900	54,900	54,900	54,900	54,900	54,900	54,900	54,900	54,900	54,900	54,900	54,900	440,256	8%
NET HOLDER INCOME	0	2,407,858	270,754	376,280	236,344	167,844	154,500	155,244	155,244	155,244	155,244	454,944	220,044	158,873	158,873	158,873	158,873	157,664	157,664	157,664	1,560,098	5,202,749	83%
NET INVESTOR INCOME	-617,358	-357,412	301,600	-7,977	262,905	200,793	116,872	-71,556	-71,556	-71,556	-142,781	746,144	56,544	-62,229	-62,229	-62,229	-62,229	-52,902	-52,902	-124,127	3,459,560	1,091,240	17%
ACCUMULATED NPV AS A %	-57%	-88%	-63%	-63%	-44%	-29%	-21%	-26%	-30%	-34%	-42%	-2%	0%	-3%	-5%	-6%	-11%	-13%	-15%	-18%	100%		
INVESTOR NPV	1,091,240																						
BENEFIT / COST RATIO	2.1																						
INVESTOR IRR	12%																						

MBmed
CASH FLOW FOR MEDIUM FOREST MANAGEMENT FARM (MBmed)
NUMBERS EXPRESSED IN COLONES

LAND USE (ha)		
TYPE OF USE	ACTUAL	PROPOSED
Reforestation		3
Forest Mngmt	109	109
Forest Regen.	14	14
Other uses	13	10
TOTAL	136	136

	YEAR																						
INCOME, EXPENSES AND DISTRIBUTIO	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	VAN	%
INCOME:																							
Gov't Incentives	0	198,364	1,648,926	2,207,964	1,338,160	906,794	614,197	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,008,930	27%
Carbon fix. from no land use change	0	227,592	227,592	227,592	227,592	227,592	227,592	227,592	227,592	227,592	227,592	227,592	227,592	227,592	227,592	227,592	227,592	227,592	227,592	227,592	227,592	2,936,299	13%
Carbon fix. from biomass growth	0	23,544	23,544	53,585	53,585	53,585	53,585	53,585	53,585	53,585	53,585	53,585	53,585	79,847	79,847	79,847	79,847	83,529	83,529	83,529	83,529	712,426	3%
Wood sales	0	7,063,200	0	0	0	0	0	0	0	0	0	3,531,600	216,000	0	0	0	0	0	0	0	10,006,848	12,683,453	57%
FUNDECOR's ecotourism plan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
TOTAL	0	7,510,700	1,900,062	2,489,141	1,619,337	1,187,971	1,095,374	281,177	281,177	281,177	281,177	3,812,777	497,177	307,439	307,439	307,439	307,439	311,121	311,121	311,121	10,317,969	22,241,118	100%
DIRECT COSTS:																							
Ident. of land holders	679,657	84,957	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	760,589	16%
Forst Mngmt or Reforst plan	563,000	70,000	0	0	0	0	0	0	0	0	190,750	0	0	0	0	0	0	0	0	190,750	0	822,257	17%
Topography & land titling	327,000	42,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	367,000	8%
Plantation establishment	0	225,000	72,000	54,000	36,000	18,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	369,960	8%
Forst Mngmt supervision	0	438,000	0	0	0	0	0	0	0	0	0	218,000	0	0	0	0	0	0	0	0	218,000	624,860	13%
Posterior mngmt	0	0	0	1,080,000	0	0	226,000	0	0	0	0	0	21,000	0	0	0	0	0	0	0	0	1,121,921	23%
Survey of project growth / return	14,000	111,800	25,500	25,200	25,200	25,200	25,200	25,200	25,200	25,200	25,200	25,200	25,200	25,200	25,200	25,200	25,200	25,200	25,200	25,200	25,200	410,796	8%
Security	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Infrastructure development	0	183,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	174,286	4%
Green Seal fee	7,000	55,900	12,300	12,300	12,300	12,300	12,300	12,300	12,300	12,300	12,300	12,300	12,300	12,300	12,300	12,300	12,300	12,300	12,300	12,300	12,300	201,809	4%
TOTAL	1,590,657	1,208,657	109,800	1,181,500	73,500	55,500	263,500	37,500	37,500	37,500	228,250	255,500	58,500	37,500	37,500	37,500	37,500	37,500	37,500	226,250	255,500	4,853,458	91%
ADMINISTRATIVE COST	159,066	120,866	10,980	118,150	7,350	5,550	26,350	3,750	3,750	3,750	22,825	25,550	5,850	3,750	3,750	3,750	3,750	3,750	3,750	22,825	25,550	485,346	9%
TOTAL COST	1,749,723	1,329,523	120,780	1,299,650	80,850	61,050	289,850	41,250	41,250	41,250	251,075	281,050	64,350	41,250	41,250	41,250	41,250	41,250	41,250	251,075	281,050	5,338,803	100%
NET INCOME	-1,749,723	6,181,177	1,779,282	1,189,491	1,538,487	1,126,921	805,524	239,927	239,927	239,927	30,102	3,531,727	432,827	266,189	266,189	266,189	266,189	269,871	269,871	60,046	10,036,919	16,902,315	100%
ACCUMULATED NPV AS A %	-10%	24%	34%	40%	48%	53%	56%	57%	58%	59%	59%	72%	73%	74%	75%	75%	76%	77%	77%	78%	100%		
ACTIVITY NPV	16,902,315																						
BENEFIT / COST RATIO	4.2																						
ACTIVITY IRR	266.05%																						
NPV DISTRIBUTION																							
HOLDER INCOME																							
Carbon income	0	10,258	10,258	10,258	10,258	10,258	10,258	283,973	283,973	283,973	283,973	283,973	283,973	300,908	300,908	300,908	300,908	295,263	295,263	295,263	295,263	2,201,415	15%
Income from incentives (50% forest)	0	0	794,711	1,083,566	856,786	447,808	407,089	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,851,956	20%
Wood sales income	0	7,063,200	0	0	0	0	0	0	0	0	0	882,900	64,800	0	0	0	0	0	0	0	2,655,072	8,279,822	57%
Advanced harvest payments	0	0	0	10,800	10,800	10,800	10,800	159,300	159,300	159,300	159,300	159,300	159,300	159,300	159,300	159,300	159,300	159,300	159,300	159,300	159,300	1,211,408	8%
NET HOLDER INCOME	0	7,073,458	804,969	1,104,754	877,844	468,866	428,157	443,273	443,273	443,273	443,273	1,326,173	508,073	460,208	460,208	460,208	460,208	454,563	454,563	454,563	3,109,835	14,544,602	86%
NET INVESTOR INCOME	-1,749,723	-892,281	974,313	84,737	660,643	658,054	377,368	-203,346	-203,346	-203,346	-413,171	2,205,554	-75,246	-194,019	-194,019	-194,019	-194,019	-184,692	-184,692	-394,517	6,927,294	2,357,713	14%
ACCUMULATED NPV AS A %	-74%	-110%	-73%	-70%	-40%	-16%	-6%	-12%	-18%	-23%	-34%	21%	19%	14%	10%	6%	3%	-1%	-4%	-11%	100%		
INVESTOR NPV	2,357,713																						
BENEFIT / COST RATIO	1.9																						
INVESTOR IRR	13%																						

MBgra
CASH FLOW FOR LARGE FOREST MANAGEMENT FARM (MBgra)
NUMBERS EXPRESSED IN COLONES

LAND USE (ha)		
TYPE OF USE	ACTUAL	PROPOSED
Reforestation		15
Forest Mngmt	182	182
Forest Regen.	49	54
Other uses	56	36
TOTAL	287	287

	YEAR																						
INCOME, EXPENSES AND DISTRIBUTIO	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	VAN	%
INCOME:																							
Gov't incentives	0	981,818	3,275,372	4,263,561	2,583,977	1,733,861	1,525,434	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12,211,620	26%
Carbon fix. from no land use change	0	380,016	380,016	380,016	380,016	380,016	380,016	380,016	380,016	380,016	380,016	380,016	380,016	380,016	380,016	380,016	380,016	380,016	380,016	380,016	380,016	4,735,839	10%
Carbon fix. from biomass growth	0	39,312	39,312	163,712	163,712	163,712	163,712	163,712	163,712	163,712	163,712	163,712	163,712	275,667	275,667	275,667	275,667	300,531	300,531	300,531	300,531	2,252,216	5%
Wood sales	0	11,793,600	0	0	0	0	0	0	0	0	0	5,996,800	1,080,000	0	0	0	0	0	0	0	34,378,128	28,237,876	60%
FUNDECOR's ecotourism plan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
TOTAL	0	13,194,746	3,694,700	4,807,289	3,127,705	2,277,589	2,069,163	543,728	543,728	543,728	543,728	6,440,528	1,623,728	655,683	655,683	655,683	655,683	680,547	680,547	680,547	35,058,875	47,437,551	100%
DIRECT COSTS:																							
Ident. of land holders	1,195,469	327,692	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,507,556	14%
Forst Mngmt or Reforst plan	1,000,000	270,000	0	0	0	0	0	0	0	0	318,500	0	0	0	0	0	0	0	0	318,500	0	1,578,715	15%
Topography & land titling	548,000	162,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	700,286	7%
Plantation establishment	0	1,125,000	360,000	270,000	180,000	90,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,849,799	17%
Forst Mngmt supervision	0	729,000	0	0	0	0	0	0	0	0	0	364,000	0	0	0	0	0	0	0	0	364,000	1,043,344	10%
Posterior mngmt	0	0	0	1,620,000	0	0	906,000	0	0	0	0	0	105,000	0	0	0	0	0	0	0	0	2,306,724	22%
Survey of project growth / return	54,000	192,800	51,700	50,200	50,200	50,200	50,200	50,200	50,200	50,200	50,200	50,200	50,200	50,200	50,200	50,200	50,200	50,200	50,200	50,200	50,200	816,773	8%
Security	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Infrastructure development	0	536,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	510,476	5%
Green Seal fee	27,000	96,400	23,600	23,600	23,600	23,600	23,600	23,600	23,600	23,600	23,600	23,600	23,600	23,600	23,600	23,600	23,600	23,600	23,600	23,600	23,600	390,441	4%
TOTAL	2,822,469	3,437,892	435,300	2,163,800	253,800	163,800	979,800	73,800	73,800	73,800	392,300	437,800	178,800	73,800	73,800	73,800	73,800	73,800	73,800	392,300	437,800	10,704,115	91%
ADMINISTRATIVE COST	282,247	343,789	43,530	216,380	25,380	16,380	97,980	7,380	7,380	7,380	39,230	43,780	17,880	7,380	7,380	7,380	7,380	7,380	7,380	39,230	43,780	1,070,412	9%
TOTAL COST	3,104,716	3,781,681	478,830	2,380,180	279,180	180,180	1,077,780	81,180	81,180	81,180	431,530	481,580	196,680	81,180	81,180	81,180	81,180	81,180	81,180	431,530	481,580	11,774,527	100%
NET INCOME	-3,104,716	9,413,065	3,215,870	2,427,110	2,848,525	2,097,409	991,383	462,548	462,548	462,548	112,198	5,958,948	1,427,048	574,503	574,503	574,503	574,503	599,367	599,367	248,017	34,577,095	35,663,024	100%
ACCUMULATED NPV AS A %	-9%	16%	25%	30%	37%	42%	44%	45%	46%	46%	47%	56%	59%	59%	60%	61%	62%	62%	63%	63%	100%		
ACTIVITY NPV	35,663,024																						
BENEFIT / COST RATIO	4.0																						
ACTIVITY IRR	242.89%																						
NPV DISTRIBUTION																							
HOLDER INCOME																							
Carbon income	0	51,290	51,290	51,290	51,290	51,290	51,290	557,709	557,709	557,709	557,709	557,709	557,709	623,027	623,027	623,027	623,027	601,254	601,254	601,254	601,254	4,579,565	16%
Income from incentives (50% forest)	0	0	1,488,926	2,030,353	1,230,517	839,969	762,717	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,343,265	18%
Wood sales income	0	11,793,600	0	0	0	0	0	0	0	0	0	1,474,200	324,000	0	0	0	0	0	0	0	9,361,332	15,802,537	55%
Advanced harvest payments	0	0	0	54,000	54,000	54,000	54,000	412,200	412,200	412,200	412,200	412,200	412,200	412,200	412,200	412,200	412,200	412,200	412,200	412,200	412,200	3,218,402	11%
NET HOLDER INCOME	0	11,844,890	1,540,215	2,135,643	1,335,807	944,276	868,007	969,909	969,909	969,909	969,909	2,444,109	1,293,909	1,035,227	1,035,227	1,035,227	1,035,227	1,013,454	1,013,454	1,013,454	10,374,786	28,943,770	81%
NET INVESTOR INCOME	-3,104,716	-2,431,825	1,675,655	291,467	1,512,718	1,153,131	123,376	-507,360	-507,360	-507,360	-857,710	3,514,840	133,140	-460,724	-460,724	-460,724	-460,724	-414,088	-414,088	-764,438	24,202,308	6,719,255	19%
ACCUMULATED NPV AS A %	-46%	-81%	-58%	-54%	-36%	-22%	-21%	-26%	-31%	-36%	-44%	-14%	-12%	-16%	-20%	-23%	-26%	-29%	-31%	-36%	100%		
INVESTOR NPV	6,719,255																						
BENEFIT / COST RATIO	2.2																						
INVESTOR IRR	12%																						

REFpeq
CASH FLOW FOR SMALL REFORESTATION FARM (REFpeq)
NUMBERS EXPRESSED IN COLONES

LAND USE (ha)		
TYPE OF USE	ACTUAL	PROPOSED
Reforestation		5
Forest Mngmt	17	17
Forest Regen.	11	11
Other uses	7	2
TOTAL	35	35

	YEAR																					
INCOME, EXPENSES AND DISTRIBUTIO	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	VAN	%
INCOME:																							
Gov't incentives	0	327,273	440,331	532,832	322,929	210,865	174,761	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,732,664	23%
Carbon fix. from no land use change	0	35,496	35,496	35,496	35,496	35,496	35,496	35,496	35,496	35,496	35,496	35,496	35,496	35,496	35,496	35,496	35,496	35,496	35,496	35,496	35,496	442,359	6%
Carbon fix. from biomass growth	0	3,672	3,672	33,849	33,849	33,849	33,849	33,849	33,849	33,849	33,849	33,849	33,849	62,700	62,700	62,700	62,700	73,810	73,810	73,810	73,810	487,605	7%
Wood sales	0	1,101,600	0	0	0	0	0	0	0	0	0	550,800	360,000	0	0	0	0	0	0	0	8,340,552	4,715,112	64%
FUNDECOR's ecotourism plan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
TOTAL	0	1,468,041	479,499	602,178	392,274	280,210	244,106	69,345	69,345	69,345	69,345	620,145	429,345	98,196	98,196	98,196	98,196	109,306	109,306	109,306	8,449,858	7,377,740	100%
DIRECT COSTS:																							
Ident. of land holders	133,504	66,752	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	197,078	11%
Forst Mngmt or Reforst plan	116,000	55,000	0	0	0	0	0	0	0	0	29,750	0	0	0	0	0	0	0	0	29,750	0	197,418	11%
Topography & land titling	51,000	33,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	82,429	5%
Plantation establishment	0	375,000	120,000	90,000	60,000	30,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	616,600	35%
Forst Mngmt supervision	0	68,000	0	0	0	0	0	0	0	0	0	34,000	0	0	0	0	0	0	0	0	34,000	97,455	5%
Posterior mngmt	0	0	0	170,000	0	0	204,000	0	0	0	0	0	35,000	0	0	0	0	0	0	0	0	318,570	18%
Survey of project growth / return	11,000	19,200	7,100	8,600	6,600	6,600	6,600	6,600	6,600	6,600	6,600	6,600	6,600	6,600	6,600	6,600	6,600	6,600	6,600	6,600	6,600	105,704	6%
Security	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Infrastructure development	0	128,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	121,905	7%
Green Seal fee	5,500	9,600	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	46,870	3%
TOTAL	316,004	754,552	129,900	269,400	69,400	39,400	213,400	9,400	9,400	9,400	39,150	43,400	44,400	9,400	9,400	9,400	9,400	9,400	9,400	39,150	43,400	1,784,028	91%
ADMINISTRATIVE COST	31,600	75,455	12,990	26,940	6,940	3,940	21,340	940	940	940	3,915	4,340	4,440	940	940	940	940	940	940	3,915	4,340	178,403	9%
TOTAL COST	347,605	830,007	142,890	296,340	76,340	43,340	234,740	10,340	10,340	10,340	43,065	47,740	48,840	10,340	10,340	10,340	10,340	10,340	10,340	43,065	47,740	1,962,431	100%
NET INCOME	-347,605	638,033	336,609	305,838	315,934	236,870	9,366	59,005	59,005	59,005	26,280	572,405	380,505	87,856	87,856	87,856	87,856	98,966	98,966	66,241	8,402,118	5,415,309	100%
ACCUMULATED NPV AS A %	-6%	5%	10%	15%	20%	24%	24%	24%	25%	26%	26%	32%	36%	37%	38%	39%	38%	40%	41%	42%	100%		
ACTIVITY NPV	5,415,309																						
BENEFIT / COST RATIO	3.8																						
ACTIVITY IRR	145.71%																						
NPV DISTRIBUTION																							
HOLDER INCOME																							
Carbon income	0	17,097	17,097	17,097	17,097	17,097	17,097	74,005	74,005	74,005	74,005	74,005	74,005	87,311	87,311	87,311	87,311	82,876	82,876	82,876	82,876	674,100	17%
Income from incentives (50% forest)	0	0	170,579	232,607	140,974	96,119	87,381	0	0	0	0	0	0	0	0	0	0	0	0	0	0	612,150	15%
Wood sales income	0	1,101,600	0	0	0	0	0	0	0	0	0	137,700	108,000	0	0	0	0	0	0	0	2,340,738	2,071,991	52%
Advanced harvest payments	0	0	0	18,000	18,000	18,000	18,000	72,900	72,900	72,900	72,900	72,900	72,900	72,900	72,900	72,900	72,900	72,900	72,900	72,900	72,900	596,370	15%
NET HOLDER INCOME	0	1,118,697	187,675	267,704	176,070	131,215	122,477	146,905	146,905	146,905	146,905	284,605	254,905	160,211	160,211	160,211	160,211	155,776	155,776	155,778	2,496,514	3,954,612	73%
NET INVESTOR INCOME	-347,605	-480,663	148,934	38,134	139,863	105,655	-113,111	-87,900	-87,900	-87,900	-120,625	287,800	125,600	-72,355	-72,355	-72,355	-72,355	-56,809	-56,809	-89,534	5,905,605	1,460,697	27%
ACCUMULATED NPV AS A %	-24%	-55%	-46%	-44%	-36%	-30%	-36%	-40%	-44%	-48%	-53%	-42%	-37%	-39%	-42%	-44%	-47%	-48%	-50%	-52%	100%		
INVESTOR NPV	1,460,697																						
BENEFIT / COST RATIO	2.8																						
INVESTOR IRR	12%																						

REFmed
CASH FLOW FOR MEDIUM REFORESTATION FARM (REFmed)
NUMBERS EXPRESSED IN COLONES

LAND USE (ha)		
TYPE OF USE	ACTUAL	PROPOSED
Reforestation		20
Forest Mngmt	30	30
Forest Regen.	2	2
Other uses	30	10
TOTAL	62	62

INCOME, EXPENSES AND DISTRIBUTIO	YEAR 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	VAN	%
INCOME:																							
Gov't incentives	0	1,309,091	814,545	840,270	509,255	309,964	214,049	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,532,984	21%
Carbon fix. from no land use change	0	62,640	62,640	62,640	62,640	62,640	62,640	62,640	62,640	62,640	62,640	62,640	62,640	62,640	62,640	62,640	62,640	62,640	62,640	62,640	62,640	780,633	5%
Carbon fix. from biomass growth	0	6,480	6,480	59,451	59,451	59,451	59,451	59,451	59,451	59,451	59,451	59,451	59,451	124,052	124,052	124,052	124,052	185,427	185,427	185,427	185,427	974,594	6%
Wood sales	0	1,944,000	0	0	0	0	0	0	0	0	0	972,000	1,440,000	0	0	0	0	0	0	0	21,906,864	11,478,049	68%
FUNDECOR's ecotourism plan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
TOTAL	0	3,322,211	883,665	962,362	631,346	432,055	336,140	122,091	122,091	122,091	122,091	1,094,091	1,562,091	186,692	186,692	186,692	186,692	248,067	248,067	248,067	22,154,931	16,766,260	100%
DIRECT COSTS:																							
Ident. of land holders	303,418	12,137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	314,977	7%
Forst Mngmt or Reforst plan	270,000	10,000	0	0	0	0	0	0	0	0	52,500	0	0	0	0	0	0	0	0	52,500	0	332,530	7%
Topography & land titling	90,000	5,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	95,714	2%
Plantation establishment	0	1,500,000	480,000	360,000	240,000	120,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,466,399	55%
Forst Mngmt supervision	0	120,000	0	0	0	0	0	0	0	0	0	60,000	0	0	0	0	0	0	0	0	60,000	171,990	4%
Posterior mngmt	0	0	0	300,000	0	0	228,000	0	0	0	0	0	140,000	0	0	0	0	0	0	0	0	507,246	11%
Survey of project growth / return	2,000	30,400	12,400	10,400	10,400	10,400	10,400	10,400	10,400	10,400	10,400	10,400	10,400	10,400	10,400	10,400	10,400	10,400	10,400	10,400	10,400	162,469	3%
Security	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Infrastructure development	0	432,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	411,429	9%
Green Seal fee	1,000	15,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	52,308	1%
TOTAL	666,418	2,126,737	495,600	673,600	253,600	133,600	241,600	13,600	13,600	13,600	66,100	73,600	153,600	13,600	13,600	13,600	13,600	13,600	13,600	66,100	73,600	4,505,051	91%
ADMINISTRATIVE COST	66,642	212,574	49,560	67,360	25,360	13,360	24,160	1,360	1,360	1,360	6,610	7,360	15,360	1,360	1,360	1,360	1,360	1,360	1,360	6,610	7,360	450,505	9%
TOTAL COST	733,060	2,339,310	545,160	740,960	278,960	146,960	265,760	14,960	14,960	14,960	72,710	80,960	168,960	14,960	14,960	14,960	14,960	14,960	14,960	72,710	80,960	4,955,556	100%
NET INCOME	-733,060	983,900	338,505	221,402	352,388	285,095	70,380	107,131	107,131	107,131	49,381	1,013,131	1,393,131	171,732	171,732	171,732	171,732	233,107	233,107	175,357	22,073,971	11,810,703	100%
ACCUMULATED NPV AS A %	-6%	2%	4%	6%	8%	10%	11%	11%	12%	13%	13%	18%	24%	25%	26%	27%	27%	28%	29%	30%	100%		
ACTIVITY NPV	11,810,703																						
BENEFIT / COST RATIO	3.4																						
ACTIVITY IRR	82.11%																						
NPV DISTRIBUTION																							
HOLDER INCOME																							
Carbon income	0	68,386	68,386	68,386	68,386	68,386	68,386	140,732	140,732	140,732	140,732	140,732	140,732	143,151	143,151	143,151	143,151	142,344	142,344	142,344	142,344	1,394,020	18%
Income from incentives (50% forest)	0	0	208,926	284,899	172,666	117,727	107,024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	749,765	10%
Wood sales income	0	1,944,000	0	0	0	0	0	0	0	0	0	243,000	432,000	0	0	0	0	0	0	0	6,499,116	4,683,508	60%
Advanced harvest payments	0	0	0	72,000	72,000	72,000	72,000	106,200	106,200	106,200	106,200	106,200	106,200	106,200	106,200	106,200	106,200	106,200	106,200	106,200	106,200	1,016,021	13%
NET HOLDER INCOME	0	2,012,386	277,312	425,285	313,052	258,113	247,410	246,932	246,932	246,932	246,932	489,932	678,932	249,351	249,351	249,351	249,351	248,544	248,544	248,544	6,747,660	7,843,314	66%
NET INVESTOR INCOME	-733,060	-1,028,486	61,194	-203,883	39,334	26,982	-177,031	-139,801	-139,801	-139,801	-197,551	523,199	714,199	-77,619	-77,619	-77,619	-77,619	-15,437	-15,437	-73,187	15,326,311	3,967,389	34%
ACCUMULATED NPV AS A %	-18%	-43%	-42%	-46%	-45%	-45%	-48%	-51%	-53%	-55%	-58%	-51%	-41%	-42%	-43%	-44%	-45%	-45%	-45%	-46%	100%		
INVESTOR NPV	3,967,389																						
BENEFIT / COST RATIO	2.7																						
INVESTOR IRR	11%																						

IDA600

CASH FLOW FOR REFORESTATION AND FOREST MANAGEMENT IN ONE LAND REFORM UNIT (IDA600)

NUMBERS EXPRESSED IN COLONES

LAND USE (ha)		
TYPE OF USE	ACTUAL	PROPOSED
Reforestation		100
Forest Mngmt	132	103
Forest Regen.	126	226
Other uses	342	171
TOTAL	600	600

	YEAR																					
INCOME, EXPENSES AND DISTRIBUTIO	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	VAN	%
INCOME:																							
Gov't incentives	0	6,545,455	6,736,198	6,489,722	3,921,044	2,487,162	1,922,372	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23,634,569	22%
Carbon fix. from no land use change	0	215,064	215,064	215,064	215,064	215,064	215,064	215,064	215,064	215,064	215,064	215,064	215,064	215,064	215,064	215,064	215,064	215,064	215,064	215,064	215,064	2,680,173	2%
Carbon fix. from biomass growth	0	22,248	22,248	635,468	635,468	635,468	635,468	635,468	635,468	635,468	635,468	635,468	635,468	1,219,747	1,219,747	1,219,747	1,219,747	1,439,533	1,439,533	1,439,533	1,439,533	9,239,933	9%
Wood sales	0	6,674,400	0	0	0	0	0	0	0	0	0	3,337,200	7,200,000	0	0	0	0	0	0	0	0	24,411,600	23%
FUNDECOR's ecotourism plan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
TOTAL	0	13,457,167	6,973,510	7,320,254	4,771,576	3,337,695	2,772,904	850,532	850,532	850,532	850,532	4,187,732	8,050,532	1,434,811	1,434,811	1,434,811	1,434,811	1,654,597	1,654,597	1,654,597	1,654,597	59,966,275	57%
DIRECT COSTS:																							
Ident. of land holders	1,231,879	1,371,451	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,538,023	9%
Forst Mngmt or Reforst plan	1,115,000	1,130,000	0	0	0	0	0	0	0	0	180,250	0	0	0	0	0	0	0	0	180,250	0	2,373,179	9%
Topography & land titling	309,000	576,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	954,714	3%
Plantation establishment	0	7,500,000	2,400,000	1,800,000	1,200,000	600,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12,331,994	45%
Forst Mngmt supervision	0	412,000	0	0	0	0	0	0	0	0	0	206,000	0	0	0	0	0	0	0	0	206,000	590,464	2%
Posterior mngmt	0	0	0	1,030,000	0	0	4,164,000	0	0	0	0	0	700,000	0	0	0	0	0	0	0	0	4,396,780	16%
Survey of project growth / return	226,000	148,200	95,800	85,800	85,800	95,800	85,800	85,800	85,800	85,800	85,800	85,800	85,800	85,800	85,800	85,800	85,800	85,800	85,800	85,800	85,800	1,363,757	5%
Security	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Infrastructure development	0	2,329,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,218,095	8%
Green Seal fee	113,000	74,100	32,900	32,900	32,900	32,900	32,900	32,900	32,900	32,900	32,900	32,900	32,900	32,900	32,900	32,900	32,900	32,900	32,900	32,900	32,900	582,245	2%
TOTAL	2,994,879	13,642,751	2,528,700	2,948,700	1,318,700	718,700	4,282,700	118,700	118,700	118,700	298,950	324,700	818,700	118,700	118,700	118,700	118,700	118,700	118,700	298,950	324,700	27,319,252	91%
ADMINISTRATIVE COST	299,488	1,364,275	252,870	294,870	131,870	71,870	428,270	11,870	11,870	11,870	29,895	32,470	81,870	11,870	11,870	11,870	11,870	11,870	11,870	29,895	32,470	2,731,925	9%
TOTAL COST	3,294,367	15,007,027	2,781,570	3,243,570	1,450,570	790,570	4,710,970	130,570	130,570	130,570	328,845	357,170	900,570	130,570	130,570	130,570	130,570	130,570	130,570	328,845	357,170	30,051,177	100%
NET INCOME	-3,294,367	-1,549,860	3,191,940	4,076,684	3,321,006	2,547,125	-1,938,066	719,962	719,962	719,962	521,687	3,830,562	7,149,962	1,304,241	1,304,241	1,304,241	1,304,241	1,524,027	1,524,027	1,325,752	161,890,259	78,345,240	100%
ACCUMULATED NPV AS A %	-4%	-6%	-2%	2%	6%	8%	6%	7%	8%	8%	9%	11%	17%	17%	18%	19%	20%	21%	21%	22%	100%		
ACTIVITY NPV	78,345,240																						
BENEFIT / COST RATIO	3.6																						
ACTIVITY IRR	43.46%																						
NPV DISTRIBUTION																							
HOLDER INCOME																							
Carbon income	0	341,930	341,930	341,930	341,930	341,930	341,930	943,735	943,735	943,735	943,735	943,735	943,735	1,217,105	1,217,105	1,217,105	1,217,105	1,125,982	1,125,982	1,125,982	1,125,982	9,542,272	18%
Income from incentives (50% forest)	0	0	1,876,364	2,558,678	1,550,714	1,057,305	961,188	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,733,653	13%
Wood sales income	0	6,674,400	0	0	0	0	0	0	0	0	0	834,300	2,160,000	0	0	0	0	0	0	0	45,260,208	25,105,235	48%
Advanced harvest payments	0	0	0	360,000	360,000	360,000	360,000	1,266,300	1,266,300	1,266,300	1,266,300	1,266,300	1,266,300	1,266,300	1,266,300	1,266,300	1,266,300	1,266,300	1,266,300	1,266,300	1,266,300	10,511,409	20%
NET HOLDER INCOME	0	7,016,330	2,218,294	3,260,608	2,252,644	1,759,235	1,663,117	2,210,035	2,210,035	2,210,035	2,210,035	3,044,335	4,370,035	2,483,405	2,483,405	2,483,405	2,483,405	2,392,282	2,392,282	2,392,282	47,652,480	51,892,569	66%
NET INVESTOR INCOME	-3,294,367	-8,566,190	973,646	816,076	1,068,362	787,889	-3,601,182	-1,490,073	-1,490,073	-1,490,073	-1,688,348	786,227	2,779,927	-1,179,164	-1,179,164	-1,179,164	-1,179,164	-868,255	-868,255	-1,066,530	114,237,769	26,452,672	34%
ACCUMULATED NPV AS A %	-12%	-43%	-40%	-37%	-34%	-32%	-42%	-46%	-50%	-53%	-57%	-55%	-50%	-52%	-54%	-56%	-58%	-60%	-61%	-63%	100%		
INVESTOR NPV	26,452,672																						
BENEFIT / COST RATIO	2.6																						
INVESTOR IRR	11%																						

GLOBAL PROJECT CASH FLOW: PROJECT CARFIX
NUMBERS EXPRESSED IN U.S. DOLLARS

NUMBER OF LAND HOLDERS TO BE INCORPORATED PER YEAR

TYPE OF FARM	YEAR OF INCORPORATION 1	2	3	4	5	TOTAL
MBpeq	10	16	16	16	16	74
MBmed	8	6	6	6	6	32
MBgra	9	6	6	6	6	33
REFpeq	20	56	56	56	56	244
REFmed	15	10	10	10	10	55
IDA600	8	4	4	4	4	1,440
TOTAL (fam)	542	334	334	334	334	1,878

AREA INCORPORATED BY FARM TYPE & ACTIVITY (ha)

TYPE OF FARM	ACTIVITY Reforest	Forst Mngmt	Forst Rege	TOTAL
MBpeq	222	2,738	222	3,182
MBmed	96	3,488	448	4,032
MBgra	495	6,006	1,782	8,283
REFpeq	1,220	4,148	2,684	8,052
REFmed	1,100	1,650	110	2,860
IDA600	2,400	2,472	5,424	10,296
TOTAL (ha)	5,533	20,502	10,670	36,705

FARM TYPE RELATIVE SHARE OF TOTAL ACTIVITY LEVE

TYPE OF FARM	ACTIVITY Reforest	Forst Mngmt	Forst Rege	TOTAL
MBpeq	4%	13%	2%	9%
MBmed	2%	17%	4%	11%
MBgra	9%	29%	17%	23%
REFpeq	22%	20%	25%	22%
REFmed	20%	8%	1%	8%
IDA600	43%	12%	51%	28%
TOTAL	100%	100%	100%	100%

INCOME, EXPENSES AND DISTRIBUTI	YEAR 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	NPV	%
INCOME:																											
Gov't Incentives	0	568,227	1,106,471	1,753,691	1,985,045	2,065,015	1,843,685	1,268,845	707,342	372,642	161,693	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9,405,654	21%
Carbon fix. from no land use change	0	58,647	110,873	153,099	215,325	267,551	267,551	267,551	267,551	267,551	267,551	267,551	267,551	267,551	267,551	267,551	267,551	267,551	267,551	267,551	267,551	208,904	156,678	104,452	52,226	3,038,759	7%
Carbon fix. from biomass growth	0	6,067	11,470	65,540	107,167	148,795	185,020	221,244	221,244	221,244	221,244	221,244	221,244	268,541	303,762	338,984	374,205	429,648	444,749	459,851	474,952	367,800	275,850	183,900	91,950	2,931,848	6%
Wood sales	0	1,820,070	1,620,810	1,620,810	1,620,810	1,620,810	1,620,810	0	0	0	0	0	910,035	1,435,455	1,276,605	1,276,605	1,276,605	466,200	0	0	0	13,972,360	10,467,259	10,467,259	10,467,259	10,467,259	29,904,959	66%
FUNDECOR's ecotourism plan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
TOTAL	0	2,453,011	2,849,623	3,603,140	3,928,348	4,102,171	2,296,255	1,757,640	1,196,137	861,437	650,689	1,396,830	1,924,250	1,812,697	1,847,918	1,883,140	1,107,956	697,199	712,300	727,402	14,614,863	11,043,964	10,899,788	10,755,611	10,611,435	45,282,229	100%
DIRECT COSTS:																											
Ident. of land holders	223,126	292,951	266,781	266,781	266,781	75,703	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,253,356	11%
Forst Mngmt or Reforst plan	192,525	247,850	226,288	226,288	226,288	62,375	0	0	0	0	49,153	43,772	43,772	43,772	43,772	0	0	0	0	49,153	43,772	43,772	43,772	43,772	0	1,270,675	11%
Topography & land titling	84,263	125,400	112,463	112,463	112,463	37,425	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	524,894	5%
Plantation establishment	0	661,094	693,975	797,288	861,750	887,363	388,500	233,100	116,550	38,850	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,902,001	34%
Forst Mngmt supervision	0	112,350	100,050	100,050	100,050	100,050	0	0	0	0	0	56,175	50,025	50,025	50,025	50,025	0	0	0	0	56,175	50,025	50,025	50,025	50,025	669,464	6%
Posterior mngmt	0	0	0	280,875	250,125	250,125	571,963	489,525	239,400	239,400	239,400	0	60,769	45,325	45,325	45,325	45,325	0	0	0	0	0	0	0	0	2,005,751	18%
Survey of project growth / return	16,788	43,920	51,562	60,134	68,926	65,244	45,529	45,881	45,881	45,881	45,881	45,881	45,881	45,881	45,881	45,881	45,881	45,881	45,881	45,881	45,881	35,170	26,378	17,585	8,793	668,872	6%
Security	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Infrastructure development	0	218,500	166,988	166,988	166,988	166,988	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	772,026	7%
Green Seal fee	8,384	21,960	24,479	28,228	31,976	29,488	19,483	19,483	19,483	19,483	19,483	19,483	19,483	19,483	19,483	19,483	19,483	19,483	19,483	19,483	19,483	14,995	11,246	7,498	3,749	296,582	3%
TOTAL	525,095	1,714,024	1,642,584	2,039,092	2,085,346	1,674,759	1,026,474	787,969	421,314	343,614	353,917	165,311	219,929	204,486	204,486	160,714	110,689	65,364	65,364	114,517	165,311	143,962	131,421	118,879	62,568	11,363,422	91%
ADMINISTRATIVE COST	52,510	171,402	164,258	203,909	208,535	167,476	102,647	78,799	42,131	34,361	35,392	16,531	21,993	20,449	20,449	16,071	11,069	6,536	6,536	11,452	16,531	14,396	13,142	11,886	6,257	1,136,342	9%
TOTAL COST	577,605	1,885,427	1,806,842	2,243,001	2,293,880	1,842,236	1,129,121	866,768	463,445	377,975	389,309	181,842	241,922	224,934	224,934	176,785	121,758	71,900	71,900	125,969	181,842	158,358	144,563	130,767	68,823	12,499,765	100%
NET INCOME	-577,605	567,584	1,042,781	1,360,138	1,634,467	2,259,936	1,167,134	890,853	732,692	483,462	261,380	1,216,989	1,682,326	1,587,763	1,622,984	1,706,354	986,198	625,299	640,400	601,433	14,433,021	10,885,606	10,755,225	10,624,844	10,542,612	32,782,465	100%
ACCUMULATED NPV AS A %	-2%	-0%	3%	6%	10%	16%	19%	20%	22%	23%	23%	26%	28%	31%	33%	36%	37%	38%	39%	40%	56%	68%	79%	90%	100%		
ACTIVITY NPV	32,782,465																										
BENEFIT / COST RATIO	3.6																										
ACTIVITY IRR	145%																										
NPV DISTRIBUTION																											
HOLDER INCOME																											
Carbon income	0	29,684	51,824	73,964	96,104	118,244	118,244	210,032	287,761	365,529	443,278	521,026	521,026	541,332	556,422	571,512	586,602	594,923	589,893	584,863	579,833	439,793	329,845	219,897	109,948	4,288,398	17%
Income from incentives (50% forest)	0	0	274,496	605,668	773,696	892,717	1,009,022	755,567	440,082	248,880	118,514	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,929,131	15%
Wood sales income	0	1,820,070	1,620,810	1,620,810	1,620,810	1,620,810	1,620,810	0	0	0	0	227,509	390,116	342,461	342,461	342,461	139,860	0	0	0	3,911,875	2,947,817	2,947,817	2,947,817	2,947,817	13,554,563	53%
Advanced harvest payments	0	0	0	31,253	54,563	77,873	101,183	210,205	277,628	345,049	412,470	479,891	479,891	479,891	479,891	479,891	479,891	479,891	479,891	479,891	479,891	362,925	272,194	181,463	90,731	3,606,789	14%
NET HOLDER INCOME	0	1,849,754	1,947,130	2,331,694	2,545,172	2,709,644	1,228,448	1,175,806	1,005,491	959,458	974,262	1,228,426	1,391,034	1,363,685	1,378,775	1,393,864	1,206,353	1,074,814	1,069,784	1,064,754	4,971,600	3,750,535	3,549,855	3,349,176	3,148,496	25,378,871	77%
NET INVESTOR INCOME	-577,605	-1,282,170	-904,348	-971,556	-910,705	-449,708	-61,314	-284,953	-272,799	-476,996	-712,882	-11,437	291,294	224,078	244,210	312,490	-220,155	-449,515	-429,384	-463,321	9,461,422	7,135,071	7,205,369	7,275,668	7,394,116	7,403,594	23%
ACCUMULATED NPV AS A %	-8%	-24%	-35%	-47%	-57%	-62%	-62%	-65%	-67%	-72%	-77%	-78%	-75%	-74%	-72%	-70%	-71%	-74%	-77%	-79%	-31%	4%	37%	69%	100%		
INVESTOR NPV	7,403,594																										
BENEFIT / COST RATIO	2.3																										
INVESTOR IRR	10%																										
NECESSARY INVESTMENT (as 1 pymt.)	5,647,977																										
Income from Carbon fixed in N. Parks		772,612	724,145	679,748	638,928	601,448	566,918	535,076	505,699	478,517	453,357	429,215	409,118	388,159	369,393	351,880	335,489	320,169	305,840	292,372	279,714	267,812	256,589	246,019	236,022	6,728,243	
NP carbon value assgnd to buffer zone	20%																										
Investor's income after N. Parks inclusion	-577,605	-1,127,647	-759,520	-835,606	-782,919	-329,418	52,070	-177,936	-171,661	-380,292	-622,210	74,405	373,118	301,710	318,086	382,866	-153,057	-385,481	-368,216	-404,846	9,517,364	7,188,633	7,256,687	7,324,872	7,441,321	8,749,243	
ACCUMULATED NPV AS A %	-7%	-19%	-27%	-35%	-42%	-45%	-46%	-46%	-48%	-50%	-55%	-54%	-52%	-50%	-48%	-46%	-47%	-49%	-51%	-52%	-11%	18%	46%	74%	100%		
INVESTOR NPV	8,749,243																										
BENEFIT / COST RATIO	2.8																										
INVESTOR IRR	11%																										
NECESSARY INVESTMENT (as 1 pymt.)	4,795,417																										
NET INCOME FROM NATIONAL PARKS		818,090	579,316	543,799	511,142	481,159	453,534	428,061	404,550	382,814	362,686	343,372	327,294	310,527	295,515	281,504	269,392	256,135	244,672	233,898	223,771	214,250	205,271	196,815	188,818	5,382,595	
NATIONAL PARKS NPV	5,382,595																										
FIXED OR SAVED CARBON (MT)																										TOTAL	
IN THE BUFFER ZONE	0	6,471	12,234	22,864	32,249	41,635	45,257	48,880	48,880	48,880	48,880	48,880	48,880	53,609	57,131	60,653	64,176	69,720	71,230	72,740	74,250	57,670	43,253	28,835	14,418	1,121,674	52%
IN NATIONAL PARKS	0	77,261	72,414	67,975	63,893	60,145	56,692	53,508	50,569	47,852	45,336	42,921	40,912	38,816	36,939	35,188	33,549	32,017	30,584	29,237	27,971	26,781	25,659	24,602	23,602	1,044,423	48%
TOTAL	0	83,733	84,649	90,839	96,142	101,779	101,949	102,387	99,448	96,731	94,215	91,801	89,791	92,425	94,071	95,841	97,725	101,737	101,814	101,977	102,222	84,452	68,912	53,437	38,020	2,166,097	100%

CARBON FIXATION MODEL

SPECIAL USE PARAMETERS

Type of numbers in the results outputs	
Dollars = 1, Colones = currency	160
Reforestation incentives (Yes = 1 , No = 0)	1
Forest management incentives (Yes = 1 , No = 0)	1
Forest regeneration incentives (Yes = 1 , No = 0)	1

GLOBAL MODEL PARAMETERS

Annual discount rate	5.00%
Annual rate of depreciation	10.00%
Percentage of administrative costs	10.00%
Kilograms of carbon per kilogram of biomass	50.00%
Kilograms of biomass per cubic meter of wood	450
Inches (pmt) per cubic meter	360
Hectares surveyed by an engineer per year	750
Government incentives by year of incorporation	
Year 1	100%
Year 2	80%
Year 3	60%
Year 4	40%
Year 5	20%
National Parks carbon value assigned to buffer zone	20.0%
Exchange rate of the Colon with respect to the Dollar	160

	U.S. $	COLONES
Price per metric ton for carbon fixation	10	1,600
Cost of land holder identification per hectare	38	6,068
Forestry engineer		
Salary and annual social cost	14,378	2,300,400
Stipends	5,219	834,960
Annual operation and maintenance of vehicles	8,034	1,285,517
Promotional materials (publications, etc..)	415	66,400
Radio equipment and GPS Satellite systems	400	64,000

REFORESTATION MANAGEMENT PARAMETERS

COSTS	U.S. $	COLONES
Cost per hectare for reforestation plan and initial site survey	37.500	6,000
Plot establishment cost per hectare	0.625	100
Annual survey cost per hectare	1.250	200
Annual plantation establishment cost per hectare		
Year 1	468.750	75,000
Year 2	150.000	24,000
Year 3	112.500	18,000
Year 4	75.000	12,000
Year 5	37.500	6,000
Posterior management or silvicultural activity per year		
Year 6	62.500	10,000
Year 12	43.750	7,000
Investment on infrastructure		
Year 1	125.000	20,000
Government incentives	825.000	132,000
Price of wood per PMT for standing timber	0.125	20
Security costs per hectare	0.000	0
Annual holder income per hectare	22.500	3,600

OTHER PARAMETERS	
Green Seal as a percentage of site sampling	0.0%
Total volume in terms of volume sold	150.0%
Percentage of the harvest to be payed to the holder	30.0%
Holder participation in carbon income	100.0%
Incentives assigned per year	
Year 1	54.5%
Year 2	18.2%
Year 3	13.6%
Year 4	9.1%
Year 5	4.5%
Annual growth in cubic meters per hectare	
Years 1 to 2	0.00
Years 3 to 12	4.61
Years 13 to 16	10.36
Years 17 to 20	16.12
Accumulated years 1 to 12	10
Total commercial volume (10 m3 in year 12)	152

FOREST MANAGEMENT PARAMETERS

COSTS	U.S. $	COLONES
Topography and land titling	18.750	3,000
Cost per hectare for management plan	31.250	5,000
Plot establishment cost per hectare	5.000	800
Annual survey cost per hectare	1.250	200
Management control cost per hectare	1.250	200
Posterior management or silvicultural activity per year		
Year 3	62.500	10,000
Year 5	0.000	0
Year 8	0.000	0
Investment on infrastructure		
Year 1	6.250	1,000
Year 5	0.000	0
Year 8	0.000	0
Government incentives	500.000	80,000
Price of wood per PMT for standing timber	0.094	15
Security costs per hectare	0.000	0
Annual holder income per hectare	5.625	900

OTHER PARAMETERS	
Green Seal as a percentage of site sampling	50.0%
Total volume in terms of volume sold	100.0%
Percentage of the harvest to be payed to the holder	25.0%
Percentage of area effectively managed per hectare	60.0%
Cubic meters of biomass annually saved from deforestation	5.8
Incentives assigned per year	
Year 2	20.0%
Year 3	30.0%
Year 4	20.0%
Year 5	15.0%
Year 6	15.0%
Annual growth in cubic meters per hectare	
Years 1 to 2	1
Years 3 to 10	1
Years 11 to 12	1
Years 13 to 19	1
Accumulated years 1 to 10	10
Accumulated years 11 to 20	10

FOREST REGENERATION MANAGEMENT PARAMETERS

COSTS	U.S. $	COLONES
Topography and land titling	18.750	3,000.00
Cost per hectare for management plan	31.250	5,000.00
Plot establishment cost per hectare	5.000	800.00
Annual survey cost per hectare	1.250	200.00
Management control cost per hectare	1.250	200.00
Posterior management or silvicultural activity per year		
Year 6	87.500	14,000.00
Year 12	0.000	0.00
Invesment on infrastructure		
Year 1	6.250	1,000.00
Year 10	0.000	0.00
Government incentives	400.000	64,000.00
Price of wood per PMT for standing timber	0.109	17.50
Security costs per hectare	0.000	0.00
Annual holder income per hectare	22.500	3,600.00
OTHER PARAMETERS		
Green Seal as a percentage of site sampling	50.0%	
Total volume in terms of volume sold	160.0%	
Percentage of the harvest to be payed to the holder	25.0%	
Percentage of area effectively managed per hectare	70.0%	
Percentage of standing commercial wood for harvast	60.0%	
Incentives assigned per year		
Year 2	20.0%	
Year 3	30.0%	
Year 4	20.0%	
Year 5	15.0%	
Year 6	15.0%	
Annual growth in cubic meters per hectare		
Years 1 to 2	0	
Years 3 to 12	4	
Years 13 to 16	7	
Years 117 to 20	6	
Accumulated years 1 to 20	92	

NATIONAL PARKS

Cubic meters of biomass per hectare	116

Annual contribution to carbon fixation (ha)		CARBON MT
Year 1	2,960.20	77,261
Year 2	2,774.50	72,414
Year 3	2,604.40	67,975
Year 4	2,448.00	63,893
Year 5	2,304.40	60,145
Year 6	2,172.10	56,692
Year 7	2,050.10	53,508
Year 8	1,937.50	50,569
Year 9	1,833.40	47,852
Year 10	1,737.00	45,336
Year 11	1,644.50	42,921
Year 12	1,567.50	40,912
Year 13	1,487.20	38,816
Year 14	1,415.30	36,939
Year 15	1,348.20	35,188
Year 16	1,285.40	33,549
Year 17	1,226.70	32,017
Year 18	1,171.80	30,584
Year 19	1,120.20	29,237
Year 20	1,071.70	27,971
Year 21	1,026.10	26,781
Year 22	983.10	25,659
Year 23	942.60	24,602
Year 24	904.30	23,602
		1,044,422.8

FARM TYPE CONFORMATION

FARM TYPE	ACTIVITY		
		FOREST	
	PLANTATION	FORST MGMNT	FOREST REGEN
MBpeq	3	37	3
MBmed	3	109	14
MBgra	15	182	54
REFpeq	5	17	11
REFmed	20	30	2
IDA600	100	103	226

SUMMARY RESULTS BY TYPE OF FARM

FARM TYPE	FARM		HOLDER	INVESTOR	
	NPV	IRR	NPV	NPV	IRR
MBpeq	1	264.18%	5,202,749	1,091,240	12.20%
MBmed	16,902,315	286.05%	14,544,602	2,357,713	12.62%
MBgra	35,663,024	242.89%	28,943,770	6,719,255	12.09%
REFpeq	5,415,309	145.71%	3,954,612	1,460,697	11.61%
REFmed	11,810,703	82.11%	7,843,314	3,967,389	11.38%
IDA600	1	43.46%	51,892,569	26,452,672	11.39%

AN ANALISIS OF AREA INCORPORATED INTO PROJECT ACCORDING TO ACTIVITY AND TYPE OF FARM

TOTAL AREA

TYPE OF FARM	ACTIVITY			TOTAL
	PLANTATION	FORST MGMNT	FORST REGEN	
MBpeq	222	2,738	222	3182
MBmed	96	3,488	448	4032
MBgra	495	6,006	1,782	8283
REFpeq	1,220	4,148	2,684	8052
REFmed	1,100	1,650	110	2860
IDA600	2,400	2,472	5,424	10296
TOTAL	5,533	20,502	10,670	36,705

PERCENTEGE OF PARTICIPATION FOR TYPE OF FARM

TYPE OF FARM	ACTIVITY			TOTAL
	PLANTATION	FORST MGMNT	FORST REGEN	
MBpeq	7%	86%	7%	100%
MBmed	2%	87%	11%	100%
MBgra	6%	73%	22%	100%
REFpeq	15%	52%	33%	100%
REFmed	38%	58%	4%	100%
IDA600	23%	24%	53%	100%
TOTAL	15%	56%	29%	100%

PERCENTEGE OF PARTICIPATION FOR TYPE OF ACTIVITY

TYPE OF FARM	ACTIVITY			TOTAL
	PLANTATION	FORST MGMNT	FORST REGEN	
MBpeq	4%	13%	2%	9%
MBmed	2%	17%	4%	11%
MBgra	9%	29%	17%	23%
REFpeq	22%	20%	25%	22%
REFmed	20%	8%	1%	8%
IDA600	43%	12%	51%	28%
TOTAL	100%	100%	100%	100%

FOREST MANAGEMENT HECTARES INCORPORATED
ACCORDING TO YEAR AND TYPE OF FARM

TYPE OF FARM	YEAR OF INCORPORATION 1	2	3	4	5	TOTAL	DISTRIB
MBpeq	370	592	592	592	592	2,738	13%
MBmed	872	654	654	654	654	3,488	17%
MBgra	1,638	1,092	1,092	1,092	1,092	6,006	29%
REFpeq	340	952	952	952	952	4,148	20%
REFmed	450	300	300	300	300	1,650	8%
IDA600	824	412	412	412	412	2,472	12%
TOTAL	4,494	4,002	4,002	4,002	4,002	20,502	100%

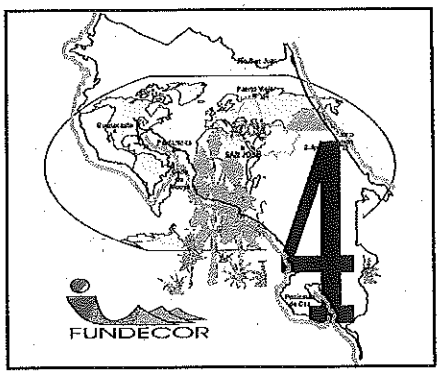
FOREST REGENERATION HECTARES INCORPORATED
ACCORDING TO YEAR AND TYPE OF FARM

TYPE OF FARM	YEAR OF INCORPORATION 1	2	3	4	5	TOTAL	DISTRIB
MBpeq	30	48	48	48	48	222	2%
MBmed	112	84	84	84	84	448	4%
MBgra	486	324	324	324	324	1,782	17%
REFpeq	220	616	616	616	616	2,684	25%
REFmed	30	20	20	20	20	110	1%
IDA600	1,808	904	904	904	904	5,424	51%
TOTAL	2,686	1,996	1,996	1,996	1,996	10,670	100%

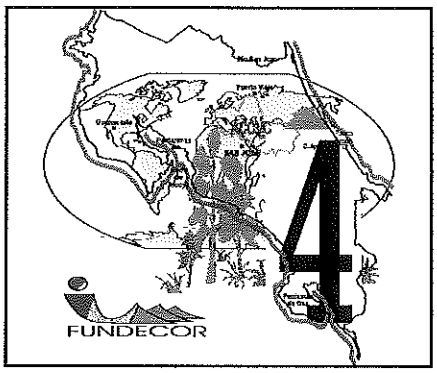
REFORESTATION HECTARES INCORPORATED
ACCORDING TO YEAR AND TYPE OF FARM

TYPE OF FARM	YEAR OF INCORPORATION 1	2	3	4	5	TOTAL	DISTRIB
MBpeq	30	48	48	48	48	222	4%
MBmed	24	18	18	18	18	96	2%
MBgra	135	90	90	90	90	495	9%
REFpeq	100	280	280	280	280	1,220	22%
REFmed	300	200	200	200	200	1,100	20%
IDA600	800	400	400	400	400	2,400	43%
TOTAL	1,389	1,036	1,036	1,036	1,036	5,533	100%

MAPS

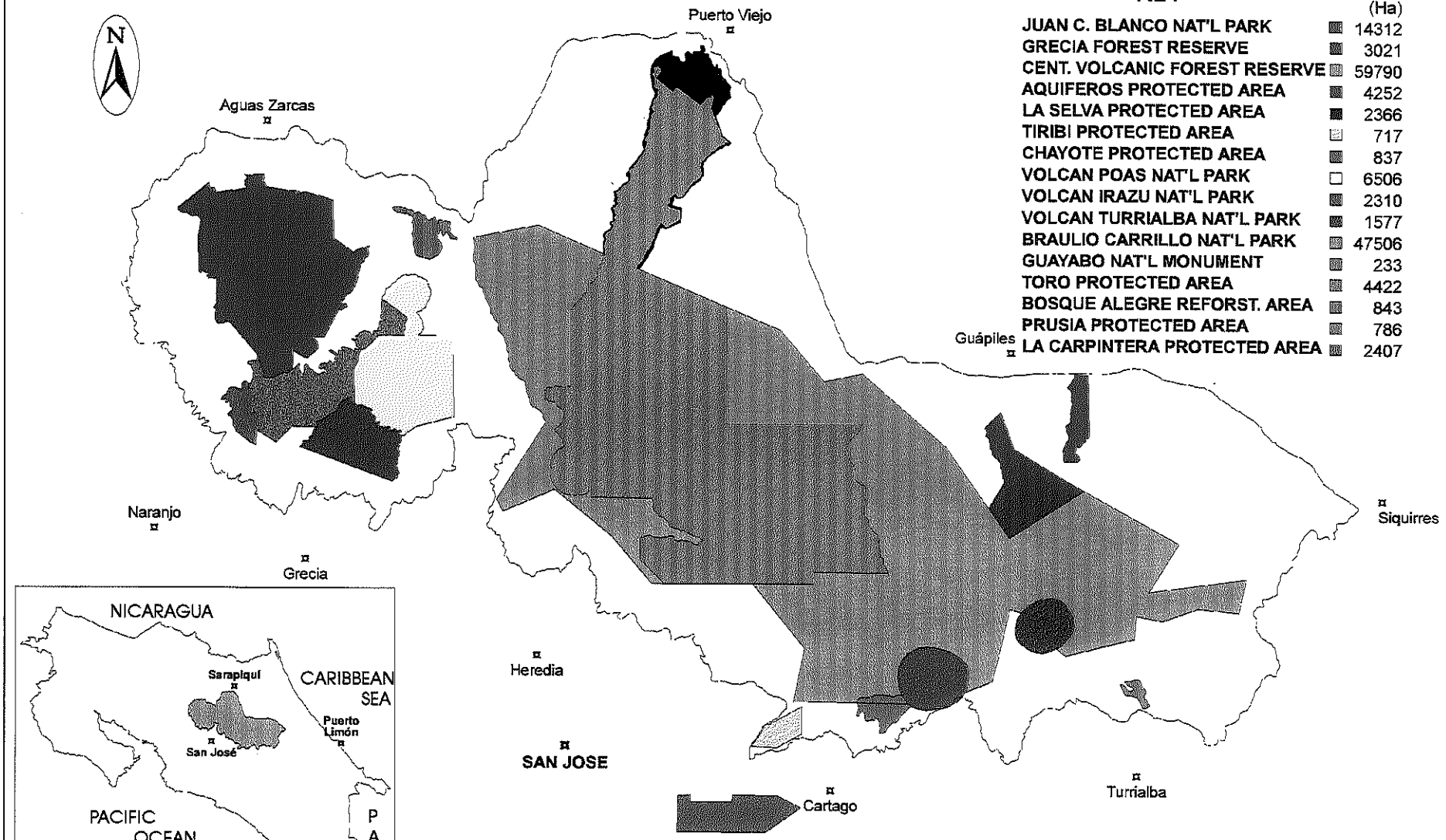


MAPS



Contents

MAP 1. CONSERVATION AND DEVEOPMENT STRATEGY
CENTRAL VOLCANIC MOUNTAIN RANGE CONSERVATION AREA (ACCVC)
NATIONAL PARKS AND PROTECTED AREAS



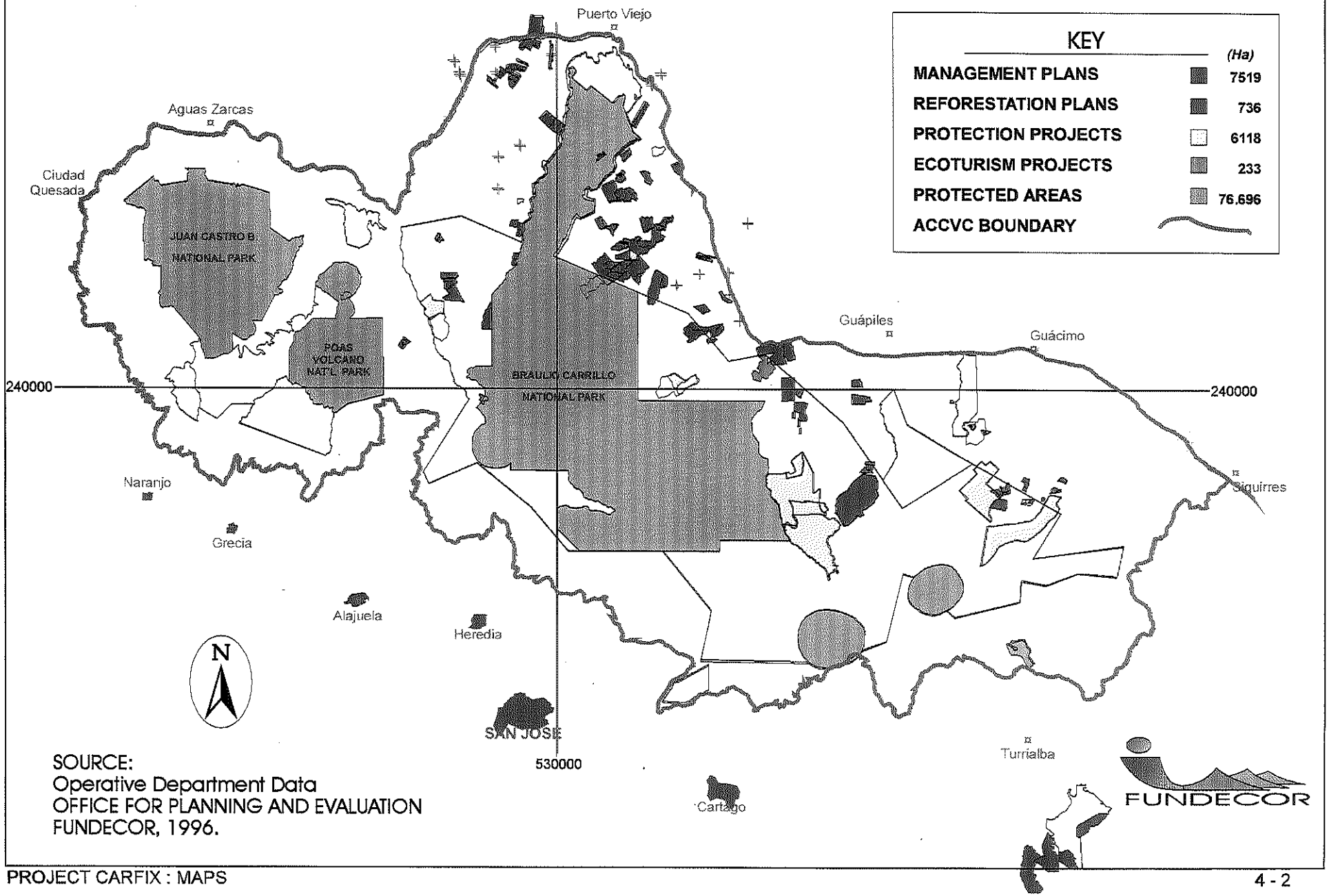
KEY

	(Ha)
JUAN C. BLANCO NAT'L PARK	14312
GRECIA FOREST RESERVE	3021
CENT. VOLCANIC FOREST RESERVE	59790
AQUIFEROS PROTECTED AREA	4252
LA SELVA PROTECTED AREA	2366
TIRIBI PROTECTED AREA	717
CHAYOTE PROTECTED AREA	837
VOLCAN POAS NAT'L PARK	6506
VOLCAN IRAZU NAT'L PARK	2310
VOLCAN TURRIALBA NAT'L PARK	1577
BRAULIO CARRILLO NAT'L PARK	47506
GUAYABO NAT'L MONUMENT	233
TORO PROTECTED AREA	4422
BOSQUE ALEGRE REFORST. AREA	843
PRUSIA PROTECTED AREA	786
LA CARPINTERA PROTECTED AREA	2407

SOURCE:
CONSERVATION AND DEVELOPMENT STRATEGY
BASE GROUP: FUNDECOR/ ACCVC-SPN

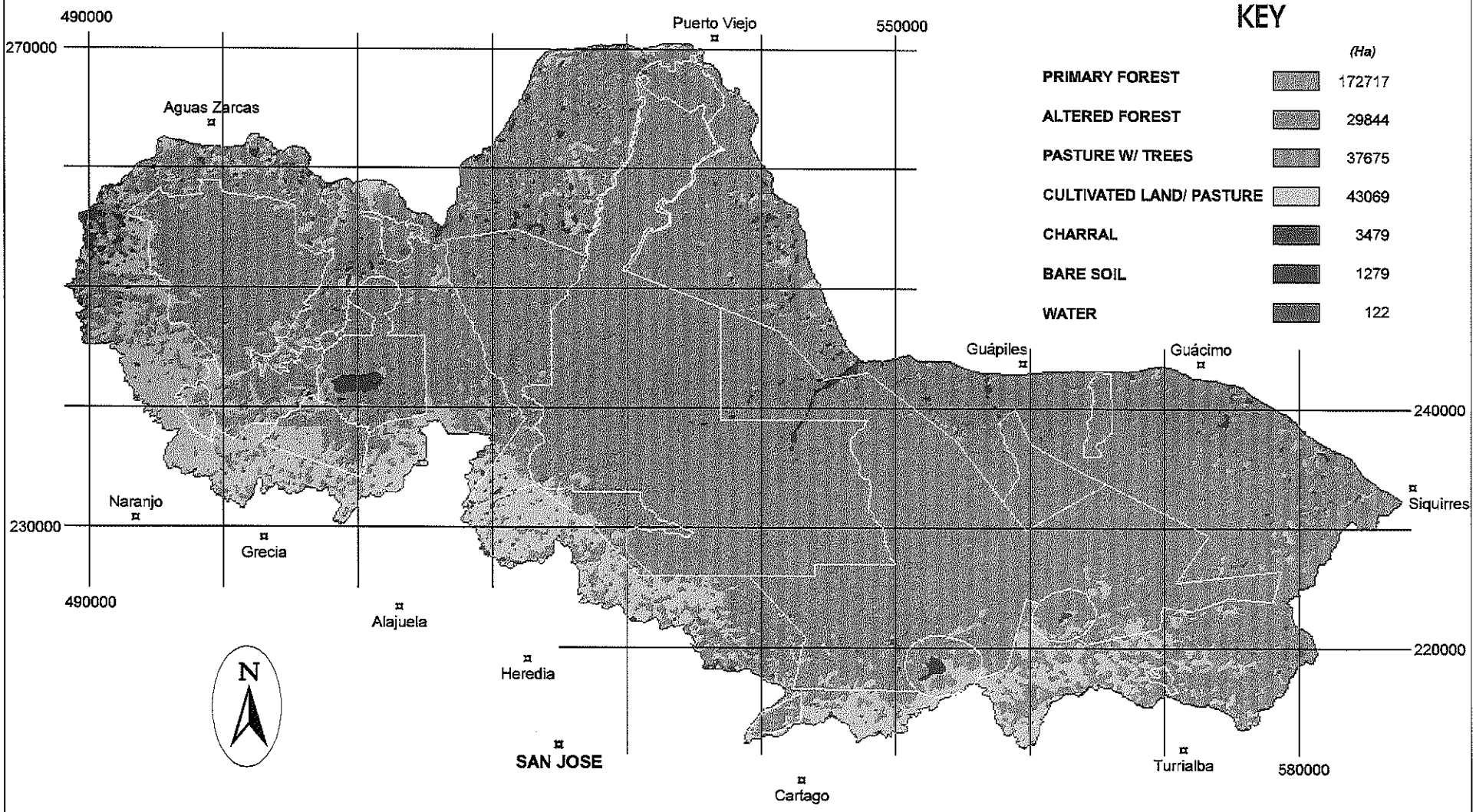
FUNDECOR

MAP 2. MANAGEMENT PLANS FOR NATURAL FOREST AND FUNDECOR REFORESTATION PROJECTS IN THE ACCVC



SOURCE:
Operative Department Data
OFFICE FOR PLANNING AND EVALUATION
FUNDECOR, 1996.

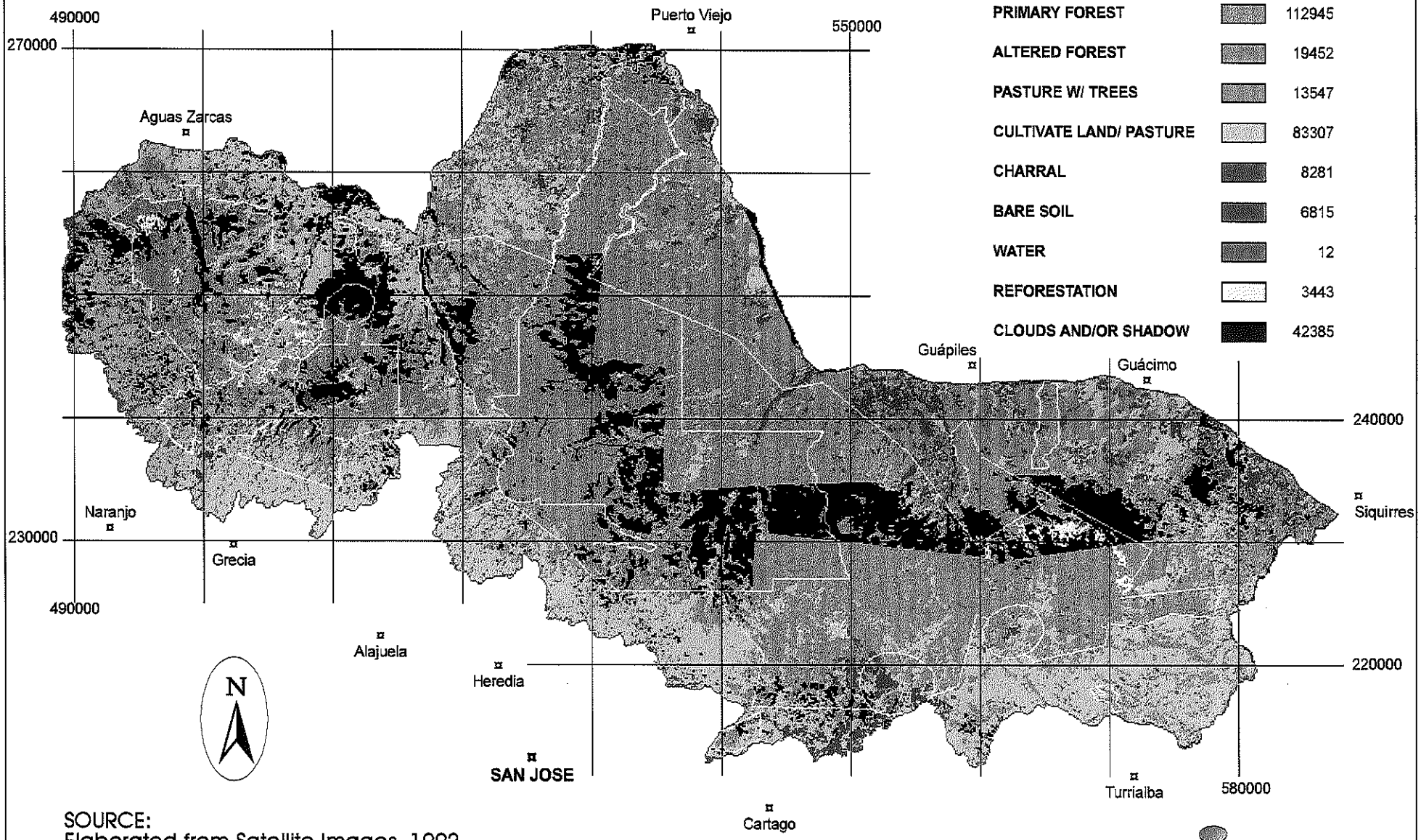
MAP 3. CONSERVATION AND DEVELOPMENT STRATEGY
CENTRAL VOLCANIC MOUNTAIN RANGE CONSERVATION AREA (ACCVC)
LAND USE MAP, 1986



SOURCE:
Elaborated from Satellite Images, 1986
CONSERVATION AND DEVELOPMENT STRATEGY
BASE GROUP: FUNDECOR/ ACCVC-SPN

FUNDECOR

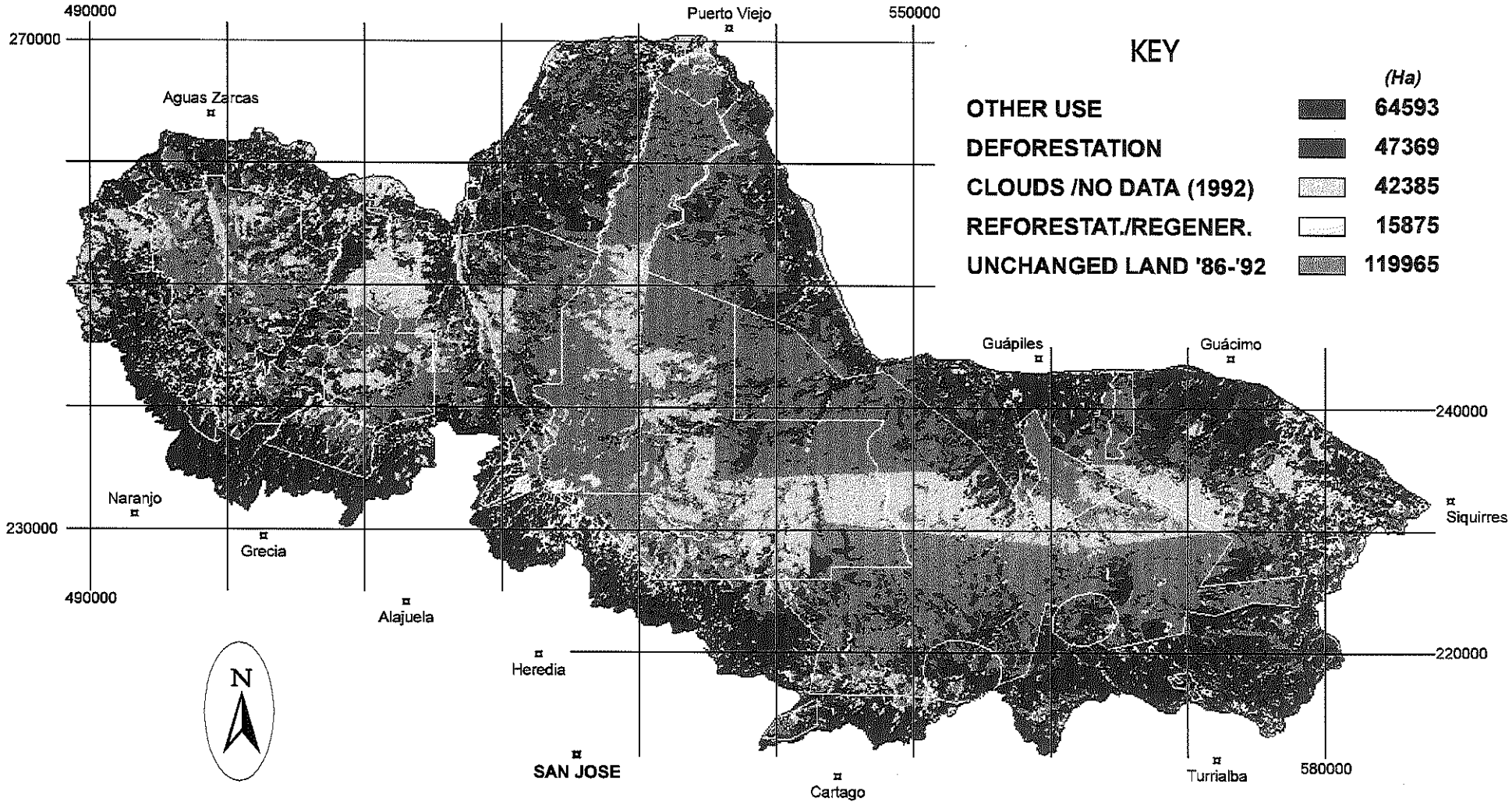
MAP 4. CONSERVATION AND DEVELOPMENT STRATEGY
CENTRAL VOLCANIC MOUNTAIN RANGE CONSERVATION AREA (ACCVC)
LAND USE MAP, 1992



SOURCE:
Elaborated from Satellite Images, 1992
CONSERVATION AND DEVELOPMENT STRATEGY
BASE GROUP: FUNDECOR/ ACCVC-SPN

FUNDECOR

MAP 5. CONSERVATION AND DEVELOPMENT STRATEGY
CENTRAL VOLCANIC MOUNTAIN RANGE CONSERVATION AREA (ACCVC)
CHANGE OF LAND USE MAP, 1986-1992



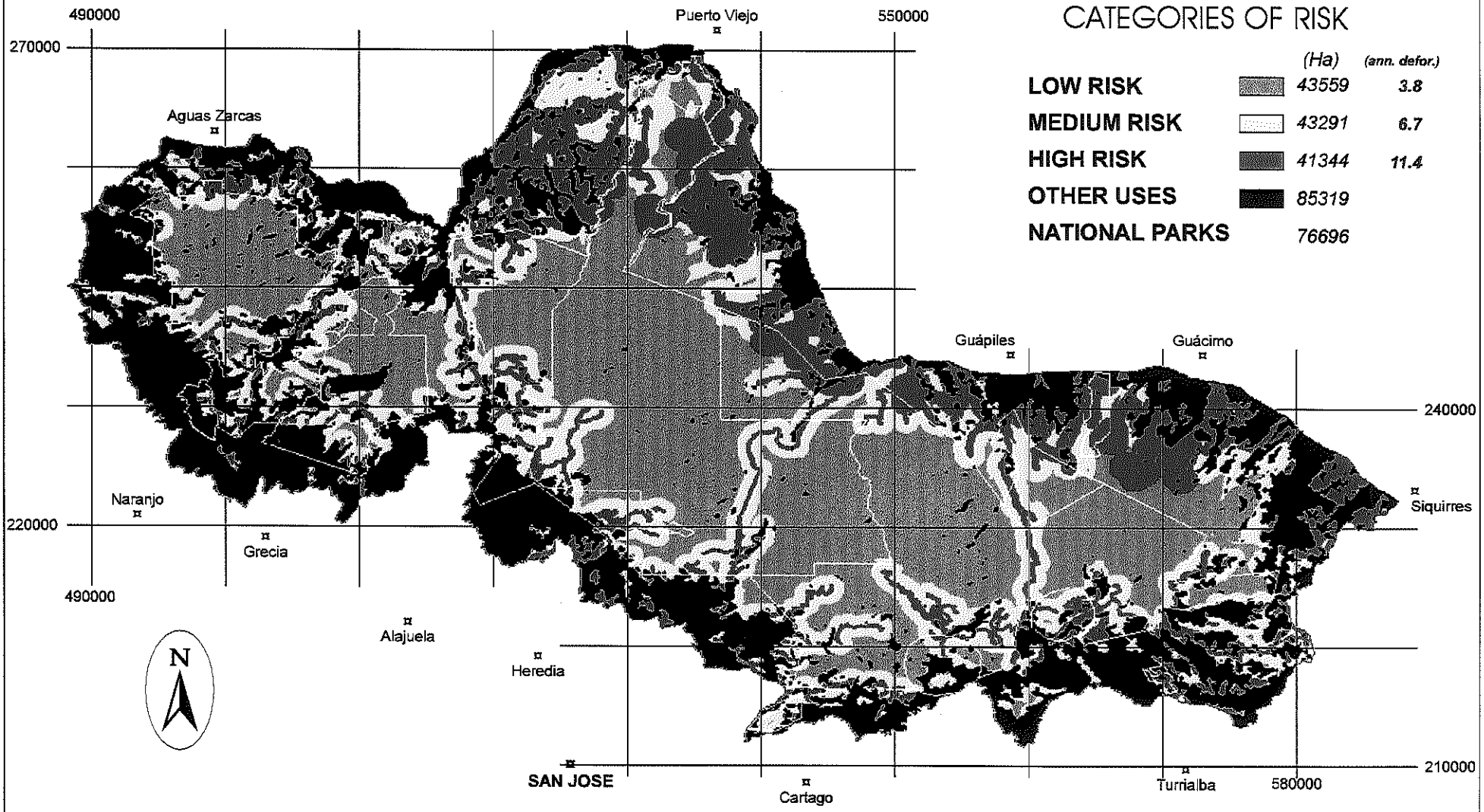
SOURCE:
Elaborated from Satellite Images, 1986-1992
CONSERVATION AND DEVELOPMENT STRATEGY
BASE GROUP: FUNDECOR/ ACCVC-SPN

FUNDECOR

TABLE 1. ACTUAL LAND USE PER Ha. (1992) IN TERMS OF PRIOR USE (1986) IN THE ACCVC

ACTUAL USE 1992 (DESTINATION)	PRIOR USE 1986 (ORIGIN) Natural Forest	Altered Forest	Pasture w/ trees	Cultiv. Land & Pasture	Charral	Reforest.	Water	Total Buffer Zone	National Parks	TOTAL
LAND USE										
NATURAL FOREST	66,835	6,155	3,257	5,101	354	0	6	*81,708*	*54,209*	*135,917*
ALTERED FOREST	9,779	3,143	4,359	1,409	423	0	14	*19,127*	*3,410*	*22,537*
PASTURE W/ TREES	5,862	3,009	4,259	1,066	340	0	22	*14,558*	*893*	*15,451*
CULTIV. LAND & PAST.	21,745	13,316	21,687	32,835	2,105	0	8	*91,696*	*10,925*	*102,621*
CHARRAL	3,974	1,635	2,603	591	206	0	1	*9,010*	*443*	*9,453*
REFORESTATION	1,927	188	149	218	7	0	0	*2,489*	*1,649*	*4,138*
WATER	0	9	5	0	0	0	47	*61*	*0*	*61*
TOTAL	110,122	27,455	36,319	41,220	3,435	0	98	218,649	71,529	290,178

MAP 6. CONSERVATION AND DEVELOPMENT STRATEGY
CENTRAL VOLCANIC MOUNTAIN RANGE CONSERVATION AREA (ACCVC)
RATE OF DEFORESTATION OBSERVED BETWEEN 1986-1992, ACCORDING TO CATEGORIES OF RISK (*)

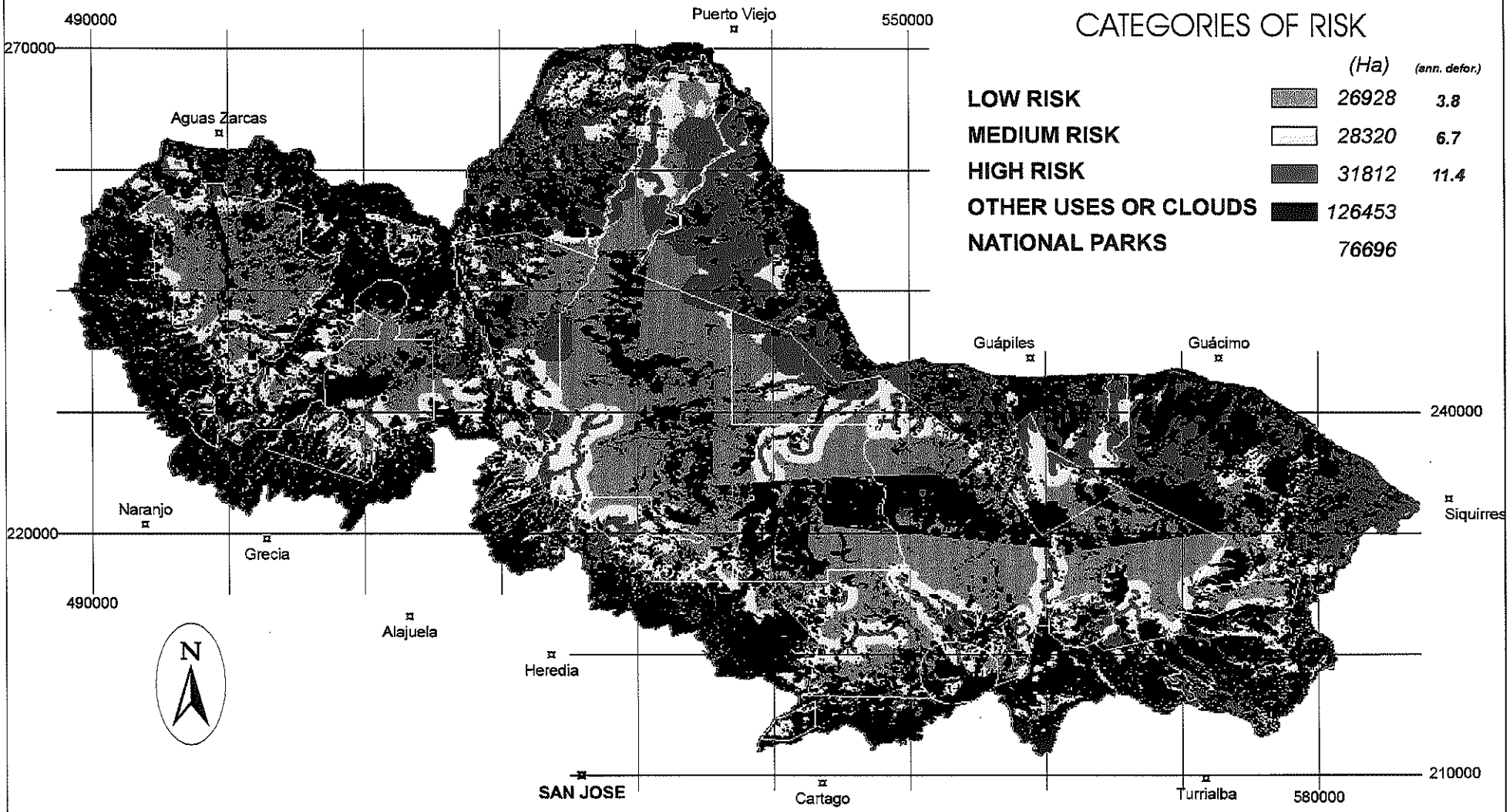


SOURCE:
Elaborated from Satellite Images, 1986
CONSERVATION AND DEVELOPMENT STRATEGY
BASE GROUP: FUNDECOR/ ACCVC-SPN

(*) The rate of deforestation is only refered to the Buffer Zone of ACCVC, do not inlcludes National Parks areas

FUNDECOR

MAP 7. CONSERVATION AND DEVELOPMENT STRATEGY
CENTRAL VOLCANIC MOUNTAIN RANGE CONSERVATION AREA (ACCVC)
RATE OF DEFORESTATION PROJECTED THROUGH 1992-1998, ACCORDING TO CATEGORIES OF RISK (*)



SOURCE:
Elaborated from Satellite Images, 1992
CONSERVATION AND DEVELOPMENT STRATEGY
BASE GROUP: FUNDECOR/ ACCVC-SPN

(*) The rate of deforestation is only refered to the Buffer Zone of ACCVC, do not includes National Parks areas.

FUNDECOR