Monoculture tree plantations in Ecuador

Patricia Granda

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Democratising Knowledge

"The shift from the globalizing to the local knowledge is
important to the project of human freedom because
it frees knowledge from the dependency on established regimes of thought
making it simultaneously more autonomous and more authentic."[1]

Vandana Shiva

[1] Vandana Shiva, *Monocultures of the mind. Perspectives on Biodiversity and Biotechnology*, Malaysia, Zed Books / Third World Network, 1993. Page 62.

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Monocultures are in fact a source of scarcity and poverty,
both because they destroy diversity
and alternatives
and also because they destroy decentralised control
on production
and consumption systems...
Monocultures spread
not because they produce more,
but because they control more.

Vandana Shiva[2]

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[2] Vandana Shiva, *Monocultures of the mind.Perspectives on Biodiversity and Biotechnology*, Malaysia, Zed Books / Third World Network, 1993. Pages 6, 7.

Monoculture tree plantations in Ecuador

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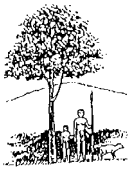

World Rainforest Movement

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Introduction

Monoculture tree plantations are spreading rapidly in Ecuador, where proponents use a number of different arguments to promote them. The most common justifications for establishing tree plantations include:

- **The generation of employment and foreign currency revenues for the national economy**

  Tree plantations are touted on a nationwide level as a source of employment and foreign currency. At the local level, people who will be directly affected by the establishment of plantations near the places where they live and work are offered the promise of future income and jobs – left unspecified – that *could be generated* by tree plantation activity.

- **Erosion control, soil recovery and/or protection of water resources**

  The fact that environmental awareness and concerns over the degradation of natural ecosystems and climate change are becoming increasingly widespread among the general public has led to the use of a heavy dose of "greenwashing"[3] in the promotion of monoculture tree plantations, which are portrayed as being "environmentally friendly". Through the manipulation of words and meaning typical of so many promotional campaigns, plantations of trees of a single species and the same age are described as "forests", and thus the characteristics of real forests (native trees of different species and various ages, coexisting flora, fauna and human communities, beneficial effects on erosion, climate, water resources and others) come to be attached to any large area planted with trees.

- **Carbon dioxide absorption/sequestering**

  As part of this "greenwashing" campaign, tree plantations are also sold as "carbon sinks" which absorb carbon dioxide from the atmosphere and are therefore "good" for the environment, since they help to mitigate climate change, a worldwide problem.
  Numerous authors have commented on the danger posed by this initiative, which has also already given rise to a market of incalculable proportions: the carbon market, on which permits to emit carbon dioxide and other harmful greenhouse gases can be bought and sold through bonds, certificates or credits.

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[3] The term "greenwashing" refers to a practice used by some companies that undertake publicity campaigns aimed at creating an image of environmental responsibility, despite the fact that their activities are highly polluting and environmentally destructive.

The actual usefulness of this market in the search for solutions to the climate change threat has yet to be demonstrated.

A fundamental aspect that nobody mentions when tree plantations are introduced to an area is that these are monoculture plantations of exotic species, and unlike native forests, they will not provide a home for local flora or fauna. Moreover, because the tree species planted are selected for their rapid growth, they absorb huge amounts of water.

In order to establish plantations of fast-growing exotic species, primary ecosystems are usually destroyed. This is especially the case in Esmeraldas, popularly known in Ecuador as the Green Province, where native forests are giving way to the large-scale planting of eucalyptus to feed pulp and paper production in the world's wealthy nations.

Through various government programmes and initiatives, with the support of international cooperation agencies, monoculture tree plantations have been established in Ecuador's three mainland regions.

Through three case studies and an overview of the history of plantation activity in the country, this publication seeks to present a comprehensive and up-to-date picture of the serious threat posed by tree plantations in Ecuador, of which most of the population has been largely unaware until now.

The three case studies focus on:

- The FACE-PROFAFOR project: tree plantations established though contracts signed with private landowners and indigenous communities in the Sierra or Andes mountain region, in operation since 1993.
- Plantations promoted by the FEPP: plantation establishments set up through "local development projects" executed by a non-governmental organisation, for which the maintenance costs and environmental impacts are absorbed by Andean region communities.

Both located in the Sierra region; and:

- The EUCAPACIFIC pulpwood plantation project on the northern Pacific coast of Ecuador. EUCAPACIFIC (Eucalyptus Pacífico S.A.) is a Japanese consortium that has bought up land from small landowners and *campesinos* in order to establish large-scale eucalyptus plantations that will supply the raw materials for pulp and paper production.

1. BACKGROUND

Do You Believe in Planted Forests?

1.1 Ideology and theoretical underpinnings of plantations as "forests"

"Western culture's favourite beliefs mirror … the social projects of their historically identifiable creators."[4]

1.1.1 The United Nations and FAO

An overview of UN Food and Agriculture Organization documentation throughout the years reveals that with the passage of time, the line that once divided the concepts of "forests" and "plantations" has become progressively blurred, to the point where today, defining the meaning of the word "forest" is a process that requires international forums and consensus.

A document[5] prepared for an international meeting of FAO experts maintains that:

> ***Planted Forests*** "…**can resemble natural ecological processes** to a greater or lesser extent," and that
>
> "…the ***difference*** between a semi-natural forest and planted forests **is essentially arbitrary** – it is in the eye of the classifier."

In fact, in order for a group of trees to be classified as a "natural forest" – according to FAO's logic – one of the basic requirements is natural regeneration, although this definition can also be extended to groups of trees that have been planted or sowed through human intervention.

According to the emerging logic within the definition process coordinated by FAO, it is now broadly agreed that:

"Forests" are tree covered areas not predominantly used for purposes other than forestry.

When it comes to the ***Benefits of Planted Forests***, the United Nations-UNFF experts make a number of claims, which include:

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4 Harding, Sandra. "The Science Question in Feminism", Cornell University Press, Ithaca, 1986, cited in: Shiva, Vandana (1993). "Monocultures of the Mind: Perspectives on Biodiversity and Biotechnology", Zed Books and Third World Network, p.10.

5 Holmgren, Carle. "Definitions Related To Planted Forests". Discussion Paper for delivery at UNFF Intersessional Experts Meeting on the Role of Planted Forests in Sustainable Forest Management, New Zealand, 2003.

- "The benefits of planted forests are basically the same as those that can be derived from natural forests. To a large extent, it's a question of management."

- A precise definition is perhaps not that important because "the boundary between planted and natural forests is often indistinct."
- It is often *extremely difficult* to distinguish a natural forest from a planted forest.

- "…a *planted forest* can be natural, provided it is a native species… But with time, even exotic species can be considered natural…"

- "Trees, whether native or exotic, have similar impacts on climate."

- "Native understorey plants can flourish under exotic tree cover and provide habitat and food sources for native fauna. While the ecological processes may be different, in many cases they are near enough to provide many of the benefits found in natural forests."

- "Planted forests can produce the same range of benefits as natural forests, the balance depending primarily on management priorities, *which may be dictated by society* rather than the forest owner."

This collection of contradictory claims is the result of a process coordinated by the United Nations and FAO aimed at the harmonization of forestry-related definitions. This process, according to FAO, has gathered momentum and strong support from a wide range of stakeholders: national experts, academics, scientists, and intergovernmental and non-governmental organisations. The underlying goal is to "resolve the difficulties" – and erase the distinctions – between the different definitions and concepts of *modified natural forests*, *semi-natural forests*, *planted forests* and *plantation forests*, because this lack of homogenous definitions has "hindered foresters and planners for decades."

When it comes to defining "forests", FAO recommends taking into account the degree of human intervention in their establishment and management, which in turn depends on the initial purpose of the "creation" of the "forest".

1.1.2 Scientific forestry

Scientific forest management, according to Vandana Shiva, "it is based on the objective of *modelling the diversity of the living forest on the uniformity of the assembly line"*. "It first reduced the value of diversity of life in the forest to the value of a few commercially valuable species, and further reduced the value of these species to the value of their dead product – wood."[6]

[6] Shiva, Vandana (1993). *Monocultures of the Mind: Perspectives on Biodiversity and Biotechnology*, Malaysia, Zed Books and Third World Network, 1993, p.18, 19.

Some tree species are "preferred" by the centres of power because of certain characteristics that make them useful, profitable or *sustainable* in market-based terms. As a result, eucalyptus and pine, despite having destroyed the hydrological cycle in various parts of the world because they absorb large amounts of water and do not produce humus, are considered by the forest industry to be "productive species", and are being aggressively introduced in Ecuador.

The fact that certain species are qualified as having "'high-yielding varieties' (HYV) is essentially a reductionist category which decontextualizes contextual properties of both the native and the new varieties".[7]

These so-called "productive" species merely increase the production of one component – that is, wood-chips-pulp – but do not reflect high productivity by the forest system as whole, given the marked scarcity in tree plantations of the goods, services and benefits provided by actual forests, such as animal fodder, biomass, biodiversity, food, water stabilisation, and climate and erosion control.

WHY MONOCULTURES ARE UNSUSTAINABLE?

The uniformity of (monocultures) destroys the conditions of renewability of forest eco-systems.

Due to monocultures floods and drought are created where the tropical forest had earlier cushioned the discharge of water.

Large scale monocultures … generate a *new ecological vulnerability* by reducing genetic diversity and destabilising soil and water systems, turning them economically non-viable.

Sustainable agriculture is based on the recycling of soil nutrients. Sustainability reflects the capacity of reproduction of an ecosystem in its biological diversity and hidrological and climatic stability.[8]

[7] Ibid., page 39.
[8] Ibid., pages 49, 55.

2. MECHANISMS USED TO PROMOTE TREE PLANTATIONS

2.1 Biodiversity in Ecuador

Ecuador is a country in northwestern South America, with Colombia to the north, Peru to the east and south, and the Pacific Ocean to the west. It has a total area of 256,370 km^2 (or 25,637,000 hectares) and a land area of 246,876 km^2, of which 38% is comprised by forest cover.

Ecuador's natural wealth lies in its diversity, which makes it extremely sensitive to impacts on its environment.[9]

Ecuador is one of the countries with the greatest biodiversity in the Americas and the world. Within the country's borders, the Andes mountain range intersects with the equator, giving rise to a rich variety of ecological niches and microclimates. In terms of plant diversity, Ecuador is home to almost 25,000 different species, distributed among the country's different regions. In terms of animals, it occupies third place worldwide in the number of amphibious species, fourth in diversity of bird and reptile species, fifth in monkeys, and sixth in mammals in general.[10]

Ecuador's Amazon region holds a world record in the number of plant species found in a single hectare. In just one hectare in Cuyabeno, researchers found a total of 400 tree species, 449 shrubs, 92 vines, 175 epiphytes, 96 grasses and herbs and 22 palms.[11]

Table 1 – Forested areas[12]

			Changes in forest cover 1990-2000		Distribution of land area according to use % (1992)		
	Area 1,000 ha	Forest cover 1,000 ha	1,000 ha/year	%	Forest	Other wooded land	Other land
Ecuador	27,684	10,557	-137	-1.21	38.1	4.4	54.1

9 Rizzo Pastor, P., La forestación en el Ecuador. Proyecto SICA. 2002.
10 Alerta Verde (1996a). Bosques vs. plantaciones. Alerta Verde (Boletín de Acción Ecológica) 35, October.
11 Varea, Anamaría & Ortiz, Pablo (1995). Conflictos socio-ambientales vinculados a la actividad petrolera en el Ecuador.
12 Source: Forest Resources Assessment, FAO 2001.

Ecuador is divided into four geographical regions:

- The **Costa (Coast) Region** (67,450 km^2) is the strip along the Pacific coast between the ocean and the western foothills of the Andes mountain range, ranging from 100 to 200 km in width. This region is relatively flat, with altitudes below 1,300 metres above sea level (asl).
- The **Andean or Sierra (Highlands) Region** (64,201 km^2) encompasses two major chains of the Andes mountains, known as the Cordillera Occidental (Western Chain) and Cordillera Oriental (Eastern Chain), and includes the areas ranging from 1,300 metres asl to the peaks of the Andes range. The mountains gradually descend in altitude southwards until reaching roughly 1,000 metres asl in the province of Loja.
- The **Oriente (East) or Amazon Region** (115.613 Km^2) is comprised of the areas below 1,300 metres asl and includes the eastern foothills of the Andes and the lowlands lying further east. The region also forms part of the western Amazon River basin.
- The **Galápagos Archipelago Region** is located roughly 1,000 km off the west coast of mainland Ecuador in the Pacific Ocean, made up of 13 large, six medium and 42 small islands, with a total area of 8,010 km^2.

This study focuses on the Sierra and Costa regions, because they are the two regions with the greatest forestry industry and tree plantation activity.

Tabla 2 – Basic information on the regions of Ecuador[13]

Region	Altitude range (metres asl)	Approximate area (ha)	%	Population (2000)*	Native forest area (ha)
Costa	0 – 1,800	6,676,000	25	6,056,223	1,494,009
Sierra	1,800 – 6,300	6,467,000	24	5,460,738	794,474
Oriente/Amazon	350 – 1,800	13,113,700	48	548,419	9,184,517
Galápagos	0 – 1,707	801,000	3	77,191	No current data available
Total		**27,626,470**	**100**	**12,156,608**	**11,473,000**

[13] Source: ITTO PD 137 and FAO, 1995 Forestry Series No.1. Figure corrected according to the 2000 national Population and Housing Census.

2.1.1 The introduction of tree plantations

> *"… Eucalyptus trees are so common in the Sierra that people think they are native to the region: they are that highly integrated. And that is why it is hard to believe that it was less than 150 years ago that the roots of these plants first came into contact with Ecuadorian soil…"*[14]

Eucalyptus was introduced in Ecuador in the 19th century, when the deforestation of the inter-Andean corridor was reaching critical levels. This tree species adapted well to the climate and altitude and its cultivation spread quickly, as it gained popularity thanks to its rapid growth. Planting eucalyptus trees and selling the wood for construction, timber and coal was a profitable business. This phenomenon occurred throughout Latin America.[15]

A large number of the reforestation policies and erosion control programmes implemented in Ecuador's inter-Andean corridor have involved the use of eucalyptus. In fact, it has become the most common tree species throughout the Andean highlands region. Very few people actually know that this tree is not native to Ecuador, but rather Australia.

It is quite likely that the harmful impacts of eucalyptus on the soil and water have been overlooked because these trees grow quickly and can thus produce timber in a much shorter time than the tree species that are native to the Andes, which by contrast are "just like us, they grow really slowly."[16]

It would also appear that the large-scale introduction of eucalyptus has not been conditioned only by monetary or environmental factors, but also by

"… that common desire to transform nature by imitating European aesthetic values. Ultimately, the aesthetics of the *civilized* countries were imposed in the Andes to emulate their modernity here on the other side of the ocean…"[17]

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14 CUVI, Nicolás, "*Dos cajones con semillas de Eucalipto*". *Ecuador: Terra Incognita*, No. 37, Sept.-Oct. 2005

15 Ibid.

16 Community workshop in San Sebastián de SigSig, 2005.

17 CUVI, Nicolás, "*Dos cajones con semillas de Eucalipto*". *Ecuador: Terra Incognita*, No. 37, Sept-Oct. 2005.

2.1.2 State incentives and subsidies for deforestation

Since colonial times, the Ecuadorian state has viewed forests as unproductive "*waste lands*"[18] and has consequently carried out an active and effective policy of deforestation with numerous objectives: the expansion of the agricultural frontier, the defusing of social pressures generated by poor land distribution[19] and the development of the export sector.

The so-called *modernization* of the Ecuadorian state in the 1950s sparked the aggressive expansion of the agricultural frontier. The Agrarian Reform and Settlement Law enacted in 1964, for instance, explicitly stipulated that

"... the settlers were obliged to clear at least 50% of the forest in order to be granted title to the plot of land…"[20]

With the goal of populating the uninhabited areas of the country, this first agrarian reform law allowed anyone who did not own land to apply for the title to land in rural areas. This law was aimed at having a minimum impact on the existing distribution of land and strengthening the modern capitalist agricultural sector.

In response to the pressure exerted by poor *campesinos*, the law was accompanied by a policy for the settlement of "waste lands", in other words, forests. Any land with 80% forest cover was considered "unproductive" and could therefore be occupied and appropriated.

Title deeds were granted after the native forest had been cleared. This was considered a *demonstration of work* on the land and proof of its habitation and *productive* use, necessary prerequisites for the legalization and allocation of land ownership. This absurd policy led to the unnecessary clearing of vast tracts of forest to demonstrate that the land was being utilized. As a result of this system, both the owners of forested lands – in order to prevent them from being occupied or expropriated – and the settlers – who needed to demonstrate that they were using the land – were obliged to clear between 50% and 80% of the forest cover on their properties.[21]

This clearly demonstrates that the Ecuadorian state has actively promoted the destruction of primary forests.

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18 Varea, Anamaría & Ortiz, Pablo (1995). Conflictos socio-ambientales vinculados a la actividad petrolera en el Ecuador.

19 McKenzie, Merylyn (1994). La política y la gestión de la energía rural: la experiencia del Ecuador. Quito, FLACSO.

20 FRA 2000. Bibliografía Comentada Cambios en la Cobertura Forestal - Ecuador, Octubre 2000**.** See at: http://www.fao.org/docrep/006/ad670s/ad670s04.htm

21 McKenzie, Merylyn (1994). La política y la gestión de la energía rural: la experiencia del Ecuador. Quito, FLACSO. In: Carrere, R. Gobierno y Empresas Responsables de la Destrucción, 2003. http://revistadelsur.org.uy/revista.067/Ecologia.html

OTHER STATE POLICIES THAT HAVE SUBSIDIZED DEFORESTATION PROCESSES

Agrarian Reform is not the only factor that has actively encouraged deforestation in Ecuador. The development model promoted through numerous state policies has resulted in the ongoing and widespread destruction of the country's forest resources.

The following excerpt from an article by Ricardo Carrere on deforestation and monocultures in Ecuador, and the responsibility of the state and business sectors in the resulting destruction, provides a brief overview of some of the extractive activities promoted by the government that have become virtually *unquestionable* in Ecuador because they are aimed at boosting exports.

Oil extraction…has been another major factor in deforestation. The clearing of forests as a result of this activity takes place in various scenarios.[22]

- The cutting of seismic lines (oil exploration tool). Some 30,000 km of seismic lines were cut, which entailed the deforestation of a million hectares of tropical forests.
- The construction of 500 km of highways. Added to the deforestation entailed by the highway construction itself was the settlement of the lands alongside them, leading to the clearing of an average of 12 km of forest on each side of the highways.
- Platform construction. Three hectares of trees were cleared around each well (for a total of roughly 400 wells) while another 15 hectares per well were impacted by the extraction of the wood needed to build the platforms.

The shrimp export industry, heavily promoted by the government, has been the biggest factor in the destruction of coastal mangrove forests. Over the last 20 years, Ecuador has lost over half of its mangroves, primarily in order to make way for the construction of shrimp farming pools.[23] In the province of El Oro, for example, the 25,000 hectares of mangroves that existed in the mid-1980s have now been reduced to barely 4,000 hectares today.[24]

Shrimp farming operations are mainly owned by individuals linked to the country's most powerful economic groups, as well as banana company owners, Asian business executives and military officers. The goal of this industry is to place shrimp on

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22 Martínez, Esperanza (1994). Impactos ambientales de la típica actividad petrolera. In: Amazonía por la vida, Martínez, E. y Bravo, E., eds., Quito, Acción Ecológica.

23 Alerta Verde (1996b). Confrontando realidades. Alerta Verde (Boletín de Acción Ecológica) 31, July.

24 Alerta Verde (1996c). Lo que calla la historia del "boom" camaronero. Alerta Verde (Boletín de Acción Ecológica) 36, December.

North American, European and Japanese tables. At the same time it destroys the source of food for coastal communities whose survival depended on the mangroves. Many of these shrimp pools are subsequently abandoned because of production problems resulting from the completely artificial conditions established in these ecosystems, and the local population is then forced either to live with the consequences of the destruction or to move away.[25]

As for the companies that run the farms, they simply move to a new location in the mangrove forests and start the process all over again, spurred by the large profits that shrimp farming generates, with no concern for the environmental degradation it is known to provoke. Despite all of the evidence of the absurdity of this destructive activity, it continues to be promoted by the government, on the sole grounds that it represents the country's third largest export product.[26]

Industrial monoculture crops (cacao, banana, oil palm) have led to the total or partial replacement of native forests where they have been established and have exacerbated social problems on a regional level. Cacao was the main large-scale monoculture crop developed and brought about not only the clearing of numerous forests, particularly in the Costa region, but also the concentration of land ownership in the hands of a small number of families. The cacao boom came to an end in the second decade of the 20th century due to the emergence of diseases that affected this crop.[27]

In the early 1930s, the U.S.-owned United Fruit company initiated the large-scale cultivation of bananas, which rapidly spread thanks to direct state support. The resulting destruction of forests was actually even fostered by the Banco Nacional de Fomento (National Development Bank), which granted credits to small and medium-sized producers on the condition that they cleared forested areas to plant banana trees. Ecuador's best forests were destroyed during this period, and the country's forest cover diminished from 75% to 62%.[28]

The replacement of forests by banana and coffee plantations has had serious repercussions on thousands of small producers affected by price decreases on the world market. The most common result is that only the producers with the greatest economic power survive, and are even able to expand their landholdings thanks to the many small producers forced into bankruptcy.[29]

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25 Ibid.
26 Alerta Verde (1996d). Camaroneros en El Oro: la misma historia. Alerta Verde (Boletín de Acción Ecológica) 36, December.
27 McKenzie, Merylyn (1994). La política y la gestión de la energía rural: la experiencia del Ecuador. Quito, FLACSO.
28 Ibid.
29 Ibid.

A more recent case is the large-scale monoculture of African oil palm, *Elaeis guineensis*. By 1982, some 12,000 hectares of this tree had been planted in Ecuador, with the support of credits from the Inter-American Development Bank. Several years earlier, a number of large companies formed with national and foreign capital (from France, Belgium and Germany) had obtained land from the government in the region of Oriente – much of it actually belonging to indigenous communities and settlers – and established large monoculture plantations of African oil palm. It is estimated that there are currently a total of 120,000 hectares of oil palm plantations in Ecuador.[30]

The monoculture of African oil palm has meant the total deforestation of the areas where it has been established. Many of these plantations were created in virgin Amazon jungle areas and have thus played a major role in deforestation. They also represent "biological deserts" because the soil in the plantations is home to very few plant species and only a very small number of plants manage to grow on the trunks of the palms. The rich diversity of native flora and fauna has disappeared, and the only animal life that interests plantation owners are the insects involved in the pollination process, which has great economic importance for the production of the oil-bearing fruits and seeds. The drainage of the land has also eliminated other natural habitats. Erosion and agrochemical use (fertilizers, pesticides, herbicides) affects life in the region's bodies of water.

At the same time, monoculture also poses a problem to the very crop it promotes. Outbreaks of different diseases that attack oil palms have resulted in many plantations being abandoned and used for cattle raising.

Taken from: Carrere, Ricardo. *Deforestación y monocultivos en Ecuador. Gobierno y empresarios responsables de la destrucción***.** Available in Spanish at: *http://revistadelsur.org.uy/revista.067/Ecologia.html*

- **Forestry legislation and the concepts of "forest" and "plantation"**

In 1952, the Forestry Service was created in Ecuador, and sought to mitigate the rate of forest loss by planting 6,500 hectares of trees annually.[31]

Between 1970 and 1980, through various forestry projects, the government planted thousands of hectares of trees, but did not carry out any kind of evaluation on the results of these reforestation programmes or the tree species involved.

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30 Alerta Verde (1996e). Los monocultivos de palma africana, etnocidio y genocidio en el Oriente. Alerta Verde (Boletín de Acción Ecológica) 35, October.

31 FRA 2000. Bibliografía Comentada Cambios en la Cobertura Forestal - Ecuador, Octubre 2000**.** See at: http://www.fao.org/docrep/006/ad670s/ad670s05.htm

Agreements were signed with the Ministry of Education to support reforestation projects through the participation of students from different educational institutions, and with the Ministry of Defence to create the Forest Rangers service and to undertake reforestation efforts using armed forces personnel. Ultimately, thanks to the use of these two "work forces" – high school students and army conscripts – the planting of exotic tree species benefited from an important subsidy, in the form of free labour.

The various reforestation projects carried out by the Armed Forces were never systematized, so there is no way to reliably estimate the number or trees or hectares planted. The only explicitly stated *goal* of these programmes is that they "…attempted to reforest the largest amount of land possible, in the most varied ecological conditions, regardless of the land's ownership."[32]

Since 1981, the Forestry Law has established that the *forest patrimony of the state* is comprised of

> "…the forested lands that the law stipulates to be under its ownership: the natural forests that exist on these lands, the forests cultivated by the state, and the wild flora and fauna."

The same legislation includes definitions of **forests and protective vegetation** such as the following:

> "Plant formations – *natural or cultivated* – comprising trees, shrubs or grasses in areas with uneven topography, around the headwaters of hydrographic basins, or in *areas where climate, soil and water conditions make them unsuited for agriculture or stock-raising…*"[33]

The Forestry law highlights the public interest in the "reforestation of lands suited to forestry," both publicly and privately owned.[34] These "lands suited to forestry" are those that are not suited to agriculture or stock-raising activities, and should therefore be used for the cultivation of trees and shrubs. Ecuador has even been described as "a nation naturally inclined to forestry."[35]

The Ecuadorian forestry legislation makes no distinction between *native forests* – primary or natural – and *tree plantations*, or as FAO calls them, *cultivated or planted forests*. Whether an area of trees is a forest or plantation makes no difference in terms of jurisdiction. The differences between the concepts of "forest" and "plantation" have been progressively eliminated – an unfortunate fact, but one that can be attributed to the process coordinated by FAO, referred to in Section 1.

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32 The document consulted raises the possibility that this lack of systematization was deliberate, by asking "whether there really was a decision made by the army not to quantify these costs, so as not to reveal the millions in costs that this signified for the institution." Bolaños, Rafael, and Luna, Alfredo, Evaluación de la Forestación de las Fuerzas Armadas.

33 Falconi et. al., (2005). Evaluación de la Política de Manejo Forestal, FLACSO. p.256.

34 Falconi et. al., (2005), Evaluación de la Política de Manejo Forestal, FLACSO p.257.

35 Falconi et. al., (2005), Evaluación de la Política de Manejo Forestal, FLACSO p.253.

Different administrations have applied strategies and recommendations based on development models conceived in other latitudes: if an area of land cannot be used for agriculture or stock raising, then it can be viewed as land suited to forestry.

In Ecuador, the terms protective vegetation or forest can be used to refer a group of trees growing around a spring or on a steep incline with no importance given to whether the area in question is comprised of native vegetation or a plantation of exotic species. The confusion of meanings has reached such an extent that in order to protect the headwaters of a hydrographic basin, eucalyptus trees are planted; in other words, to combat drought and/or prevent erosion, vast areas of land are planted with a tree species whose voracity for water is internationally recognised, and which contributes in no way to curbing erosion.[36]

2.1.3 Species used

In both the Costa region and the high plateaus of the Sierra region, tree plantations have been established on a massive scale, with the vast majority made up of eucalyptus and pine species. While this process responds to foreign standards promoted by multilateral agencies or economic interests, the lumber industry has merely focussed on the comparative advantages of introducing species like pine and eucalyptus in tropical regions:

a) their easy adaptation to extreme climates, at altitudes higher than 3,000 metres above sea level
b) greater production yields when introduced to the region where the Andes meet the equator: pine and eucalyptus trees have an average annual growth rate of up to 15 cubic metres a year, as compared to the rates of around 10 cubic metres a year seen in the other species in the area.[37]

2.1.4 Forest administration

Until 1992, the administration of Ecuador's forests was the responsibility of the Ministry of Agriculture and Livestock,[38] which dealt with the forest sector solely on the basis of its relevance

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36 Soil erosion in a eucalyptus plantation is made evident when the roots of the trees are visible above ground. This is not a tree species with aerial roots; instead, this is an indication of the loss of the upper layers of soil. In eucalyptus plantations, there is no protective or understorey vegetation to preserve the soil, since this vegetation is eliminated by the changes in the soil's acidity provoked by eucalyptus and its aggressive competition for water and light. Eucalyptus trees can grow to very tall heights in the Andes, and do not allow the growth of the shrubs that actually protect the soil from runoff and erosion.

37 Mc Cormick, Ian (1987). Análisis económico de inversiones en plantaciones forestales en el Ecuador. USAID. Quito.

38 "The Ministry of the Economy and Production was originally responsible for the administration of these matters, which were later passed to the Ministry of Agriculture and Livestock, to INEFAN, and later to the Ministry of the Environment." (Source: Interview with Marco Palacios.)

to agricultural activity. In September of that same year, following the UN Conference on Environment and Development or Earth Summit in Rio de Janeiro, the new criteria of sustainability were incorporated into forest administration. This led to the creation of the Ecuadorian Institute of Forestry, Natural Areas and Wildlife (INEFAN), which functioned as an autonomous body linked to the Ministry of Agriculture and Livestock.[39] INEFAN's administrative and regulatory organization was defined in 1993 with the assistance of the German Technical Cooperation Agency (GTZ).[40]

As of 1996, responsibility for forest administration was transferred to the Ministry of the Environment,[41] leading to the subsequent disappearance of INEFAN. During this change in jurisdiction, a large part of the documentation on forestry projects and data related to the forestry sector in general was lost. As a result of this mishandling of files, there is almost no official data available, and any documentation still in existence is circulated informally, by individuals who worked for or had some connection to INEFAN and are still in possession of certain documents from that period.[42] Consequently, **there is no clear record of how lands were allocated for reforestation, nor the terms and conditions under which reforestation projects were executed**.

The administration of the Ministry of the Environment is divided under four under-secretariats,[43] which are in turn responsible for administering ten regional districts. The regional districts are decentralised financial and administrative units with the authority to issue licences and permits for forestry operations.[44] This causes further difficulties in access to information on the forestry sector, because there has been no systematization of data on the projects carried out in each district. As a result, information on projects currently underway or already executed must be obtained through the headquarters of each individual district.

What follows is at least a partial overview of some of the most representative reforestation projects carried out in Ecuador, with the information it was possible to obtain despite the institutional changes and the specialization or decentralization processes undertaken in the management of natural resources by state agencies.

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39 INEFAN (1995). Acción en defensa de los bosques y el medio ambiente, estructura del INEFAN y síntesis de las principales funciones, proyectos y convenios en ejecución, Quito.

40 See at: http://www.estade.org/Consutorias92-99.html

41 Based on the jurisdictions established in the Law on Forestry, Preservation of Natural Areas and Wildlife and in the reform of the Forestry Law of the Ministry of Agricultural and Livestock. National Forestry Department, 2004.

42 Source: Interview with Ángel Villacís.

43 These include the Subsecretariat of Natural Capital, Subsecretariat of Coastal Environmental Management and Subsecretariat of Environmental Quality. Forest administration falls under the Subsecretariat of Natural Capital.

44 Source: http://www.ambiente.gov.ec/info_general/organigramae/index.html

2.1.5 Forestry projects promoted by the state with financing from multilateral agencies

> *"International cooperation has offered important resources provided through multilateral agencies… This has been one of the sources of financing most frequently used by the state in its forestry-related strategies.*[45]

The Ecuadorian state policy of promoting tree plantations is meant to fulfil two basic objectives:
a. As a mechanism for the conservation of "natural forests"; and
b. As a source of income for the national government.

Both have been maintained since the introduction of the first programme of incentives for tree planting, launched by the government in **1985** under the name of the Forest Plan.

The Forest Plan was executed by the National Forestry Division (DINAF) and the Ministry of Agriculture and Livestock, which gradually revealed what it believed to be the main benefit of reforestation: economic returns. The main actors in the Forest Plan were landowners and the Ministry, and its goal was an increase in productive "forests", from which the owners of the land involved received 100% of the profits. The Ministry financed the project through FONAFOR (the National Forestry Fund), which granted low-interest loans to be repaid by the landowners once the timber on their properties had been harvested.[46]

In **1986** the Ministry of Agriculture and Livestock, with the participation of a private forestry company, the Empresa de Desarrollo Forestal (EMDEFOR), launched a project for the planting of pine trees in three provinces in the central Sierra region.[47] The goal of the project was the *establishment of timber-producing forests* [sic] as part of a social initiative that included the subsequent distribution of the profits as follows:

- 30% for the owners of the land, whether communities or individuals;
- 54.3% for the Ministry; and
- 15.7% for EMDEFOR, which was responsible for managing the execution of the project.

A full 100% of the financing came from international cooperation aid, and the time period stipulated for the first harvest was 20 years.

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45 Falconi et. al., Evaluación de la Política de Manejo Forestal, FLACSO. p.358.
46 Mc Cormick, Ian (1987). Análisis económico de inversiones en plantaciones forestales en el Ecuador. USAID. Quito.
47 The provinces were Chimborazo, Tungurahua and Bolívar.

In **1990** an agreement was signed between EMDEFOR and INEFAN for a project to be financed with a loan from the IDB and aimed this time at "strengthening the country's forestry system". The project was carried out on lands owned by farmers with limited economic resources, through a "participatory scheme" implemented in a number of provinces.[48] The project was executed **between 1990 and 1997**, although the time period established for the first tree harvest was from 15 to 20 years. The profits earned were to be split between the landowners, who would receive 70%, and the state, which would get the remaining 30%.

But before the time stipulated for the profits to materialize had elapsed, the residents of the community of Zoila Martínez, located in the El Altar highlands in the province of Chimborazo, had begun to face other results of the project:

> "…EMDEFOR, which is a contractor, came here to plant trees 12 or 13 years ago. The community didn't want to take on this job, so they had to hire people from outside. But the land belongs to the *campesinos*, so they said they were going to give us 70% of what they earn from selling the wood. They planted trees on about 70 hectares. But before the plantation was there, we used those lands for pasture, and there's no pasture land anymore, there's nothing but dead straw. There's nowhere to keep the animals now…"[49]

In the communities where plantations were established, the residents were offered the possibility of earning profits from the non-timber resources provided by the trees, as part of the "benefits" the community would receive from the introduction of pine or eucalyptus. Among the products promoted as a source of income for the communities were the mushrooms that grow underneath pine trees, as the result of a process applied to the roots of the seedlings in the nursery. But the testimony of the residents of these communities tells a different story:

> "…EMDEFOR is just starting to prune now. They always come and say to prune the trees, but they don't pay anything. When the plantation people came here, they told us at first that this would protect the river water. But now there are other technicians handling water management, and they say that pine trees absorb more water… When they came to offer us the plantation, they said that the mushrooms that grow on the trees could be sold by the boxful, and we could use that money to buy anything we wanted to eat. But they didn't give us the technique, we don't know how to do it, or which mushrooms to harvest… as far as I know, there are some mushrooms you can eat and others that are dangerous, but they never taught us how this works…"[50]

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48 INEFAN (1995). Acción en defensa de los bosques y el medio ambiente, estructura del INEFAN y síntesis de las principales funciones, proyectos y convenios en ejecución, Quito.

49 Source: Interview in the community of Zoila Martínez.

50 Source: Interview in the community of Zoila Martínez.

> "In my community we grow onions, and grasses for animals to graze on. Down there they grow pine trees, and there's no water or food for livestock. It dried up five years ago – there used to be rivers there. People don't know what happens when they agree to having those trees planted. Now that they have their plantation, are they just going to leave everything to rot? It's better to use the land as pasture for animals. With the plantations, there isn't enough land to do it…"[51]

Another major project, in terms of both its wide reach and the agencies involved in its execution, was the FAO-Netherlands PAFE (Ecuadorian Forestry Action Plan) initiative, carried out **between 1991 and 1995**. In late 1994, the federal government officially recognized PAFE as the reference framework for its forestry and natural areas policy.[52]

The forestry sector was provided with over 7.545 billion sucres (125 million dollars) in international technical assistance and 52 million dollars in investments), used to establish plantations on 22,437 hectares of land (2,875 hectares in 1992, 5,786 hectares in 1993 and 13,746 hectares in 1994).[53] Financing was also contributed through agreements between the Forestry Subsecretariat and international agencies like the World Bank, FAO, GTZ, IDB and ITTO, requested by the Ecuadorian government through INEFAN and executed by FAO for the implementation of national forestry action plans.

After one year of implementation, the PAFE project experienced cutbacks in its activities due to the institutional changes adopted in 1992, which apparently provoked a loss of interest on the part of public sector agencies, the private sector, and non-governmental agencies.[54] PAFE had recommended stepping up the establishment of tree plantations, a suggestion materialized in INEFAN's formulation of the Reforestation Plan and in forest repopulation as an alternative for strengthening internal capacity for promoting "sustainable development" of forest resources, as ratified in the Forestry Master Plan.

Among the national programmes executed was the National Plan to Promote Tree Plantations (PLANFOR), a second attempt by the federal government to foster the execution of afforestation and reforestation on privately owned lands judged as suitable for forestry,[55] and implemented only **between 1993 and 1994**.

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51 Source: Interview in the community of Pachancho.
52 FAO (1995). Miriam Abramovay, Savia Arguello. Estrategia para incorporar el enfoque de género en el plan de acción forestal del Ecuador (PAFE). Documento de trabajo No. 14. Rome.
53 Ibid.
54 Source: Interview in the community of Bolívar Vásquez.
55 Resolution No. 011, 1993.
http://www.estade.org/IIILegislaci%F3n/Legislaci%F3n%20ambiental%20ecuatoriana.doc

The basic premise of PLANFOR was to finance 75% of the total cost of tree plantations. This financing was provided by the government through INEFAN and the National Forestry Fund (FONAFOR) to the landowners or those undertaking the tree planting. The funds allocated were meant to finance the planting, maintenance and pruning of the plantations established. In order to receive these funds, the landowners or planters first needed to receive approval for their individual projects, which were formulated with technical assistance offered through the programme itself. Project proposals were to include information on the tree species to be planted, with the seedlings provided by nurseries established by the Ministry of Agriculture.

The following table outlines the most important tree plantation projects executed during these years, based on a written report released by INEFAN in 1995:

Tabla 3 – Tree plantation projects undertaken between 1992-1994

Name of Project/ Agreement	Province	Plantations (ha)			Total (ha)	Beneficiary	Investment (sucres)
		1992	1993	1994			
MAG - Armed Forces	El Oro		250	250	500	Armed Forces	54,110,500
MAG - INERHI	Loja	1,224	1,033	469	2,756	Various	295,021,350
PORFORS	Sucumbíos	535	2,000	720	3,255	623	553,350,000
PROFAFOR	Sierra region			160	160	6	58,240,000
IBD / 808 / EMDEFOR	Chimborazo Tungurahua Bolívar	1,116	2,503	4,200	7,819	30% State 70% Farmers with limited economic resources	3,182,414,524
MAG - MEC	Loja			94	94	Various	15,665,100
PLANFOR	Nationwide			7,853	7,853	1,014	2,356,312,279
TOTAL		**2,875**	**5,786**	**13,746**	**22,437**		**6,515,113,753**

The year **1999** marked the launching of the Forestry Development of the Ecuadorian Andes project, implemented throughout four years with financing from Dutch cooperation assistance and FAO. The project was carried out in the Sierra region, specifically the provinces of Pichincha,

Chimborazo, Imbabura, Azuay, Cañar and Loja, and one of its basic premises was to include community participation in all plantation activities. The trees planted were exotic species: pine and eucalyptus.

By the year 2003, there were roughly 145,000 hectares of tree plantations in Ecuador, and according to estimates from the Ministry of Agriculture and Livestock, that figure had reached 176,000 hectares in 2005: a considerable increase that is markedly greater than the growth rates registered throughout most of the previous years. Of the total land area currently used for tree plantations, 90% is in the Sierra region, 8% in the Costa region, and 2% in Oriente. This clearly demonstrates that tree plantation activity is primarily concentrated in the Costa and Sierra regions. In 1997, for example, 10,861 hectares of land were used to establish plantations in the Costa region, 9,218 hectares in the Sierra, and 5,822 hectares in Oriente. There is also a direct relationship between the decrease in the percentage of native forest cover, as seen in the Sierra, and the increase in the number of plantations in the area.[56]

These plantations were established without taking into account the adaptability of the land to the species used or the opinion of the local populations that have lived in the surrounding areas for generations. This "reforestation" process has been carried out with no evaluation of the real impacts of these plantations in social and environmental terms.

Table 4 – Increase in tree plantations 1985 - 1989

Tree plantations	**Area in hectares**
Industrial plantations - 1985	54,566
Other industries (Ex. Balsa - 5 years)	5,000
New plantations 1986 -1989	5,524
Experimental	699
FONAFOR plantations 1986 - 1989	6,000
TOTAL 1989	71,789

[56] Rizzo Pastor, P. (2002). La forestación en el Ecuador. Proyecto SICA. http://www.sica.gov.ec/agronegocios/Biblioteca/Ing%20Rizzo/forestacion/foda.htm

Table 5 – Increase in tree plantations 1980 - 1995

Tree plantations	Area in hectares
Reported plantation area 1980	58,200
Reported plantation area 1995	142,700
Estimated annual increase in plantation areas 1980 -1995	5,600

Many of the proposals to promote tree plantations have claimed to take into account the communities living in the areas where these plantations are introduced, and to be aimed at two basic objectives:

- Raising the level of development of the population; and
- Generating employment for local residents.

However, the pursuit of "development" has been guided by parameters with no relation to local realities, or to the particular needs of the groups who will be *affected* by these projects – the purported *beneficiaries* in development jargon. It is these local communities who ultimately bear the brunt of the externalities and negative impacts of these kinds of projects.

2.1.6 Forestry sector exports and the exhaustion of natural wealth

An assessment of forest management policy in Ecuador undertaken by the Latin American Faculty of Social Sciences (FLACSO) reported significant growth in the forest sector during the decade from 1991 to 2000, based on figures of timber exports and tree plantation expansion.

The FLACSO study – conducted from a purely economic perspective – noted that this growth has been considerable in terms of the *volume* of wood exports, which increased by 41% over the decade (with an average annual increase of 4%), but has not been reflected in monetary terms, since revenue from these exports has grown by only 11%.[57]

The same study notes that "an especially critical factor of national forestry policy is the scant economic benefit perceived by the state in the framework of the process of exploiting forest resources."

Ecuador faces a reality common to all of the so-called "developing" countries, whose economies are sustained by the export of raw materials, notes the study. "There is a very direct relation

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57 Falconi et. al., (2005), Evaluación de la Política de Manejo Forestal, FLACSO. p.246.
58 Falconi et. al., (2005), Evaluación de la Política de Manejo Forestal, FLACSO p.235.

between the expansion of exports – due to pressures created by debt payments – and environmental degradation and the exhaustion of *natural capital*."[58]

Through their reference to *natural capital* – and the way it is highlighted in the document quoted – the authors of the study open up the possibilities of viewing the resources of nature through the logic of capital in general. In fact, in the study's Conclusions, the FLACSO researchers propose that one solution for conserving natural resources is for "society to pay for the environmental services it receives."[59]

Apparently, the authors of this study have been unable to observe that while natural resources have in fact been threatened and destroyed, this has happened because of the application of the prescriptions imposed by the World Bank and other multilateral agencies. These agencies have conditioned the provision of credits and financing on the exploitation of the *primary sector* for exports. The proposal for society to "pay for the environmental services it receives" actually developed within these same circles, and is based on the same way of viewing reality and understanding nature: as a *good* or a *service* that can be capitalized and commercialized.

The fragility of the economy, currency devaluation and pressures exerted by international agencies encourage primary sector exports, including agricultural and forest resources. These practices lead to the exhaustion of *natural wealth*, understood as the capacity of a biologically diverse system to maintain and regenerate itself.

2.2 Tree plantations as carbon sinks: the FACE-PROFAFOR model [60]

2.2.1 What is FACE-PROFAFOR?

The Dutch FACE[61] Foundation was established in 1990 by the Board of Management of the Dutch Electricity Generating Companies, N.V. Sep, with the initial objective of establishing 150,000 hectares of tree plantations and thus compensating for the emissions from a new

[59] Ibid, p.375.

[60] The information presented in this section is based on a previous study devoted exclusively to the tree plantations in Ecuador promoted by the FACE-PROFAFOR initiative. The publication, titled "Carbon sink plantations in the Ecuadorian Andes: Impacts of the Dutch FACE-PROFAFOR monoculture tree plantations project on indigenous and peasant communities", provides more extensive and detailed information and can be viewed at: http://www.wrm.org.uy/countries/Ecuador/face.html

[61] FACE stands for Forest Absorbing Carbon Dioxide Emissions.

coal-fired electricity generation plant to be set up in the Netherlands. The new plant was to represent millions of tons of carbon dioxide released into the atmosphere. Due to the costs involved, they turned to the establishment of tree plantations in the developing countries of the South.

Since 2000 the FACE Foundation has been working independently without N.V. Sep funding. Its main offer is absorption and sale of carbon credits on the international carbon market, through third parties including logging companies, small farmers and national parks. While partially sponsoring the establishment of tree plantations, FACE reserves *all the "rights" over the carbon* that these trees are theoretically "*sequestering*".

The FACE Programme for Forestation in Ecuador S.A., or PROFAFOR, is presently the largest among the various projects of the Dutch FACE Foundation. PROFAFOR del Ecuador S.A. is a company incorporated in Ecuador with the funding of FACE, to establish forestry plantations and "fix" CO2 from the atmosphere. FACE-PROFAFOR is promoted under the slogan: LET US SAVE THE CLIMATE! It maintains that it bases its reforestation activities on carbon absorption and fixation, and also that it "takes advantage of land that is not being used and that could generate income for the local economy."

FACE established PROFAFOR in Ecuador in June 1993. In its establishment, PROFAFOR received the support of the Ministry of the Environment. Initially, the Ministry entrusted PROFAFOR with the execution of part of the PlanFor (National Forestation Plan), a ministerial initiative that was aimed at foresting and/or reforesting 250,000 hectares in the Andean region over a period of 15 years. When PROFAFOR proposed its initial goal of planting 75,000 hectares of trees in five years, it was seen by the Ecuadorian government as an interesting counterpart for the implementation of its forestation plan. In 1993 the two parties signed a Memorandum of Understanding, whereby PROFAFOR obtained a seal of institutional support.

According to the FACE Foundation website, thanks to the PROFAR programme, "areas high in the Andes where agriculture is not profitable and most sites are unsuitable for livestock are being forested with the help of farmers and farming communities." Despite the heavy use of exotic tree species in these efforts, FACE maintains that the aim of its projects is to "strengthen the agricultural economy and combat land degradation."

2.2.2 How does FACE work in Ecuador?

The initial objective of FACE-PROFAFOR in 1993 was to establish 75,000 hectares of tree plantations in a period of 15 years. Subsequently this objective was reformulated to 25,000 ha. So far contracts have been signed for the plantation of 24,000 ha, and 22,000 ha have actually been planted. Of these, 20,000 ha have Forest Stewardship Council (FSC) certification.

The plantations are established through contracts signed between the company and private owners, either individual landholders or indigenous communities in the Sierra. Some contracts are signed in the form of a mortgage with terms running for up to 99 years.[62]

A significant part of the planted area (8,000 hectares) corresponds to contracts signed with 39 indigenous communities in the Sierra region. According to PROFAFOR this "has served to incorporate degraded lands or unused lands into the national economy."

2.2.3 FACE-PROFAFOR's "green label"

In December 2001, PROFAFOR received certification from the Swiss certifying company SGS (Societé Générale de Surveillance) for the management of 20,000 hectares of plantations in the Ecuadorian Sierra, where most of the forestation projects carried out by PROFAFOR are located.

Plantation management was evaluated in 1999 by SGS Qualifor, which decided that PROFAFOR complies with FSC Principles and Criteria and therefore granted it the Forest Certification Label. To keep this certification, the company is subject to annual visits from the certifying organization.

As we were able to confirm during visits to communities involved in certified projects, FSC certification does not guarantee that these communities will receive economic, social and environmental benefits. In the case of indigenous communities in the Ecuadorian Andes, the reality is quite the opposite: the communities are forced to absorb the costs and impacts of the projects, which lowers the investment costs for FACE-PROFAFOR's certified activities.

FSC certification provides the company with an international public image of respect for the environment, under the assumption that certification guarantees that an industrial practice is "environmentally friendly" and that the natural resources are being correctly exploited.

Certification makes the negative impacts generated by the project invisible and leaves no place for possible claims by the communities affected by certified projects. It makes their claims invisible, and if they do manage to get out and come to public knowledge, their words have to face the strength and the weight of the "Green Label", which weakens the credibility of local communities' demands and struggles.

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62 The contractual figure of a mortgage is limited to those contracts signed with private estate and land holders, individuals or corporate bodies. However, for Indigenous Communities another type of contract is established, as "communal property" is not subject – according to the "Commune Law" – to land tax or mortgages. In these cases, the contracts include penalty clauses and fines in the event of a breach of contract.

2.2.4 Promotion and contracts

In order to establish forestation contracts, FACE-PROFAFOR goes directly to the communities to promote the plantation "business". The forestation project is presented as a net source of income and employment.

Contracts are established on a "pay to plant" basis, through which the company offers communities:

- A monetary "incentive" for each hectare planted;
- The seedlings to be used; and
- The technical assistance and training needed to manage the plantation.

PROFAFOR keeps the rights and ownership of the carbon "fixed" by the plantation, while the community gets the timber.

These communities are therefore presented with the possibility of access to all of the income from the sale of the timber when it is harvested. Access to a supply of wood is also important: firewood is a highly valued resource for indigenous Andean communities that use it as fuel.

The economic incentives offered for the establishment of the plantation – added to the possibility of a new "high performance" productive activity that will generate employment in the community – become the main factors that lead communities to consent to signing the agreement and giving up their land for the establishment of FACE-PROFAFOR plantations.

However, the potential income from plantation activities is generally overestimated and *campesino* communities consent to signing contracts without precise knowledge of the benefits they will receive from harvesting the timber. As has been documented, PROFAFOR possesses this information, which is obtained through feasibility studies conducted for each project, but "*…this information has not been transferred to the communities, to avoid creating expectations of future income that may not be fulfilled.*"[63]

• The offer of income

On promoting the benefits of establishing a contract with PROFAFOR and presenting the amount of money that would enter the community, amounts are negotiated to be paid per hectare as is the number of hectares of communal land that would be devoted to the project. These values are multiplied and figures appear that convince the communities at first sight.

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[63] Luis Fernando Jara, PROFAFOR (pers. comm.)

The range of the amounts that FACE-PROFAFOR pays landowners per planted hectare is quite wide and depends on the tree species and the region. Payment per hectare planted up until the year 2002,[64]

> "…varied between $220 and $467 per hectare. Payment of $467 per hectare was for the plantation of native species along the coast, and $220 per hectare was paid for planting pine and eucalyptus in the Sierra."[65]

For the communities contacted that signed contracts with the company between the years1997 and 2000, payment fluctuated between $100 and $189 per planted hectare.

After the price to be paid per planted hectare is negotiated and the total amount to be contributed to the community is quoted, the costs of the seedlings to be sown and technical assistance during the first three years of the establishment of the plantation – both of which are provided to the "beneficiaries" by PROFAFOR – are deducted from that total.

Through this clever manipulation, a figure is put forward initially, but then subject to various deductions. As a result, the communities end up being paid practically one half of what they were initially offered.

Table 6 – Income offered vs. actual income received by the community

Community	Area under contract	Payment agreed per hectare	Total amount offered	Cost of seedlings and technical assistance (deducted)	Amounts disbursed to the community	Percent deducted
San Sebastián de SigSig	400 ha	$ 189	$ 75,600	$ 36,800	$ 38,800	49%
Pisambilla	300 ha	$ 165	$ 49,500	$ 22,500	$ 27,000	46%
Mojandita Avelino Dávila	130 ha	$ 165	$ 21,450	$ 9,750	$ 11,700	46%

Source: PROFAFOR forestation contracts. Prepared by Acción Ecológica.

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64 The company stopped establishing new contracts in 2002 for lack of financing. Luis Fernando Jara, PROFAFOR (pers. comm.).

65 Luis Fernando Jara, PROFAFOR (pers.comm.).

After having deducted the "price" of the seedlings and of technical assistance,[66] 80% of the resulting amount is delivered in three instalments during the first year following signature of the contract. To receive this percentage, the community must show that it has fulfilled the contracted planting. One of the clauses of the contract establishes the following:

> *"It is considered that the BENEFICIARY has not fulfilled the activities foreseen if it is necessary to replant over 25% of the plants sown."*[67]

The remaining 20% of the money offered is handed over to the community *"following complete fulfilment of the activities foreseen"* by the company for the second and third year following signature of the contract.

According to the contracts, the communities have a commitment to use the resources provided by FACE exclusively for the objectives of the plantation contract. What has happened in practice, however, is that the economic input has not been enough to sufficiently cover the expenses that the communities must incur to complete the *establishment* of the plantations.

In addition to the obligation to use the funds provided exclusively for the establishment of the plantation, PROFAFOR's "beneficiary partners" do not receive any real benefit, because the way in which the incentive is delivered means it is rapidly consumed and cannot be invested in activities other than the running expenses of plantation establishment – for which it is also insufficient.

In the event that the trees manage to survive, harvesting will take place 20 or 30 years after the contract is signed. This is a very long time for peasants and local communities, yet the project requires their contribution in the form of "work" or labour for the maintenance of the trees.

• The offer of employment

The offer of "job generation" through this plantation programme is not only fictitious, but in fact has become a negative impact that has to be absorbed by the community economy in order to fulfil the contract with FACE-PROFAFOR.

The communities have had to hire people from outside to carry out some of the activities, either because they do not possess the necessary skills to perform the work in conformity with the technical specifications required by the company in the management plans,[68] or because the plantations are located on land that is hard to access and subject to extreme climatic conditions. Thus, according to an inhabitant of the commune of Chuchuquí:

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66 "Services" provided by PROFAFOR.
67 FACE-PROFAFOR, forestation contract.
68 Forestation activities are totally foreign to Andean communities, which traditionally practice grazing and subsistence farming.

> *"They paid for dibbling, but only for pine, not for eucalyptus. And they didn't pay me, I worked under Minga [an unpaid communal work system, described in detail below]… We couldn't work here, people had to be hired from Quito and Chimborazo and the community paid the workers, another part was done by us through Minga… at that time it was raining, you couldn't work in the paramo…"*[69]

Therefore what happened was that the funds received were allocated to hire and pay people from outside the community.[70] And if the funds are not sufficient to complete the plantation work that the community is committed to carry out – something that happens quite frequently – then it must fall back on unpaid communal "Minga" labour to meet its contractual obligations. An IIED study on the economic impacts of forestation *sponsored* by PROFAFOR coincides with this finding:

> "*Employment on the plantations is temporary and in most cases is done through Minga*."[71]

MINGA

Minga is a traditional communal work system, typical of the indigenous communities of the Andes. Among the Quichuas of the Ecuadorian Andes, Mingas unite forces and labour to work towards a determined collective material objective. It is a complex and complete mechanism of social interaction through which the entire community – men, women and children – is mobilized to devote an entire day of labour, or more, exclusively to this activity.

The communities of the Sierra region generally establish one day a week for Minga, used to carry out a variety of works needed by the community (such as the building of access roods, irrigation channels, a school or health care centre, or for communal agricultural activities like planting and harvesting).

By definition, Minga work is unpaid, and is based on a system of reciprocity. When Minga labour is directed towards an individual goal, then it must be "returned", which means the *mingado* or beneficiary is obliged to contribute his or her labour to the *mingueros* or workers at some time in the future.

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69 Source: interview in the community of Chuchuquí, province of Imbabura.

70 In a clear breach of FSC Principle No. 4, on Community Relations and Workers' Rights, and particularly item 4.1 which states that the communities within, or adjacent to, the forest management area should be given opportunities for employment, training, and other services.

71 Albán, M. and María Argüello, 2004. *Un análisis de los impactos sociales y económicos de los proyectos de fijación de Carbono en el Ecuador*: *El caso de PROFAFOR-FACE*. IIED, London, UK.

• Coercive and Unequal Contractual Conditions

On signing the contract the community takes on a commitment for the care and maintenance of a tree plantation for periods of between 20 and 25 years.[72] This is of concrete utility to the company, which must find a way of guaranteeing *continuity* in terms of the carbon it proposes to sequester from the atmosphere and later trade as *credits* on the international market.

Within the negotiation process, numerous irregularities have been reported. According to the company, the procedure for the establishment of a contract between PROFAFOR and a community requires the approval of the majority of the community Assembly. However, one of the communities interviewed clearly maintained that the agreement signed with the company was not valid: it had been signed by 50 people at a time when the community had over 200 families.

> *"…when the agreement was signed in 1998, it was only signed by the Assembly and 50 people. The explanation given by the Engineer was that at that time there were only 50 people... I was secretary in 1997, and at that time we had registered over 200 community members, and after that they signed the agreement with 50. The majority were not present..."*

In the revised contracts, the company has taken certain precautions to discourage a breach of contract. According to Clause Five:

> *"The RESIDENT ENGINEER may terminate a ...Forestation Contract ahead of time and unilaterally in the case of a breach of obligations by the BENEFICIARY, and claim payment of COMPENSATION by way of the penalty clause established under Clause Six..."*[73]

Clause Six or the Penalty Clause requires the communities to pay disproportionate monetary amounts in the event of a breach in the obligations derived from the contracts.

Through these clauses, PROFAFOR acquires the right to unilaterally terminate a contract and demand as COMPENSATION the payment of amounts that are greater than those initially offered and that are up to three times the amounts disbursed to the communities, as will be seen from the following table:

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[72] The more recent contracts established by PROFAFOR establish longer terms, of up to 99 years.

[73] In particular, but not exclusively, breaches of obligations by the BENEFICIARY are considered to be the following:
- the lack of execution of any of the activities foreseen in the plans.
- early use or sale… of forestry resources.
- any act or omission that places in jeopardy the subsistence of forestry resources.
- delays in depositing in the BANK ACCOUNT the percentage of the product of use or sale of forestry resources from the AREA." Taken from: PROFAFOR, forestation contract.

Table 7 – Penalty Clause Amounts

Community	Amount initially offered	Amount disbursed to the community	Amount of penalty clause	%
Caguanapamba		$ 15,716	$ 42,660	271%
San Sebastián de SigSig	$ 75,600	$ 38,800	$ 108,000	278%
Pisambilla	$ 49,500	$ 27,000	$ 81,000	300%
Mojandita Avelino Dávila	$ 21,450	$ 11,700	$ 35,100	300%

Source: PROFAFOR forestation contracts. Prepared by Acción Ecológica.

This clause converts the contract into a *tool for coercive contracting* that obliges the communities to serve company interests.

"…when I told the engineer Franco Condoy that we wanted to undo the agreement, he told me: You can't get out of the agreement, the commune is mortgaged…"[74]

The engineer representing PROFAFOR is mistaken in claiming that the commune "is mortgaged", because communal property in Ecuador is not subject to mortgages. However, this arrogant and overbearing affirmation should be interpreted in the context of power relations where the interests of a company and the situation of the peasants are in conflict.[75]

In the SGS Public Summary for 2001, when PROFAFOR obtained FSC certification, the certification agency had already identified deficient capacity (or insufficient training) of FACE-PROFAFOR technical assistants in providing adequate support to the communities with regard to the social implications of the contracts.[76] In spite of this, the company was granted its "green label", perhaps because in the same document, one of PROFAFOR's strengths is purported to be "the participation of local communities in decision-making."[77]

74 Source: interview in the community of San Sebastián de SigSig.

75 Power relations that reproduce long-standing defects inherited from systems of domination – such as the Hacienda System in Ecuador – that determined and still determine the patterns of certain inter-ethnic relations in the Americas.

76 Resulting in a Minor CAR (Corrective Action Request), which does not prevent certification and is similar to an admonition: the company must make take corrective action or at least pledge to try to do so.

77 Qualifor Programme. FM Main Assessment Report: AD65. April 2000, p.25.

2.3 Introduction of tree plantations in the name of local development: the FEPP model

2.3.1 Pine plantations in the central Sierra region of Ecuador[78]

This section is based on information gathered in rural communities by Ivonne Ramos (Acción Ecológica) and Ricardo Carrere (WRM) during a visit to this Andean region in July 2005.

In the province of Bolívar, located in the centre of the Ecuadorian Andean region, there has been a profound change in the landscape of the *paramo* or high plateau. Everywhere you look, there are rows upon rows of pine trees, and all of a single species: *Pinus radiata*, or Monterey pine, native to the United States. Some are planted in massive clumps, others in small stands or windbreaks; some spread across the flat páramos, others climb hills at altitudes higher than 4000 metres above sea level.

• The arrival of the pines

The pines did not get here on their own, nor is their presence the result of decisions made within the communities. Their arrival was the result of a policy imposed by outside actors, particularly those connected to the Catholic Church and represented by the Ecuadorian *Populorum Progressio* Fund, or FEPP.

FEPP played a decisive role in the widespread planting of pines. To begin with, they provided the necessary arguments to convince the local communities to plant these trees. Their main argument involved the large sums of money that could be made through the sale of the timber once it was ready to harvest after a period of 20 to 25 years. Added to this was the potential source of local firewood obtained through pruning and thinning the trees, as well as the profits from harvesting the mushrooms that would grow under the trees. At the same time, the tree plantations were advertised as "forests" that would therefore help to regulate the hydrological cycle and preserve soil, flora and fauna.

Once it had successfully completed the first stage of convincing the communities to agree to the plantations, FEPP took care of providing the necessary training for them to properly plant the pines. The acquisition of pine seedlings was also facilitated by FEPP through a mechanism that granted credits to the communities, which were subsequently repaid with foreign assistance funds. Ultimately, while the communities did not actually have to pay out money for the seedlings they "bought", this mechanism nevertheless acted as a commitment assumed on their part.

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78 Carrere, Ricardo. "Pinos y eucaliptos en Ecuador: símbolos de un modelo destructivo", WRM, 2005.

The communities took on the most difficult part of the operation: the planting. This work was carried out under the "Minga" system, with each and every member of the community – man, woman and child – contributing his or her labour free of charge. According to the local residents, this task signified "a lot of sacrifice." It entailed digging holes, carting the seedlings, and planting them in the harsh conditions of the páramo (steep slopes, frequent rains, high winds, cold temperatures). To make matters worse, the nursery supplied the seedlings packaged in polyethylene bags filled with soil, making them much heavier than "bare-root" (unpackaged) seedlings, which are most commonly used for planting pine trees.

• Changes brought about by the pines

The case of the community of Tingo serves to illustrate the changes provoked by the large-scale planting of pine trees. The community is made up of roughly 70 families (400 people), and together they own 800 hectares of land, of which 600 hectares are páramo (grasslands) and 200 are used for growing crops. Pine plantations have been established on 400 hectares of páramo, and another 100,000 pine trees have been planted in the surrounding area.

The main impact has been the decrease in the land available for grazing. Before the plantation, each family had an average of 50 sheep – the wealthiest families owned between 200 and 300 each, while the poorest had around 20. Today, the wealthiest family has 25 sheep, the poorest has none, and the average has dropped to 10 sheep per family. This has clearly signified a major loss of resources for the community. And in addition to the loss of land for raising sheep, there is also less land for other animals used by the community, such as cows, pigs, horses, mules, burros, llamas and goats.

The other major impact has been the loss of water. Most of the plantations are between five and seven years old, and a decrease in available water can already be perceived. The people have noticed that "the streams are disappearing" and that the soil is much drier than before:

"We made a mistake. The water has dried up in Salinas and now we have to walk for two or three hours to get water. There used to be 24 springs that supplied Chagpollo (near the Chimborazo refuge) and flowed into the Corazón River, which had a flow of 250 litres of water. INHERI (the national water resources institute) recently went to measure the river's flow and it was only 120 litres; it had fallen to less than half of what it was in just a short time. That's why the *campesinos* don't want any more trees, and they're just waiting until it's time to harvest the timber. They directly associate the plantation with the loss of water."[79]

[79] Source: Interview with Manuel Chacha, Guaranda.

At the same time, there have been significant impacts on biodiversity. At a community workshop held during a visit to the area, the local participants quickly identified 22 local plant species and their multiple uses, as well as 29 local animal species, most of them edible. The majority of these plant and animal species are no longer available to the community, because their habitat has been taken over by pine tree plantations, implying a negative impact on the local population's sources of sustenance.

With regard to the soil, the roots of pine trees are visible above the ground, which is evidence of a considerable degree of erosion. One important observation made by the local people is that on the soils where pine trees have been planted, it is now possible to grow better potato crops than ever (with the addition of chemical fertilizers), "because the pines make the soil sandy." In other words, the pine trees appear to be modifying the texture and structure of the soil.

• The majority opinion

Though there may not be unanimous agreement on the matter, the majority opinion of the local people is that the establishment of pine plantations has been a mistake, and that they have lost more than they have gained. While the possible benefits are limited to access to firewood, timber, and income from the sale of timber and mushrooms, the damages encompass the loss of countless means of survival (grazing and the sale of animals and wool, medicines, straw for thatched roofs, food, craft materials, wood from native tree species, water resources).

After this experience, the people now recognize the need for environmental restoration efforts to increase the availability of water, straw, pasture land, and native plants and animals. They place particular emphasis on the planting of native tree species as a key element of this environmental recuperation, "but we can't find anyone to help us with this."

In the meantime, they are faced with the problem of what to do with the pines that have already been planted, at the cost of "great sacrifice". "Now we are saying ENOUGH and are concentrating on native plants, but it would be a shame to destroy what we have." "What's done is done, but we haven't done it anymore since we realized the truth – we haven't planted any new pine trees in over four years."

• The numbers don't add up

From an economic viewpoint, pine plantations appear to have been a bad business move. In fact, when you take into account all of the work already done and still to be done, as well as the loss of resources (especially grazing land) resulting from the plantations, it turns out that the current price of pine timber does not even compensate for the loss of grazing land. The work already done through communal Minga labour includes:

- Dibbling, at a rate of 500 holes/day per family;
- Carting the seedlings to the plantation site, at 500 seedlings/day per family; and
- Planting, which implied 60-100 days of labour per family.

The following work still needs to be done:
- Pruning, at a rate of 50 trees pruned/person/day;
- Clearing of firebreak paths (which has not been and never will be done);
- Thinning (which will be difficult to do, since it requires training and equipment);
- Harvesting (which will require the purchase of chainsaws and fuel);
- Removal of the felled trees from the plantation; and
- Loading onto trucks.

When it comes to timber prices, sales have recently been negotiated with local buyers offering to pay one dollar per standing tree (for 15-year-old trees) on plantations located along the highway. On the plantations that are more difficult to reach, buyers have stated that they "wouldn't cut that wood even if they got it for free." This situation will undoubtedly be repeated in many of the current plantations located on hilltops, on extremely rugged terrain, or far from roads and highways.

The most likely scenario is that the communities will not prune the trees (which will reduce the value of the wood because of the greater number of knots), nor will they undertake the needed thinning work (resulting in smaller diameters), and they will sell the timber as standing trees (for lack of training and equipment for felling and transporting). If this is the case, the community will have lost out economically when the profits from the plantation are compared to what could have been earned in the past when the land was used for grazing. Yet even if the communities undertake the pruning and thinning work and harvest the timber themselves, the finally price they receive for the wood would not compensate for the labour and additional expenditures that these operations entail, and the losses would probably be even greater.

There are two other potential benefits of pine trees mentioned in the region: the mushrooms that grow underneath them, and an essential oil extracted from pine needles, which can be used as a medicinal ointment. Of the two, the mushrooms appear to be the most appealing, since this is a product that could also be exported. Mushroom harvesting is mainly carried out in the area around Salinas, where children are responsible for the picking work.

It is quite interesting to note the statement made by a participant in a workshop held in Guaranda, whose opinion of the pine plantations was more favourable than unfavourable. Nevertheless, even this plantation supporter admitted that "if you analyze the economic aspect, you lose money with pine trees."

• The conflicts

The impacts of the tree plantations (especially on the water supply) affect neighbouring communities as well, which has given rise to conflicts between communities. In 2003, a community in Moya set fire to another community's plantation (some 30 hectares of trees) as a result of a water dispute. When you enter Salinas, you can see a hill once completely covered by a tree plantation that was burned down for similar reasons.

• The beneficiaries

It is abundantly clear that the communities where these tree plantations have been established are not receiving any significant benefits from them. Nevertheless, there are other actors who are already benefiting from the plantations and others who will obtain benefits from them in the future. The first category includes those who produce and sell the seedlings needed to plant trees on thousands and thousands of hectares of land. It is clearly in their interest to continue promoting tree plantations, and this is fact what they are doing.

The region's wood processing industries fall into the second category: in the future, they will have large volumes of wood from the plantations at their disposal. These industries will therefore be able to set their own prices, from their position as a quasi-monopoly buyer dealing with a large scattered group of suppliers. The biggest beneficiary will be a company called Aglomerados Cotopaxi, part of the Durini Group which also owns the ENDESA and BOTROSA forestry companies, both of them infamous for their socially and environmentally destructive practices. Aglomerados Cotopaxi is not merely the only local company with the power to purchase large volumes of wood: it also owns vast pine tree plantations established within the borders of Cotopaxi National Park.

• An uncertain future for the pines

All of these pine plantations face two major threats. One of them is fire. Whether intentionally or accidentally, any one of these plantations could easily go up in flames. On the páramo highlands, fire is used as traditional means of increasing the supply of animal fodder. Firebreak paths are either non-existent or insufficient. Fire-fighting equipment is non-existent as well. The natural conditions (extremely rugged terrain and steep slopes, high winds that typically coincide with the dry season) are further obstacles to controlling fires. Moreover, pine tree plantations are particularly prone to fire because they are essentially large masses of flammable material, which also contain highly combustible resins.

The second threat stems from the fact that these are large-scale monoculture plantations of a single species, *Pinus radiata*, which is particularly vulnerable to attack by the so-called European pine shoot moth (*Rhyacionia buoliana*). This moth is already found in a number of South American countries, including Uruguay, Argentina, Brazil and Chile, and is increasingly likely to enter Ecuador as the area planted with this species of pine continues to grow. If this were to happen, the impact on the plantations would be disastrous, as the larvae of these moths bore into the buds and shoots of the trees, stunting and deforming their growth, and even leading to death in cases of serious infestation.

Beyond these potential problems, the simple fact of the matter is that for the local people, these pine plantations are an episode from which they want to escape as soon as possible. While they do not intend to eliminate the existing plantations, they are not prepared to plant more pine trees, or to replant after harvesting the current crop. Their goal is to restore the natural ecosystem through the incorporation of native species; for the páramo to return to being the páramo once more, and provide them with what they have traditionally obtained from it.

2.4 Land purchases and private investment for the paper industry: the EUCAPACIFIC model

"Forest industry ambitions and eucalyptus are developing together in the coastal province of Esmeraldas…"

Vast plantations of this alien tree are uncontrollably wiping out native forests.

"Travelling to Esmeraldas was always a voluptuous experience: the hot climate, the delicious food, its lively and fun-loving people, the exuberance of its vegetation, the warm rivers that engulf you in a kind of communion, its beaches… Along the sides of the highway, small or large patches of forest are the sign of the rich biodiversity of the region known as El Chocó, which stretches from southern Panamá to the northwest of our own country, and where nature, it seems, is bound and determined to overflow with life… here and there you can make out the slender pambil palms, whose trunks are transformed into works of art by skilful hands… the chapil is another palm, whose fruit is the source of an oil with extraordinarily special qualities, nutritionally comparable to olive oil… Guadua bamboo, in dense thickets, stores within its roots and hollow trunks the water that will serve to maintain an enormously rich variety of living things linked to these plants. In the jungle, trees bearing coveted wood like the guayacán, sande, chapul and tangara share the land with guabas, ceibos and bototillos, while the Fernán Sánchez tree tints this green canvas with strokes of pink and scarlet. The countless ferns, orchids, anthuriums, lianas and vines find an infinite number of places on which to grow and to weave the network supporting the flamboyant animal life celebrated in the verses, legends and songs of Esmeralda, while the hands of craftspeople mould the fruit of the native ivory-nut palm or shells and coral, the fruits of the sea. And when the traveller has almost grown used to this idyllic scene, suddenly a colony of giants rises up, as far as the eye can see, evoking images of distant latitudes. These are the vast stretches of eucalyptus that have been planted in Muisne and Atacames, for the purpose of producing wood chips for paper manufacturing …"[80]

2.4.1 The Eucapacific company

Eucapacific (Eucalyptus Pacífico S.A.) is a consortium that was created in late 2000 to undertake an extensive eucalyptus plantation project on the northwestern coast of Ecuador, in the province of Esmeraldas.

According to a press release from one of the participants in the project, JPower (Electric Power Development Co., Ltd.),[81] this is the first Japanese joint venture "afforestation" project in Ecuador. Starting in January 2001, it involves the establishment of eucalyptus plantations on a total of 10,500 hectares of land.

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80 Paredes, Karina. "*El Nuevo Paisaje Esmeraldeño*". *Ecuador: Terra Incognita*, No. 37, Sept-Oct. 2005.
81 JPower (Electric Power Development Company Ltd.), news release, May 25, 2000.

The eucalyptus planted is to be harvested after seven years, then processed into wood chips locally. The entire output of wood chips would then be exported to Japan for use as the raw material for paper manufacturing by Mitsubishi Paper Mills, another Eucapacific partner.

The objectives of the project, as stated in the 2000 press release, are:
a) to provide a *fast-growing source of imported wood chips* for the Japanese paper industry, as well as
b) contributing to the *preservation of the global environment*,
c) promoting the *greening* of *abandoned farmland and unused land*, and
d) the acquisition of CO2 absorption credits through the Clean Development Mechanism.[82]

The Ecuadorian partner in this project is Expoforestal. The company already had a contract with the Sumitomo Corporation and Mitsubishi Paper Mills and it exported its first shipment of *Eucalyptus globulus* chips (produced in the Sierra region) to Japan in December 1994. It had previously set up a chipping plant in Esmeraldas.

Eucapacific operates in the province of Esmeraldas by buying up land from small landholders and *campesino* farmers. Contact with the local population is handled by *community liaisons*, land is purchased through *intermediaries*, and the hiring of workers is *outsourced*.

• The shareholders

The Eucapacific consortium includes a number of major transnational corporations:

Mitsubishi Paper Mills	
Percentage of shares	25%
Nationality	Japanese

The **Mitsubishi Companies** group operates worldwide through different independent companies in a wide range of sectors, and is the largest business group in Japan today. The first Mitsubishi company was a shipping firm founded in 1870, which soon diversified into areas like mining, shipbuilding, banking, insurance, warehousing and trade. Later diversification of its operations led to investments in an even wider range of sectors, like paper, steel, glass, electrical equipment, aircraft, oil and real estate. In 1946, the Mitsubishi company split into a number of independent companies in compliance with the Japanese postwar government policy of decentralizing industry. Today, in addition to those mentioned above, Mitsubishi companies also operate in such sectors as maritime transport, nuclear power engineering, waste treatment plants, satellites, defence contracting, petrochemicals, beer, and property and casualty insurance, among others.

82 Ibid.

Through its various companies, the Mitsubishi group has been the target of harsh criticism over the destructive impacts of its operations. On 16 October 1996, a coalition of civil society organisations in countries around the world declared an International Day of Protest Against Mitsubishi. An ongoing boycott of Mitsubishi was stepped up with demonstrations in front of the corporation's offices in various cities worldwide.[83] The wrongdoings highlighted by the protestors included:

- Mitsubishi's support of the military junta in Burma;
- The destruction of vast regions of the world's rainforests and the cultures of the people living there; and
- Practicing institutional sexual harassment.[84]

In 1998, Mitsubishi was preparing to build the world's largest industrial salt works next to San Ignacio Lagoon on the coast of Mexico. This was an area that had supposedly been given protected status by the Mexican government as part of the Vizcaíno Biosphere Reserve, and had also been declared a World Heritage Site by the United Nations. The project posed the risk of direct and indirect harm to the natural ecosystems in an extremely fragile desert environment, and endangered the habitats of over 70 animal species, including one of the last remaining breeding grounds for grey whales.[85]

Eventually, an avalanche of criticism and protests and an international boycott of Mitsubishi products forced the corporation to give up on the San Ignacio salt works project.

The Mitsubishi Corporation has timber and mining operations around the world, stretching from the United States to Malaysia and Brazil. Mitsubishi's Alberta-Pacific bleached kraft mill in Canada is one of the world's largest wood pulp processors, operating 24 hours to process 300 truckloads of trees a day. The Mitsubishi-owned Canadian Chopsticks Manufacturing Company reportedly throws away 85% of the trees it cuts down to produce these disposable utensils because "the wood is not white enough."[86]

Sumitomo Corporation	
Percentage of shares	25%
Nationality	Japanese

[83] Rainforest Action Network: *"International protests against Mitsubishi"*, 16 October 1996. E-mail: ranmedia@ran.org

[84] Ibid.

[85] Spalding, Mark. **"***Mitsubishi vs. Reality"*. CorpWatch, 1 March 1998, http://www.corpwatch.org/article.php?id=4069

[86] Rainforest Action Network: "*International protests against Mitsubishi"*, 16 October 1996.

Another Japanese corporate giant involved in the Eucapacific consortium is the Sumitomo Corporation. Like the Mitsubishi group, the Sumitomo Corporation is made up of numerous companies that operate in a range of different sectors. Each member of the group is a company established and developed under the Sumitomo "business principles" but operates independently. Sumitomo does not exist as a company and no specific company within the group rules or influences the others.

The Sumitomo Corporation imports and exports metals, machinery, electronics, chemicals, textiles and foodstuffs, among other products. It is also involved in financial, logistics and real estate activities. Other companies within the group include Sumitomo Mitsui Banking and Sumitomo Life Insurance.

The Sumitomo Mitsui Financial Group has now moved into the emissions market generated under the Kyoto Protocol.

Electric Power Development Co.	
Percentage of shares	17%
Nationality	Japanese

Environmental Engineering Service Co. Ltd.	
Percentage of shares	3%
Nationality	Japanese
(An affiliate of *Electric Power Development Co.)*	

These independent companies form part of Electric Power Development Co. or JPower, and together control 20% of the shares in Eucapacific. JPower is an electric power generation and transmission company whose majority shareholder is the Japanese government.

As a signatory of the Kyoto Protocol, the Japanese government is obliged to reduce greenhouse gas emissions, or purchase emissions reduction credits. It is governments, not industry, that are obliged to curb emissions, which means that reductions or purchases of carbon credits by industry are voluntary and not regulated by any international instrument. This has opened the way for an "uncontrolled market" outside of the regulations established by the Protocol. Japanese industry, divided into 27 sectors, has been instructed to voluntarily reduce emissions until the next government review of the progress achieved, which may lead to the adoption of obligatory domestic reductions outside the sphere of the Kyoto Protocol.

Expoforestal	
Percentage of shares	30%
Nationality	Ecuadorian

The Ecuadorian company Expoforestal is officially the "local" partner in the Eucapacific consortium, although its investment in the project also involves Chilean capital. Expoforestal began exporting *Eucalyptus globulus* wood chips (produced in the Ecuadorian Sierra region) to Japan in December 1994, under contract with the Sumitomo Corporation and Mitsubishi Paper Mills. It had previously set up a chipping plant in Esmeraldas, which has been a constant source of negative impacts because of the irresponsible management of its operations. More than 10 years since it exported its first shipment of eucalyptus wood chips, Expoforestal has yet to complete the procedures to obtain an "environmental license", while causing pollution and health problems among the population where it operates.

In November 2005, an Ecuadorian national newspaper published the following report on Expoforestal's operations:

> **ENVIRONMENT**
> **Mitigation commitments unfulfilled: Pollution uncontrolled**
>
> Despite the fact that Expoforestal's Environmental Management Plan stipulates the mitigation and management of wastes in the form of volatile particles of eucalyptus wood chips, these commitments are not fulfilled.
>
> The mesh fencing erected several months ago to prevent the dispersal of these particles fell down close to a month ago and has yet to be put back up again.
>
> A complaint presented by the Northern Operations Command (COOPNO) a year ago reported that the wood shavings had caused problems for a number of people, especially children, who live in the area, without mentioning respiratory complications.
>
> Expoforestal, which is operating inside the Esmeraldas Free Trade Zone, had still not obtained an Environmental License as of mid-October.[87]

• Government subsidies for Japanese private investment

The initially projected duration of the Eucapacific project is 25 years, and will involve a total investment of 48 million U.S. dollars.

The partners will contribute 20% of the capital needed to start up the project, while the remaining 80% is a subsidy from the Japanese government, which will be gradually disbursed during the first six years of the project in the form of a loan.

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87 http://lahora.com.ec/noticiacompleta.asp?noid=379157, 7 November 2005.

The consortium succeeded in obtaining this loan of public funds from the Japanese government by arguing that this is an "environmentally sustainable" project, and that the eucalyptus plantation will serve to absorb CO2 from the atmosphere and thus compensate for the greenhouse gas emissions generated by the Electric Power Development Co. in Japan.

2.4.2 Globalization, the paper market and the carbon market

• Location and comparative advantages

Japan has established this eucalyptus plantation project in Ecuador for two main reasons. The first is to ensure a fast-growing supply of raw materials to meet the growing demands of the Japanese paper industry. The second is that the comparative differences between the Japanese and Ecuadorian economies make it possible to maximize profits by minimizing production and operation costs, by taking advantage of the low land prices and cheap labour in Ecuador.

Profits are also boosted by selling everything that can be obtained through the plantation activities. In addition to supplying raw materials for paper manufacturing, the fast-growing eucalyptus trees planted through the Eucapacific project are also attractive to Japanese industry because they will absorb CO2 from the atmosphere, generating emission reduction credits that can be sold on the emissions trading market.

Eucapacific acknowledges that Ecuador and particularly the region of Esmeraldas offered the possibility to produce large volumes of wood in a short period of time.

The company plans to harvest the trees every six years. This is sufficient growing time because the favourable climatic and soil conditions will speed up the growth rate of the trees. The fact that the plantation areas are near the Pacific Ocean port of Esmeraldas was another factor contributing to the choice of this location for the project.

There were other factors involved in the selection of Ecuador for this project, which were not openly acknowledged by Eucapacific. These are factors common to almost all countries of the South, and are clearly offered by the area where the company has chosen to set up operations:

- Low land prices;
- Low labour costs; and
- Weak environmental and labour regulations.

• Raw material to feed the paper market

The global paper market is based on the assumption that consumption and demand for paper and paperboard will continue to grow indefinitely:

> "… the most dangerous assumption is that growth in paper demand is inevitable. The FAO projects that global consumption of paper and paperboard will rise from 276 million tons per year in 1995 to 480 million tons in 2010… The United States, Japan and Western Europe combined represent less than 20 percent of the world's population and account for nearly 70 percent of its paper consumption… Between 1989 and 1995, southern hardwood chip exports increased five-fold."[88]

In the moist tropics, where tree growth is continual year-round – as is the case in coastal Ecuador — large pulp mills can be supported by a much smaller land base than in the North.[89]

> "The plantation area required to feed a 500,000 ton-per-year pulp mill in a Nordic country may be up to 16 times the area required in Brazil."[90]

The Japanese investment in Ecuador through the Eucapacific project clearly illustrates the globalization of the market. In 1995, Japan accounted for 10.9% of global paper consumption, but its production of the raw materials needed was essentially insignificant. Japan is the world's largest importer of wood chips, with a 70% share of all imports worldwide in 1994. By 1998, Japan was buying ever larger amounts of wood fibre from countries of the South (Chile, Indonesia, South Africa and Brazil) and is now seeking to become a producer of wood chips in Ecuador.

• …and the carbon?

In establishing vast plantations of eucalyptus trees in the tropical Pacific coast province of Esmeraldas, Eucapacific maintains that one of its objectives is that of "contributing to preservation of the global environment," while also "aiming for the acquisition of CO2 credits" through the Clean Development Mechanism.[91]

Eucapacific is trying to convince the world that by planting alien trees in the last remaining vestige of the Chocó rainforest region in Ecuador, it is helping to "preserve" the global environment. The reasoning behind this claim is that the eucalyptus trees will absorb carbon from the atmosphere.

While it is true that the trees will sequester CO2 while they are growing, the extent to which this carbon sequestering is relevant in *climatic* terms depends largely on how long it is in effect. In order to have any significant impact, the carbon "fixed" by the trees must remain there without

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88 Mattoon, Ashley. "*Paper Forests*", World Watch Magazine, March/April 1998.

89 Annual growth rates of three to five cubic meters per hectare (m3/ha) in eastern Canada and 10 m3/ha in the southern United States pale in comparison to rates as high as 25 m3/ha in Indonesia and 30 to 40 m3/ha in Brazil. And while it takes at least 15 years to grow pine large enough to cut in Alabama, rotations of eucalyptus in Brazil can be as short as six to eight years. Mattoon, 1998.

90 Mattoon, Ashley. "*Paper Forests*", World Watch Magazine, March/April 1998.

91 JPower, (Electric Power Development Company Ltd.), news release, May 25, 2000.

being released back into the atmosphere for the longest time possible. However, the trees planted for the Eucapacific project will be cut down after a mere six years to be turned into paper and the stored carbon will return to the atmosphere.

In reality, the Eucapacific project is profitable for the participating Japanese corporations because they can argue that the CO2 absorbed by the trees planted will compensate for greenhouse gas emissions, which helps them to meet the obligations to reduce emissions imposed by the Japanese government. At the same time, the companies involved in the consortium could market the credits for the carbon supposedly sequestered by the eucalyptus plantations.[92]

For Japan and Japanese corporations, it is cheaper to buy or produce emission credits than to reduce greenhouse gas emissions[93] at the source, which would have a major impact on the economy.

Meeting the *insufficient* targets set by the Kyoto Protocol would require the wealthy countries to adopt major changes in their economies through drastic reductions in consumption levels in order to cut greenhouse gas emissions.

According to *Japan News*, it will be a difficult task for Japan to meet its commitments under the Kyoto Protocol, given that in 2003, its emissions levels had actually increased by 8% over 1990 levels, instead of decreasing. It has been estimated that it will cost Japan 14 trillion yen (around 134 billion U.S. dollars) to fulfil its Kyoto obligations.[94]

It is therefore not surprising that Japan is increasingly focussing attention on the Protocol's *flexible mechanisms*[95] as a means of meeting its reduction target. To lower the costs of fulfilling its international obligations, Japan has embarked on a plan to purchase carbon credits, investing 60 million dollars in this undertaking in 2005 and 200 million in 2006.[96]

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92 The industrialized countries that have signed and ratified the Kyoto Protocol are obliged to reduce their collective greenhouse gas emissions by 5.2% compared to 1990 levels, a reduction that many authors consider insignificant. Research has clearly established that in order to achieve any *real* impact on the climate change problem, the developed economies would need to cut their emissions by at least 70%.

93 Responsible for global warming and climate change.

94 Japan's national target under the Kyoto Protocol is a 6% reduction in emissions compared to 1990. "The Kyoto Protocol will cost Japan over 14 trillion yen", Kyoto News, 9 March 2005.

95 The Kyoto Protocol's Flexible Mechanisms were created to allow industrialized countries to achieve parts of their emission reduction commitments without actually reducing their own emissions. The three mechanisms are Emissions Trading, Joint Implementation and the Clean Development Mechanism.

96 Net-Inform, "Japón abre nuevo plan de compras", http://www.prochile.cl/servicios/medioambiente/noticia_destacada_05_03.php.

2.4.3 Eucapacific in Esmeraldas

The proposal initially announced for the Eucapacific project in Esmeraldas involved planting eucalyptus trees on 10,500 hectares and maintaining 3,500 hectares as *conservation areas* on the land acquired. However, the environmental impact studies submitted by the company refer to an area of 30,000 hectares, which indicates that its real intentions extend far beyond those initially stated.

The output from the trees planted in the area encompassed by the project will be considerable. With a rotation of just six years, the company estimates it that will be able to export 260,000 metric tons of wood chips (worth about 15 million dollars) to Japan annually.

The eucalyptus trees will be cut and converted to wood chips in Esmeraldas itself, and the chips will then be exported by Eucapacific from the port of Esmeraldas to Japan, where Mitsubishi Paper Mills will turn them into pulp and then paper to feed the voracious Japanese market – the world's third largest consumer of paper and paperboard.[97]

• Main criticisms of Eucapacific

Eucapacific was established in the province of Esmeraldas in late 2000 through an aggressive process of buying up land, first from owners of medium-sized parcels of between 500 and 2,000 hectares and later from small landholders. The latter were offered good prices for their land, as well as the promise of employment.

In the end, however, the company failed to live up to these offers. The landowners were not paid the prices that were originally quoted, and many of them feel cheated for having received less money than they were due. This was largely the result in discrepancies in the measurement of the land, which resulted in the former owners being paid for a smaller number of hectares than they actually possessed. The company based its calculations on planimetric measurements, without incorporating slope corrections, and thus avoided paying for the *real* area of the land parcels by failing to account for irregularities in the terrain, which are very frequent in the region where Eucapacific is operating.

"They came with a thing after we had measured the land and it didn't give the full number of hectares, it said there were 44 and my measurements said 58…"[98]

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97 "Resource Consumption: Paper and paperboard" World Resources Institute: http://earthtrends.wri.org/searchable_db/index.php?theme=9&variable_ID=571&action=select_countries. Data based on Food and Agriculture Organization of the United Nations (FAO), 2005. FAOSTAT on-line statistical service, available online at: http://faostat.fao.org

98 Source: Interview in the community of Bunche.

Plantación de Pinus ubicada en las partes más altas de los Páramos de la Comunidad Kawanapamba

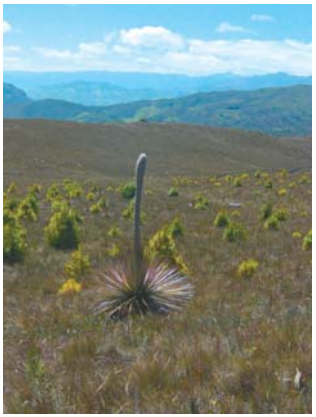
Uso de agroquímicos después de la tala de vegetación nativa, preparando el terreno para establecer plantaciones de EUCAPACIFIC

Disminución del agua. Cooperativa la Unión de Matambal

Plantaciones promovidas por FEPP en el páramo. Provincia de Bolívar, Parroquias de Simiatug y Salinas, julio 2005

Comunidad de Tingo, Provincia de Bolívar, julio 2005

Uso de agroquímicos después de la tala de vegetación nativa, preparando el terreno para establecer plantaciones de EUCAPACIFIC



Plantación de PROFAFOR. Páramo de la comuna San Sebastián de Sig Sig, agosto 2005

Plantación de pino de 6 años de edad, en medio de la vegetación nativa del páramo. Comuna San Sebastián de Sig Sig, agosto 2005

Plantaciones promovidas por FEPP en el páramo. Provincia de Bolívar, Parroquias de Simiatug y Salinas, julio 2005

To extend its control over the entire region, Eucapacific exerted pressure on the *campesinos* whose farms were gradually being left isolated, surrounded by the lands already bought up by the company. One means of pressuring these *campesinos* to sell their land was by fencing off the areas already owned by the company and hiring guards to stop local residents from using the roads that once passed through the area and have now been blocked by the plantations.

"Even the right of way! There's a road that passes along here and goes in there, and they won't let anyone use it anymore. So what are the *campesinos* supposed to do? How can they get off their lands now that they're surrounded? They're forced to sell, because they're trapped in the middle. The company posts guards and they don't let the *campesinos* who live on the neighbouring lands pass through, because they say it's private property, you can't cut through here anymore."[99]

Campesinos are forced to accept outrageously low prices for the land when access to their property is cut off, since it is illegal for them to pass through the neighbouring lands now controlled by the company.

"The project that they organized here is not for the good of the community… In this community we've actually even been trapped in, the people here have no way out, we been genuinely trapped in by them, on these three hectares of land…"[100]

Eucapacific has used other forms of pressure against the local population. These include an open boycott of the goods produced on local farms, property theft, the theft and slaughter of farm animals and poultry, and the violation of specific agreements.

There are even cases of intimidation through concrete threats:

"They paid Mr. G. 500 dollars a hectare for his land… he sold because it was far away from where he lives, and he's old and sick… He had cattle, and in the mornings he'd find them hacked up with machetes, or find the barbed-wire fence torn down… They even threatened to kill him, the workers on the neighbouring fields that were already sold, they were sent to threaten him so that he would sell out and leave… They killed his animals, he'd find them in the morning chopped to pieces, and they ate his pigs… He'd come to his property looking for a pig, and wouldn't find it. He had a lot of cacao growing there, and when he went to harvest it, there was none left. He sold because of the harassment, he didn't want to sell but he had to do it…

"If anyone's animals enter the plantation, they never come out again. They can kill the animals and eat them, and we can't say anything about it. Some people have complained about losing their animals. The workers say that *any pig that comes in here gets eaten*, because they don't want them on the plantation. Those are the orders from the company: any pig that enters there gets killed."[101]

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99 Source: Interview in the community of Bunche.
100 Ibid.
101 Source: Interview in the community of Tortuga.

"Anyone who reports a violation has to leave the community out of fear of reprisals from these gentlemen, the owners of the company. I know that they have bad people working there, they hire them specifically for that: to threaten the people so they don't report what's going on and don't say anything about the problems."[102]

• The consultative process and the broken promises

"The law is clear: in order to undertake any activity that may cause some kind of environmental damage, the community must be consulted. That didn't happen: they had meetings with the people but didn't explain things to them clearly. They would simply show up at a meeting, take it over and run it, and then collect signatures from the people in attendance, and that's what they called *consultative workshops* with the communities…"[103]

In all of the testimony gathered in the area affected by the Eucapacific project, it was clearly demonstrated that the process of "prior consultation" required by the Ecuadorian constitution has not been carried out, and instead, the meetings with local residents are used to make promises that are not kept.

"People sell their land, but without any idea of what is going to be planted there. People sell without knowing… they said that they were going to make pastures for cattle, but that's not what they wanted the land for, they wanted it to plant eucalyptus trees…"[104]

The company's *community liaisons* have visited the communities with offers of workshops and public works *as a form of compensation*, but as of now, these have not materialized.

The offer to undertake public works needed by the population places the potential "donor" in a position of power that can be used to the company's advantage. In the case of Eucapacific, community liaisons have approached communities with a variety of offers and collected signatures from local residents interested in receiving such services as training workshops or basic infrastructure works.

But as the following testimony reveals, the signatures gathered have instead been misused as evidence of the supposed fulfilment of a prior consultation process, a constitutional prerequisite for projects like these.

"They came here almost two years ago. Three people came and asked us questions about what we needed here, people from Eucapacific… So we met with them as a group and told them that what we need most is a road and electric power, which we don't have. They said: Look, we

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102 Interview with Fundación de Defensa Ecológica (Ecological Defence Foundation), FUNDECOL.
103 Ibid.
104 Ibid

can't give you a road or electricity, but we can give you the training you need so that you can demand these things from the government. We're going to give some courses here in El Salto, get everyone here at the meeting to sign up. I was wondering what kind of courses they were going to give and I asked them. They said they were going to teach us how to grow peppers and cacao, and also prepare us to become leaders and go to the government to make our demands…

So they got us to sign those papers, they said it was to make sure we would go to the course. Some of us said yes, and they got almost everyone to sign. And so far those liars have never contacted us about the seminar they said they would give. They've just caused us damage and have never come back. They used our signatures to say that they had come to talk to the community about the eucalyptus trees, we realized that later… When they came they said they wanted to compensate the community here a little… they also said, *the eucalyptus company wants to help you, so we are going to give you this seminar*. And we were convinced it was true, but so far more than a year has gone by…"[105]

There were numerous other testimonies of Eucapacific representatives offering to give courses or workshops. They have also offered to provide support for the creation of community farms. Supposedly, the community would be required to contribute a certain amount of land – half a hectare – while the company would contribute the technology that the *campesinos* could implement in order to achieve purported "*food security*". Some communities have been offered basic infrastructure works and services like drinking water, health care centres, playing fields, roads, computer equipment and training courses.

Therefore, there is ample evidence that Eucapacific did not merely fail to provide the communities in the areas affected with the full, correct information needed for them to be adequately informed of the impacts caused by the large-scale planting of eucalyptus trees. In addition, the company's true intent was disguised with offers that were never fulfilled. This was the strategy used to manipulate the local population and gather signatures that have been fraudulently used to validate the company's operations.

It should be stressed that these signatures are presented as proof of a supposed prior consultation process that forms part of an environmental impact study, both of which are required to obtain an "environmental license". These are legal documents that validate the company's operations in the eyes of the Ministry of the Environment. Therefore, the testimony gathered implies that Eucapacific is committing the crime of perjury.

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[105] Source: Interview in the community of Tortuga.

• Offer of employment

As is the case in the other tree plantation models previously described, it is quite likely that the *offer of jobs* is the most convincing argument of all when it comes to gaining the acceptance of local communities and governments. The purported generation of employment is consistently used to promote the establishment of large-scale tree plantations. Like many others before them, the communities in the area where Eucapacific is operating were convinced that the company's activities would create jobs, and that local residents would be hired to fill them. Instead, the workers on Eucapacific's plantations have been brought in from outside the area, and are hired through an outsourcing system.

"They didn't even get people from here to work for them. They brought people in from outside, because nobody from here went to work for them. They didn't even ask… They bring people from all over the place to work for them. There's almost no one from the community working, they bring in their own people, they don't hire people from the community… They come to spray chemicals, to clear the land with machetes, to plant that stuff… This is work that people from here could do, even me, all those jobs, clearing the land with machetes and spraying chemicals, to prepare the places where they're going to plant the trees. Anyone can do that kind of work…"[106]

The employees working on the Eucapacific plantations are not hired by the company itself, but rather by an outsourcing agency, which means that Eucapacific is free from any responsibilities towards these workers.

The outsourcing agency hired by Eucapacific is a Chilean company called ISM (Institute Service Management). As their employer, ISM is legally responsible not only for paying the workers their wages, but also for other obligations established by labour standards, such as social security contributions, vacation and severance pay, and medical insurance coverage. But according to the workers interviewed, they are paid only for the days they work. They receive no vacation pay, their food, transportation and medical costs are not covered, and no social security contributions are made on their behalf, although this is a right of all workers.

Although the work on the plantations could be done by people from the neighbouring communities, the local residents believe that the company hires people from outside the area to ensure that they will "go along" with certain policies and practices that are not socially responsible, such as the previously mentioned theft and killing of animals from the small properties bordering on the lands purchased by the company.

"They don't hire people from the community because they hire people who are willing to do anything. That's why they bring people in from outside, because they don't care what they have to do. The other day there were a bunch of people working, here inside, when those pigs went missing, but they were people from other places…"[107]

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[106] Source: Interview in the community of Tortuga.
[107] Ibid.

• Plantation work

The different activities involved in establishing a tree plantation like this one entail hard physical labour, as can be observed in the table below:

Clearing:	Scrub or pasture is cut to a height of 20 to 25 centimetres.
Felling:	Any trees on the site are cut down with chainsaws.
Spraying:	Herbicides are applied to the entire area to kill any plants that could compete with the tree seedlings. Various products are used, including glyphosate, Amina, Coloso and Tordon, in quantities of four to six litres a hectare, applied as many times as necessary during the first 12 to 14 months. Afterwards, applications are repeated twice yearly for maintenance purposes.
Mounding:	The soil is tilled into 40 x 40 x 40 cm mounds, with each occupying a 2 x 3 metre planting space.
Ant control:	The entire area is sprayed with an insecticide called ATAKill (whose main active ingredient is arsenic) in quantities of 6 kg per hectare. Subsequently, this product is applied specifically to ant hills, both within the plantation area and on neighbouring lands.
Planting:	The seedlings are kept in a temporary nursery during a 15-day adaptation period and then planted in the mounds.

Working conditions

Approximately 400 workers are brought in to work on a 400-hectare plantation establishment. They all live together in a single camp if the plantation has access to roads. Otherwise, they are divided among three or more camps distributed throughout the plantation areas.

The camps with road access are usually very large. They are made up by barrack huts that each house 30 to 40 men, who sleep in three-tiered bunk beds. These huts are built of poor quality wood with zinc roofs, and most have no sanitary facilities. The few that do are equipped with barely one septic tank for every 50 inhabitants. Within a week these septic tanks are full and overflowing. This poses a severe health threat, since the contamination of drinking water with fecal wastes facilitates the spread of diseases, while the overflowing septic tanks can also serve as a breeding ground for disease-spreading mosquitoes. This feces-laden liquid waste also flows into nearby rivers and streams.

This is the situation observed in the camps in the Mútile, Elba Adriana and Quititos plantations. In addition, toxic chemical products (herbicides, pesticides and fertilizers) are stored next to the dining halls and underneath the barrack huts, exposing workers to a serious risk of poisoning, against which they are completely unprotected.

In the camps scattered throughout the jungle, the workers sleep in makeshift shelters with plastic roofs and walls that measure five metres by five metres or less. An average of six workers are housed in each one. They have no access to basic services of any kind (running water,

electricity) and unlike the larger camps, they are not even equipped with latrines. As a result, the nearby rivers and other sources of water are directly contaminated by the workers' excrement.

Despite the dangers involved in forestry work, the workers are not supplied with adequate protective equipment for the different activities they must carry out. There is no drinking water available in the areas where they work, no type of medical assistance, and no access to medicines. In the case of a medical emergency, there is no transportation available to take the victim to a nearby health care centre. Cases of poisoning from contact with the chemicals used are commonplace.

There are frequent occurrences of health problems like fever, diarrhea, vomiting, coughs, dizziness and headaches. There have also been numerous cases reported of symptoms like blurred vision, nasal congestion, sore throat, lack of appetite and a variety of skin problems, like rashes and blisters. Moreover, the activities carried out by the plantation workers result in constant workplace accidents, for which the employers take no responsibility. According to the people interviewed, sick or injured workers are basically left to their own devices.

The employers also fail to provide effective social security coverage, which is supposed to be the right of all workers. In some cases, the employers do make social security contributions, but not for the full time that the workers are employed. It is also quite common for workers to be contracted for periods of less than three months, which happens for two reasons:

- In some cases, this is the result of a clever strategy on the part of the employers to avoid making social security payments for their workers. According to Ecuadorian labour legislation, a worker can be hired on a *temporary contract* – or *on trial* – for up to three months. After three months, the worker is considered to be under *permanent contract*, and the employer is obliged to make social security contributions on his or her behalf, into addition to other obligations.
- Another reason why many workers are contracted for periods of less than three months is because plantation work is typically short-term, temporary work. This contradicts one of the supposed benefits offered to the community by Eucapacific, that of the "guarantee of permanent jobs."[108] In reality, due to the nature of the industry, most of the labour is required and contracted only during the initial phases of plantation establishment, a period of roughly three to four months. After that point, most of the workers are laid off, since once the trees are planted, all that the company needs are guards to protect its property.

The salary earned by workers on Eucapacific plantations, for 22 consecutive days of work, eight hours a day, is between five and six dollars daily, for those who have permanent contracts and social security coverage. This works out to an average of 133 dollars a month, which is less

[108] Castro Poblete, Iván. "Análisis sobre los requerimientos de Estudios de Impacto Ambiental y Licencias Ambientales". Official letter submitted to the Ministry of the Environment, Eucapacific.

than the official minimum wage. In the case of workers hired on a temporary contract for less than three months – which means the employers are not obliged to make social security contributions on their behalf – the average pay for a day's work is between four and five dollars.

Workers receive no pay on their days off, and sick pay is non-existent. The outsourcing agency also deducts the cost of the food it provides to the workers from their pay.

The case of a Eucapacific worker
(Based on an interview conducted 2 December 2005)

Ademar Sánchez Solórzano, 25, worked on the Palmas Juntas plantation in the province of Esmeraldas from November 2004 until October 2005. His job was weeding, which he carried out with a machete or by spraying with chemical products like glyphosate. The only protective equipment supplied to workers responsible for spraying is a thin paper mask.

Ademar became ill. He broke out in an itchy rash that covered his body and was aggravated by perspiring and exposure to the sun. The rash took the form of tiny blisters that constantly oozed a foul-smelling liquid.

Given the lack of medical personnel on the plantation, a company official sent Ademar to the SOLCA cancer hospital (a public medical facility) in Guayaquil. He was also referred to the dermatology department at Luis Vernaza Hospital. The company offered to pay Ademar's salary for three months while he recovered, but when he went to his immediate superior to arrange this paid sick leave, he was fired on the spot instead.
Workers like Ademar have no way of taking legal action against the company, or of continuing the medical treatment they need.

2.4.4 Biodiversity in the Mache Chindul Tropical Rainforest Reserve

In the province of Esmeraldas, Eucapacific plantations have been established in the communities Maldonado Sur, Maldonado Norte, Vilsa, Tortuga and Palmas Juntas in the municipality of Muisne, and in the Viche, Colope and Muchín communities in the municipality of Quinindé. All of these surround the Mache Chindul Tropical Rainforest Ecological Reserve.

The reserve is marked by a high degree of biodiversity and additionally serves to protect the sources of important waterways. It is also the last surviving rainforest remnant in the south of the province.

The main functions of the rainforest are to preserve biodiversity and regulate the water cycle, ensuring that the rain that falls during the wet season continues to feed the area's rivers and streams throughout the year. In areas where eucalyptus trees are planted, water becomes increasingly scarce, generating serious impacts. Added to this are the effects of the chemical products regularly used on plantations.

The soil in forests is home to an abundance of micro-organisms that play a vital role in the life of the forest ecosystem as a whole, by facilitating the decomposition of organic matter. Forest soil is rich in nutrients and micro-nutrients, and supplies large amounts of nitrogen. By comparison, the soil in monoculture tree plantations contains very few or sometimes none of these micro-organisms, leading to much lower rates of decomposition. The absence of micro-organisms, decrease in water supply and heavy use of chemical pesticides and fertilizers on plantations cause irreparable damage to the structure and life of the soil.

The destruction of protected areas

Eucapacific chose the areas surrounding the Mache Chindul Ecological Reserve to establish its plantations because they offered ideal climatic, soil and water conditions for rapid growth, making it possible to harvest the eucalyptus trees just six years after planting.

The Mache Chindul Ecological reserve occupies 70,000 hectares between the provinces of Esmeraldas and Manabí. It represents one of the most important rainforests on the Ecuadorian coast, with an extremely high degree of biodiversity and a large number of unique native species of flora and fauna. It also encompasses a mountainous hydrological system that feeds major rivers in both Manabí (the Cuaque, Cojimíes and Cheve rivers) and Esmeraldas (the Muisne, Atacames, Tiaone and Dógola rivers).

Another area affected by the Eucapacific plantations is the Muisne River Wildlife Refuge, one of the few surviving mangrove forests on the Muisne River estuary, part of the Bunche-Cojimíes mangrove ecosystem. The refuge covers an area of 3,173 hectares rich in nutrients and bio-aquatic species (shellfish and crustaceans). It is also a nesting site for frigatebirds, pelicans, egrets, cormorants and other resident and migratory birds.

In spite of industrial shrimp farming activities in the region, the ancestral users of the mangrove ecosystem have managed to preserve, protect and recover this remnant of mangrove forest for sustainable community use. There is no land tenure or legal ownership over this area, although there has traditionally been a system of community management, especially with regard to the harvesting of shellfish and crustaceans and artisanal fishing.

Vast plantations of eucalyptus trees have been established in Muisne, in many cases after the clearing of native forests, in violation of a bylaw adopted to protect biodiversity in the Muisne River estuary basin. This bylaw specifically prohibits monoculture plantations that are harmful to the environment.

Ecuadorian national newspapers like *La Hora* and *El Comercio* frequently publish reports of problems associated with the introduction of eucalyptus plantations in the Costa region.

"Despite the legal prohibitions and its failure to comply with the prerequisite of obtaining an environmental licence, Eucapacific has been found guilty of cutting down native forest in the Colope region, and tried and sentenced as a result. A number of other claims have been filed in the province's courts, including one regarding the 3,000 hectares of forest razed on the banks of the Huele and Viche Rivers."[109]

Eucapacific has also established eucalyptus plantations in the Matambal River basin, which has had a serious impact on the residents of Muisne island, who had plans to use water from this river for a project to develop a drinking water supply system. Since the introduction of the eucalyptus trees, the river's water level has significantly diminished, and the remaining water is seriously contaminated by agro-toxins. As a result, the Matambal River can no longer be used as a source of drinking water for the local population.

A number of the waterways that pass through Eucapacific's plantations flow into the coastal mangroves, directly affecting the reproduction and survival of the species that live there.

Rain washes the herbicides which are sprayed on the plantations into the area's rivers and streams, leading to the death of bio-aquatic species. The contamination resulting from agro-toxin use has also resulted in cases of poisoning. The residents of Las Delicias, a community in the municipality of Quinindé, filed an official complaint against Eucapacific for having caused the poisoning of domestic animals through the toxic insecticides used on the eucalyptus trees.

There has been a significant decrease in the water level of the Bunche, Aguacate, Róbalo, Tortuga and Casuela rivers, which means that the local residents who used to depend on these rivers for water transportation are now forced to travel by land. In addition, the Tortuga, Península, Santa Cruz and San Isidro rivers have been seriously contaminated, owing to the company's practice of using rivers and streams to rinse out the equipment used to spray toxic chemicals. There have been numerous cases of poisoning reported as a result of this contamination. It should be stressed that the residents of Tortuga and other communities in the area depend on these rivers for their drinking water, and have continued to consume this water despite the frequent appearance of dead fish, killed by agrochemical poisoning.

Crops like bananas have been impacted by the scarcity of water provoked by the large-scale planting of eucalyptus trees. Decreased water levels have also led to the practical disappearance of species like crabs and crayfish. According to a resident of the community of Tortuga:

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[109] Paredes, Karina. *"El Nuevo Paisaje Esmeraldeño", Ecuador: Terra Incognita,* No. 37, Sept-Oct. 2005.

"We have faced two plagues, two enemies: before it was the shrimp farms, now it's the eucalyptus."

2.4.5 Popular resistance initiatives

In 2002, the communities and local civil society organizations like the Women's Forum, People's Parliament, Committee for the Defence of the Rights of Muisne, the local branch of the National Teachers Union (UNE), the Catholic Church, the Ecological Defence Foundation (FUNDECOL) and Acción Ecológica joined together to publicly urge the government not to issue an environmental licence for eucalyptus plantations in the Muisne region. Despite the criticisms put forward and the fact that it was illegal to do so, the Ministry of the Environment nonetheless issued this licence in October 2003, three years after the plantations had been established.

The above-mentioned organizations then embarked on a campaign to inform the local population of the impacts of commercial tree plantations. The goal of this campaign was to create awareness among the local *campesinos* so that they would not sell their lands to the company. Also participating in these efforts were international representatives of the World Rainforest Movement and the Latin American Network Against Monoculture Tree Plantations. The campaign included demonstrations in the cities of Esmeraldas and Quito, with widespread public participation.

In June 2003 the participating organizations focussed their efforts on the enforcement of the bylaw for the protection of biodiversity in the mangrove and rainforest ecosystems in the Muisne estuary basin. Despite the passage of this bylaw, which prohibits the establishment and exploitation of monoculture tree plantations that are harmful to the environment, Eucapacific has continued its operations in the area.

• Complaints filed with national authorities

Reports denouncing these irregularities have also been filed with the Environmental Protection Committee of the Ecuadorian Congress. This committee, along with representatives of the Ministry of the Environment, undertook an inspection of the company's activities. This inspection uncovered concrete evidence of the destruction of primary forests, the contamination of water resources, the death of fish and bio-aquatic species in the area's waterways, detrimental effects on the health of the local population, and the prohibition of free passage along paths and roads that have been used by the population for generations. It was also determined that Eucapacific does not comply with legal standards and procedures.

As a result, the congressional Environmental Protection Committee called on the Ministry of the Environment to immediately halt Eucapacific's activities in Muisne. Instead, the ministry imposed fines on the company that have still not been paid. At the same time, evidence of the irregularities committed by the company was presented to the Japanese embassy in Ecuador, which has failed to respond to these criticisms. Eucapacific's violations have also been reported to the Ecuadorian Attorney General's Office and the Office of the Comptroller General.

During a public hearing held in Muisne in October 2005, the minister of the environment publicly pledged to suspend Eucapacific's environmental licence to operate in Muisne, and to launch an investigation into the irregularities reported.

That same month, a government inspection demonstrated that the plantations had in fact been established through the destruction of primary forests in conservation areas, and that the company had planted eucalyptus trees extremely close to the region's waterways. There are also plantations established outside of the areas stipulated in the environmental management plan that was submitted to and approved by the Ecuadorian government. All of these factors constitute more than sufficient grounds to revoke the company's environmental licence.

• The Municipal Council speaks out

In November 2005, the Expanded Council of the Municipality of Muisne passed a resolution through which "the establishment of new eucalyptus plantations in the municipality is strictly prohibited." The council also established compensation payments to be made for environmental damage and taxes to be paid on the harvesting of the wood by Eucapacific.

• Other actions

Community protest camps were organised to strengthen the process of social mobilization, with the participation of representatives from numerous provinces. This process led to the creation of a group called Youth in Action, formed by local residents to defend the environment.

A draft provincial bylaw was drawn up to prohibit the planting of eucalyptus trees in the province of Esmeraldas. The draft bylaw was officially presented to the provincial government during a public demonstration in the city of Esmeraldas, the provincial capital.

3. THE BENEFICIARIES OF THE PLANTATIONS

3.1 National wood industry

The forestry industry in Ecuador has focussed on the extraction of wood from tropical forests. The destructive operations of this sector have been left uncontrolled by the different national regulatory bodies, and accusations of corruption and human rights violations abound. Forestry company activities have led to major deforestation and degradation of the remaining forests, as well as the displacement of the local population as a result of the aggression aimed against them.[110]

For example, in the province of Esmeraldas, deforestation claims 20,000 hectares every year, which represents 400,000 cubic metres of wood. These figures are actually underestimates, because there is no way of precisely determining the amount of wood extracted, although it has been predicted that if logging continues at this pace, the province's forests will completely disappear in less than 15 years.[111]

The forestry companies have operated outside the areas for which they have been granted concessions, have failed to comply with forest management plans, and have undertaken no reforestation efforts. In the meantime, the payments they make to the government are more symbolic than anything else.[112]

Despite this ongoing destruction, Ecuador imports four times more forestry-related products than it exports.[113] The meagre revenues contributed to the national economy by the forest industry contrast sharply with its overwhelmingly negative impacts, which can be summed up as the "scant generation of value added versus an accelerated process of deforestation."[114]

While failing to actively contribute to strengthening the national economy, the forestry industry also exerts considerable political pressure.

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[110] The companies most infamous for their disastrous environmental practices are ENDESA S.A. and other forestry companies owned by the Peña Durini Group in Ecuador (including BOTROSA, SETRAFOR, and Fundación Forestal Juan Manuel Durini or FJMD). These companies have also been repeatedly denounced for violating the human rights of the *campesinos* in Esmeraldas. In response, they have falsely accused the *campesinos* of "terrorism". http://www.accionecologica.org/webae/index.php?option=com_content&task=view&id=540&Itemid=7708

[111] "Los Bosques se Talan con la Venia Oficial". *El Comercio,* Section B, p.8. 27 December 2005.

[112] Carrere, R. "Gobierno y Empresas Responsables de la Destrucción", 2003. http://revistadelsur.org.uy/revista.067/Ecologia.html

[113] McKenzie, Merylyn (1994). La política y la gestión de la energía rural: la experiencia del Ecuador. Quito, FLACSO.

[114] FALCONI et. al., (2005). Evaluación de la Política de Manejo Forestal, FLACSO, p.252.

"The line most forcefully promoted by the forestry sector is that conservation should be limited to protected areas, and that the rest of the forests should be considered *productive*. This sector supports proposals for repopulating *forestry lands*…"[115]

In the case of the introduction of tree plantations in the central Sierra region of Ecuador through government programmes and non-governmental initiatives backed by international cooperation (see section 2.3, the FEPP Model), the *production* of wood has not served to benefit local populations.

Instead, the local communities have been forced to absorb the costs of care and maintenance of the plantations, as well as the unquantifiable but enormous impacts on the soil, water and biodiversity.

The small amount of wood obtained from these plantations is being sold at ridiculously low prices that do not even come close to compensating for the labour required to produce this wood, not to mention the environmental damage and economic losses provoked by the establishment of tree plantations in the Andean páramo highlands.

On the plantations visited, there are a number of tasks that still need to be carried out before the wood can be sold (pruning, thinning, harvesting, removing the logs from the plantations and loading them onto trucks). This is work that it will be difficult for the communities to do by themselves, because of the training and equipment required, including the purchase of chainsaws and fuel.

As was seen earlier, in the case of adult pine trees (15 years old) on plantations bordering the highway, local sales have been negotiated with buyers who have offered to pay one dollar per standing tree. In plantations that are more difficult to reach, the buyers have said that they "wouldn't cut that wood even if they got it for free."

The buyers are chipboard manufacturers who are the only ones with the capacity to harvest and transport the trees, and can therefore profit from the cut-rate prices that the communities are willing to accept. This is a blatantly unequal transaction, in which the buyer has a clear advantage and is able to set the price and conditions, while the sellers – the communities – are at a disadvantage and therefore obliged to accept, since they have no other potential buyers, nor the tools and skills to harvest and market the wood themselves.

[115] Ospina 2000 in: Falconi et al, (2005), Evaluación de la Política de Manejo Forestal, FLACSO, p.246.

• The political stance of the forestry and timber sector

"The public sector currently demands an environmental impact study for all projects. In many cases, these impact studies are considered a mere formality to be complied with… among public functionaries and directors, environmental considerations are viewed as anything from a *fashion* to a series of *restrictions* imposed from abroad… Certain aspects, like administrative prerequisites and controls over activities, are conflictive and difficult to implement…"[116]

Ecuador's forestry sector[117] is now promoting a reform of the way forestry activities are dealt with by the government, or as they call it, an "Updating of the Strategy for Sustainable Forestry Development in Ecuador."[118]

This "updating" would entail, among other things:

- the creation of a permanent Forestry Development Management Committee;
- the creation of exclusive national funds for management of plantations, for which the government would be expected to establish a financing plan;
- the entry of forestry and timber companies into the environmental services market.

And perhaps most troubling of all:

• the industry is demanding that the forestry sector be transferred from the jurisdiction of the Ministry of the Environment to the Ministry of Agriculture, so that plantation activity will be classified as "forestry crop production" and thus exempt from environmental controls and the need to carry out environmental impact studies. Despite entering into the domain of the Ministry of Agriculture, the forestry sector is asking for its accounts to be incorporated into the national accounts independently from those of the agricultural sector.

The forestry companies have used different arguments to have their activity viewed as "crop production", which would not be inaccurate. However, their ulterior motive in requesting what appears to be a simple change in the classification of this *productive* activity is to be removed from the jurisdiction of the Ministry of the Environment, which would free them from the need to comply with environmental standards.

Meanwhile, the forestry and timber companies are demanding to be exempted from the requirement for environmental impact studies, arguing that the criteria for evaluation are based on the analysis of the oil industry, but at the same time, they are pushing for the creation of a

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116 Ospina 2000 in: FALCONI et. al., (2005), Evaluación de la Política de Manejo Forestal, FLACSO, p.250.

117 This sector is composed of companies devoted to two activities: logging and timber processing (from sawmills to the manufacture of plywood, pulp and paper). FALCONI et. al., (2005), Evaluación de la Política de Manejo Forestal, FLACSO.

118 A draft of this proposal was presented at the 2nd National Workshop on 9 September 2005.

national fund to finance forestry sector development, which would itself be financed by oil export revenues.[119]

• Eucapacific exerts pressure on the Ministry of the Environment

As a means of pressuring the authorities through public opinion, Eucapacific has put forward a number of arguments – which could essentially be called threats – aimed at gaining acceptance of its demands. The following "report" was published in a national newspaper:

> **EUCAPACIFIC WILL LEAVE THE COUNTRY IF IT IS NOT GIVEN GUARANTEES TO INVEST IN ESMERALDAS**
>
> The lack of incentive for foreign investment in Ecuador has led the Japanese company Eucapacific to consider pulling out of the country, where it had planned to invest 48 million dollars in planting eucalyptus trees in Esmeraldas.
>
> Tomoe Satoh, the company's administrative manager, said that the main problems lie in the lack of knowledge of how to treat foreign investment in the forestry sector when it comes to control procedures. For example, he noted, the Ministry of the Environment has no clear guidelines on the implementation of environmental management legislation and is exceeding its authority in its demands of the company.
>
> Taken from: "Eucalipto, un árbol polémico", *El Universo*, 10 September 2005.

This "news story" is clearly aimed at mobilizing public opinion behind the political demands made by these Japanese investors. The Eucapacific representative would like the public to believe that the Ministry is "exceeding its authority" in requiring the company to comply with an environmental impact study in order to be granted a licence to plant 10,000 hectares of eucalyptus trees in the last surviving remnant of the Chocó rainforest in Ecuador.

Because Ecuador is a poor country, it was essential to mention how much money could be "invested" in the country and might be lost because of the "lack of incentive for foreign investment" or "excessive" environmental requirements.

An official letter sent to the Ministry of the Environment, titled "An analysis of the requirements for environmental impact studies and environmental licences" and signed by engineer and Eucapacific consultant Iván Castro Poblete, calls on the minister of the environment to use her powers "to exempt plantation activity in Ecuador from the environmental licensing process and rule that it not be required."

The Eucapacific consultant argues that:

- the environmental impact study acts as "a difficult barrier to overcome"; and
- the plantations were established without the need for environmental licences to be granted by the Ministry of the Environment, and the demand for more complex studies, like environmental impact studies, could hinder the establishment of new forestation projects.

After a simplistic analysis rife with inaccuracies and generalizations, the Eucapacific consultant ends the letter by asking the minister of the environment to release plantation activity from the need to conduct environmental impact studies.

The inaccuracies found in the letter include the following statements:

a) that "Ecuador is a country clearly suited to forestry";
b) that "the lack of a serious forestation process signifies the continuation of low levels of socioeconomic development";
c) that "failing to develop plantation activity entails a negative effect on the land that is becoming progressively deteriorated and spurs the migration of the population from the countryside to the cities";
d) that "the negative impacts of the development of plantations are outweighed by the positive effects: the guarantee of permanent employment and the improvement of the economy, among others"; and
e) that "tree plantations are important for guaranteeing the quality of the environment in areas that are undergoing a process of environmental degradation due to the use of the soils in agricultural or stock-raising activities, and that these plantations provide positive solutions for the improvement of the environmental quality of degraded areas."[120]

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[119] Presidency of the Republic of Ecuador. Lucio Gutiérrez Borbúa. Draft executive decree for the creation of the National Council for the Promotion and Development of Forestry (CODEFOR).

[120] There are numerous reasons why this argument in particular is utterly false. Large-scale commercial tree plantations tend to degrade soils owing to a number of factors. They provoke soil erosion because the soil remains exposed during the first two years following the plantation of the new trees and another two years after the harvest. They provoke the loss of nutrients, both through erosion as well as thanks to the harvesting of large volumes of timber every few years. They also cause a loss of balance in the recycling of nutrients, because the tree plantations are made up of non-native species, and the local organisms which are adapted to bring about decomposition have great difficulty in acting on the organic material which falls from these trees. In addition, the soil is compacted by the use of heavy machinery, which prevents good drainage and further facilitates soil erosion. Because of these and other impacts, it will be very difficult to reconvert these lands back to agricultural uses. Meanwhile, both the quantity and quality of water are affected by tree plantations. Eucalyptus trees in particular consume large amounts of water and also make it hard for water to filter down through the soil. The little water left is contaminated by the intensive use of agro-chemicals required on this kind of plantation. Carrere, Ricardo. "*Ten Replies to Ten Lies*". Briefing paper, Plantations Campaign, World Rainforest Movement, 1999. http://www.wrm.org.uy/plantations/material/lies.html

These statements were not actually authored by the engineer and Eucapacific consultant who signed the official letter sent to the minister of the environment. They were in fact copied from the conclusions of a document released by the International Tropical Timber Organization (ITTO) and the Corporation for Forest and Timber Development (CORMADERA), which could perhaps be more accurately referred to as the *dogmas* that guide the discourse on industrial tree plantations. These supposedly *irrefutable* truths are actually more like *urban myths*. They claim, for example, that large-scale commercial tree plantations offer the guarantee of permanent employment, when it has been seen around the world that these projects only provide jobs during the initial plantation establishment phase, and furthermore, lead to the displacement of the population and their means of survival by replacing local vegetation with exotic tree species.

> "…Large-scale plantations generate employment mainly during planting and harvesting. After the trees have been planted, employment opportunities fall dramatically… The few jobs generated are usually of the unskilled, seasonal variety, with low salaries and labour conditions which are characterized by bad food, inadequate accommodation and non-compliance with current labour legislation… In many countries, plantations cause the former occupants of the land to lose their former livelihoods. It is common for these plantations to be established on land used for subsistence farming, so that the tendency is towards a net loss of jobs… In almost all cases, tree plantations lead to the expulsion of local communities, especially to the slums on the outskirts of cities."[121]

3.2 Foreign pulp and paper industry

"The forestry sector is a very important segment of the paper industry in Latin America and the world…"[122]

The establishment of large-scale industrial tree plantations in Ecuador today responds to the needs created by the growth of the global paper market (since 90% of the pulp used for papermaking comes from wood[123]).

According to Larry Lohmann,[124] the pulp and paper industry's current drive towards larger scale and global expansion cannot be explained solely by "economics", but also has a political and ideological component. Although the industry may argue that this expansion is needed to

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121 Idem

122 De Freitas, Manoel. "Sudamérica será clave en la elaboración de madera para celulosa y papel". 11 May 2005. http://www.papermarket.cl/papermarket/site/pags/20050511004357.html

123 De Freitas, Manoel. "Sudamérica será clave en la elaboración de madera para celulosa y papel". 11 May 2005. http://www.papermarket.cl/papermarket/site/pags/20050511004357.html

124 Lohmann, Larry. "Pulp, Paper and Power: How an Industry Reshapes its Social Environment", The CornerHouse, 1995. http://www.thecornerhouse.org.uk/item.shtml?x=52196

meet the growing global demand for paper, "the evolution of pulp and paper technology has always been intertwined not merely with profit but with the attempt of small elites to rearrange structures of power in their favour."

It should be stressed that greater consumption of paper does not reflect a particular country's level of literacy. Greater paper consumption is essentially indicative of higher levels of consumption in general, as well as higher degrees of wastefulness in a given society.

Lohmann stresses that growing environmentalist resistance to the pulp and paper industry's exploitation of forests in individual countries has merely tended to encourage companies to organize fibre production on a hemispheric or global scale.[125] This view is shared by Ashley Mattoon, who notes:

"Over the past 20 years…the wood fibre supply has begun to shift southward… In many southern countries, the prospect of a pulp and paper bonanza has resulted in lavish government subsidies and a rush of foreign investment… Between 1989 and 1995, southern hardwood chip exports increased five-fold."[126]

Large forestry companies frequently claim that the large-scale tree plantations established in the South make use of "degraded lands", and thus contribute to environmental recovery. In actual fact, the industry has little interest in investing in "degraded land"; what draws them to countries of the South, like Ecuador, is the fact that they offer land suited for high growth rates of the species that the market wants, as well as a year-round supply of water and easy access to nearby processors or ports.[127]

Moreover, in Ecuador and other southern countries, native vegetation – including forests – is being destroyed in order to feed the international wood chip market. In Chile, for example, "an estimated 20,000 hectares of native forest have been logged each year, largely to make way for pulp plantations."[128]

In the global organization of the "new world order" being imposed by the pulp and paper industry, there are three areas targeted to meet the growing demand for wood fibre: South America, Indonesia and Australia.[129]

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125 Ibid.
126 Mattoon, Ashley. *"Paper Forests"*, World Watch Magazine, March/April 1998.
127 Lohmann, Larry. "Pulp, Paper and Power: How an Industry Reshapes its Social Environment", The CornerHouse, 1995. http://www.thecornerhouse.org.uk/item.shtml?x=52196
128 Mattoon, Ashley. *"Paper Forests"*, World Watch Magazine, March/April 1998.
129 De Freitas, Manoel. "Sudamérica será clave en la elaboración de madera para celulosa y papel." 11 May 2005. http://www.papermarket.cl/papermarket/site/pags/20050511004357.html

The worldwide pulp and paper market now involves a total of over 300 million tons of paper and 200 million tons of pulp annually. Meanwhile, prices continue to rise alongside production: in one year, the price of short fibre increased by close to 14%, and over 50% more fibre is being produced today than in 1995.

One of the most serious problems is that the pulp and paper industry is working towards *politically incorrect* goals. For example, on the 50th anniversary of Industria Papelera Atlas, Peru's largest paper manufacturer, Brazilian pulp, paper and forestry consultant Manoel de Freitas shared his vision of the current and future prospects of the global pulp and paper industry.

De Freitas believes that there are "more than auspicious" conditions for the growth of the paper industry in Latin America. In a presentation highlighting the "key" role that will be played by Latin America in the production of wood for pulp and paper, he maintains:

"The pulp and paper industry in Latin America has extraordinary prospects for growth and exports to international markets, as part of new trend being headed up by Brazil."[130]

The paper industry's "prospects for growth" in Latin America are illustrated by comparing the levels of consumption of paper and paperboard in the industrialized nations to those of Latin American countries:

"The consumption of paper and paperboard in the United States, Canada and other industrialized countries is extremely high in comparison with the countries of Latin America. This means that we have enormous potential for the consumption of paper and paperboard."[131]

In view of the differences, the industry has decided that the paper consumption levels of the wealthy countries should be the "goal" to pursue in Latin America. In other words, the Latin American countries should match the consumption levels of the wealthy countries in order for the pulp and paper industry to realize its "extraordinary prospects for growth."

It is politically incorrect to think that the countries of the South should imitate the behaviour or consumption patterns of the countries of the North, when it has been demonstrated that:

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[130] Brazil currently has five million hectares of eucalyptus plantations, primarily used to produce pulp for paper manufacturing. Ignoring the objections raised, Brazilian President Luiz Inácio Lula da Silva has proposed the establishment of another six million hectares of new eucalyptus plantations by the year 2012. Eucalyptus trees have been planted in Brazil for over 30 years, and there is ample evidence of the impacts suffered by the local population. As a result, some communities have embarked on a process to recover their land, through agricultural projects aimed at developing a self-sustaining food supply and combating the imposition of this monoculture. http://www.accionecologica.org

[131] De Freitas, Manoel. "Sudamérica será clave en la elaboración de madera para celulosa y papel." 11 May 2005. http://www.papermarket.cl/papermarket/site/pags/20050511004357.html

- A higher consumption of paper in a particular country does not necessarily mean that its population reads more or is more educated. On the contrary, 70% of the paper consumed in the United States is used for advertising, packaging and junk mail.
- It is the uncontrolled levels of consumption – and waste – on the part of the developed economies that has led to the climate change crisis facing the planet.

Therefore, the pulp and paper industry's aspirations are both unsustainable and totally unrelated to the real needs of the population.

3.3 Polluting industries in the North

Beginning with the Industrial Revolution and the wide-scale burning of fossil fuels, there has been a build-up of greenhouses gases in the earth's atmosphere that the biosphere[132] has been unable to recycle. This build-up has led to global warming and the phenomenon known as climate change.

Among the greenhouse gases responsible for global warming, the most abundant is CO2, carbon dioxide, produced by the burning of fossil fuels and also the respiration and decomposition processes of living beings.

Throughout the course of more than 150 years, industrial societies have been moving carbon from underground reserves of coal and oil into the air. The economies, living standards and consumption patterns of these societies have been built around this oil-dependent-industrialized model. It is this model and the economies and consumption patterns it promotes that are responsible for the climate change crisis facing the planet today.

Different strategies could be adopted to confront climate change. The most logical would be to stop filling the atmosphere with CO2 by undertaking an urgently needed energy transition, that is, by swiftly and drastically reducing the use of fossil fuels and switching to *renewable* energy sources instead.

Faced with the urgency of taking action to curb global warming, 39 countries signed the United Nations Kyoto Protocol in 1997. Under the Protocol, the industrialized countries are obliged to lower their collective greenhouse gas emissions by 5.2% in comparison with 1990 levels, by a deadline of 2012.[133]

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[132] The vegetation and micro-organisms in the soil and oceans that use CO_2.

[133] The emissions reductions required by the Protocol are viewed by almost all observers as inadequate. Numerous studies have concluded that in order to have a real impact on the climate change problem, greenhouse gas emissions would need to be cut by at least 70% as compared to 1990 levels.

In response to the protests from industrialized countries regarding the negative impact on their economies that would result from cutting emissions, the U.N. Framework Convention on Climate Change proposed that global warming could be combated in a *cost-effective* way: by investing in the reduction and sequestering of greenhouse gases in other countries through Clean Development Mechanism (CDM) projects. Basically, it is cheaper to implement CDM projects in "Third World" countries than to make real reductions of greenhouse gas emissions at the source, that is, in the smokestacks of industries in the countries of the North.

When a CDM project is implemented in a developing country to "fix" CO2, the project passes through a number of stages until it generates carbon certificates or credits that can be traded on an international market: the emissions market, which could become "the largest market ever created."[134]

This Kyoto Protocol initiative has led to the emergence of a carbon market regulated and controlled by the United Nations, as well as parallel markets created by the private sector, like "oxygen for sale". These private initiatives:

- Are not regulated or endorsed by any international agencies or governments;
- Can therefore not be applied under the Kyoto Protocol and used by governments to meet their emissions reduction commitments;
- Are voluntary, unregulated initiatives undertaken by companies or corporations;
- Comprise a market on which environmental services are traded. Their usefulness lies in the fact that they help corporations and companies to clean up their public images by announcing that they finance carbon absorption or sequestration projects.

Aside from the fact that the biosphere's capacity to absorb carbon is being appropriated as private property, the fundamental causes of climate change are forgotten. Meanwhile, a *supposition* is confused with *knowledge*: given that there is an exchange of carbon between the atmosphere and the earth's vegetation, it is assumed that the soils and vegetation can be managed in such a way as to increase their ability to absorb and fix carbon, thus turning them into carbon sinks.

The idea behind the CDM and parallel emissions markets of increasing the sequestration of carbon does not attack the fundamental problem of the excessive consumption of fossil fuels. Instead, it leads to the creation of incorrect or even "perverse" incentives: focussing on carbon sequestration allows for more credits to be obtained when faster growth of trees is demonstrated. This becomes an incentive for large-scale tree plantations, and sadly, these plantations take the place of natural vegetation, and therefore promote deforestation and the release of more carbon into the atmosphere.

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[134] In terms of the volumes of capital that could be moved in operations resulting from the Kyoto Protocol, it has been estimated that these could reach 2.345 billion dollars, and thus become "the greatest invention in history of monetary assets derived from a voluntary international agreement." Lohmann, Larry, "Background Paper To Commodifying Carbon: Consequences and Strategies", September 2004.

"According to satellite-image analysis, in the 1980s, 75% of new tree plantations in Southern countries in the tropics were established in places where, ten years earlier, natural forests had stood. The result was an estimated additional release of 725 million tons of carbon dioxide to the atmosphere".[135]

Tree plantations intended to "compensate" for carbon dioxide emissions in the industrialized countries are being established in Ecuador under both the FACE-PROFAFOR project and the Eucapacific project.

While the primary objective behind Eucapacific's operations is the production of raw materials for the paper industry, the company is also seeking to gain even more profits from its large-scale tree plantations by arguing that the eucalyptus trees planted will absorb carbon from the atmosphere and thus help to mitigate the climate change problem. One of the Japanese companies involved in the Eucapacific consortium could "deduct" the credits earned this way from its own greenhouse gas emissions, while improving its public image at the same time.

[135] Lohmann, Larry. "Shopping for Carbon: A New Plantation Economy." Presentation to Agrarian Studies 2000 Conference, Yale University. May 2000.

4. IMPACTS OF TREE PLANTATIONS IN ECUADOR

… because the environment isn't just the trees or forests, it's everything you see, and all of us who live in it…

Tree plantations are causing serious social and environmental impacts in Ecuador, as the testimony gathered in the communities visited for this study clearly illustrates. This section will provide an overview of the impacts, and well as some of the comments shared by the people affected by them.

4.1 Socio-economic impacts

There are two main arguments used to convince communities to have tree plantations established on their lands. One is that the plantations will serve as a source of employment for local residents; the other is that the communities will earn considerable income through the sale of the plantation's products. However, in the communities we visited, the reality proved to be quite different.

Whether the plantations are promoted by "development" agencies or private companies, the promises to boost the local economy through job creation and increased revenues have gone unfulfilled. Instead of generating employment for the local population, these plantations have absorbed money and labour from the communities where they have been established through a variety of strategies.

• Manipulation of the consultative process

The Eucapacific consortium launched its operations in the province of Esmeraldas in 2000, without having obtained an environmental licence. One of the prerequisites for these licences is the completion of an environmental impact study, which must include prior consultation with the communities that will be affected. But instead of a genuine information and consultation process, Eucapacific carried out something more akin to an election campaign, complete with campaign promises of benefits for the population that have never been fulfilled.

Eucapacific's strategy consisted of organizing meetings with local residents, at which they offered the communities "training courses" and basic infrastructure works. These "informational meetings" held by the company were used to win the communities over with the promise of various benefits, as opposed to fully and adequately informing the local population of the impacts of eucalyptus plantations. At the end of every meeting, the company representatives gathered

the signatures of all of the community members present. These signatures were then fraudulently used to demonstrate to the Ministry of the Environment that the consultation process had been duly fulfilled. (See the earlier section on "The consultative process and broken promises".)

To gain the acceptance of the communities, Eucapacific representatives approached them with offers of infrastructure works and other forms of "compensation":

> "…This transnational company promised to provide social compensation in exchange for allowing them to plant eucalyptus… Unfortunately, these were not written agreements, only verbal agreements. The Eucapacific representative fooled not only this community, but a number of communities, by claiming that the population would be compensated for letting them plant eucalyptus. This has happened all over the province: the company offers things before it buys the lands, and then it doesn't follow through… Here in Salto they offered us drinking water, a health care centre, and computers, or at least one computer for the health care centre. They haven't given us any of the things they promised, they just blackmailed us into letting them plant that product…
>
> "The people from the company told us that they're not going to give this community anything, because we reported them. We reported them with the help of FUNDECOL when they cut down all the forest that used to be here. The minister even came that time. That's why they say that they're not even going to give the community work… They were building a bridge over there at the entrance, but they didn't finish it, and they left those poles stuck in the middle of the hole. It's even more dangerous than it was before, because before you could get through by going down underneath, but now those unsafe poles are there. They say they've given us a bridge, but it's unsafe, dangerous, and besides, they're the only ones who use it. They don't even consider the fact that little children could fall in. They just left the bridge unfinished, it's been like that for a year. They've neither finished it, nor put it back to the way it was before they put those poles there…"[136]

In the communities of the Sierra highlands where tree plantations have been established, whether through the FEPP programme or the FACE-PROFAFOR carbon sink initiative, the main factors that have led the local population to agree to participate in these projects are the offers of employment and of future profits from the sale of the wood.

FACE-PROFAFOR representatives have travelled to the communities to promote the tree plantation "business", presenting it as a source of income and jobs.

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[136] Interview in the community of San Sebastián de SigSig.

"A foreigner came here, saying they had heard the commune had large fields of páramo (grasslands) and they wanted to make a plantation. We got all excited when they told us we would get who knows how many thousands of dollars… you know, sometimes people like us, country people, can be kind of naïve and get talked into things…

This engineer came to an assembly here, and told us that the commune would get thousands of dollars, and we would get what we needed to go out and plant the trees… He said we would have jobs until after the harvest was finished, and then we would get all kinds of money, and we accepted. The assembly signed the agreement…"[137]

• Fraudulent negotiations

In the province of Esmeraldas, many of the *campesinos* who sold their land to intermediaries working for Eucapacific have complained that this aggressive land-buying process was conducted unfairly. In a great many cases, the sellers have reported that the measurements taken by company technicians have not reflected the real size of the lands sold. This is because the company measures plots of land planimetrically, without corrections for slopes, which is essential on irregular terrain like this.

"When the company came, they told me to sell them my land. Now I'm sorry because they cheated me, they did their own measurements and didn't give me enough money for what the land was worth…"[138]

The handful of former landowners who were not cheated through this mechanism were the ones who had public deeds to their properties, documents that they could use to back them up when negotiating. But this was not the case among the majority.

"For example, if the *campesinos* said, *I have 40 hectares*, and the men from the company measured and said, *No, you only have 32*, then they would pay for the 32 hectares that they measured… But you knew you had more and that they were cheating you…"[139]

The purchase of land for Eucapacific's tree plantations has been handled by intermediaries. The prices that they pay vary. In addition to complaints of underpayment due to the tactics used for measuring the land, there have also been reports that these intermediaries failed to pay the full prices agreed upon when the land sales were negotiated.

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137 Ibid.
138 Interview in the community of Tortuga.
139 Ibid.

"There's no fixed price. They paid the people who were buying up the land 1,000 dollars a hectare, but they only paid us 500. They offered to pay 1,000, but the intermediaries only paid us 500, that's all…"[140]

"They said they would pay 1,000 dollars, but when people went to collect, they were only paying 600."[141]

"When they did the measuring they got 18 hectares. My measurements said 20, but theirs said just 18. So then I told them I didn't want to sell all that land, just a part of it, and then another gentleman came and I said: No! No more measuring!... Then things started getting out of hand. I didn't want to give up the farm, but in the end I had to give it up, because they started taking my things, because the big fish eats the small fish… The truth is, I had never planned to sell all my land, they practically took it by force. I was determined not to give up all my land, to just give them what was fair. But then people told me that they would make me regret it, that they'd get back at me for not giving them my land, and that's why I finally let them have it…"[142]

• Pressure and threats

Eucapacific has also resorted to pressure and threats to force the local population into selling their land to the company. The pressure exerted takes various forms, from blocking the right of way on roads used by the communities for generations, to gradually fencing in the remaining *campesinos* by surrounding their properties with eucalyptus plantations and prohibiting them from passing through the plantations, thus trapping them on their own lands. There have also been reports of active harassment, including the destruction and theft of crops, livestock and property belonging to *campesinos* who refuse to sell their land:

"I didn't want to sell, that's where I spent all my time, now we've been left stranded… It got to the point where they had me completely surrounded. I had some pigs, and when they wandered off my land, they never came back. That happened several times with a number of animals. And also, I would go to bed at night and the cacao trees would be full of fruit, and then in the morning I'd go back and there'd be nothing left. During the night they would steal everything, so that I would finally give up and sell. And even so I hung on for a long time. They even burgled the little house where I used to sleep, up there, they broke in three times, and cleared it right out. They didn't leave a thing, not even the mattresses, they took everything. They did the same thing to me so many times that the people from the town started telling me, 'You'd better sell.' And I started thinking, what am I going to do stranded in that wilderness? If I don't get out, I'll probably end up dead, who knows why they haven't just killed me once and for all? Maybe it would be better to sell. So what else could I do? Nothing. So I ended up selling, and that was the end of all the work I'd done during all those years…"[143]

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140 Ibid.
141 Ibid.
142 Interview in the community of Tortuga.
143 Ibid.

"That other foreman, Lombardo Chili, goes around saying that this community belongs to him, and that we should be begging him not to kick us out, because when he wants to, he can make us leave. It gets to the point where you think, what else can they do to us? Because this community only has about three hectares of land. The company has taken all the rest of the land. You can see how we're fenced in here…"[144]

The *campesinos* who still live in the area where the Eucapacific project is being carried out have been gradually boxed in and cut off by eucalyptus plantations. As a result, they not only lose their neighbours, but also the possibility of selling the goods they produce.

"On those farms they used to grow bananas, cacao, coffee, corn, rice, all that stuff. They used to grow it and harvest it. Now nobody bothers to harvest it, because there's no one left to sell it to."[145]

"They bought up all the surrounding land, and then they started pressuring me and I had to sell to them, because I was stuck in the middle and couldn't get off my land…My farm was left in the middle, and I had to sell, because they were pressuring me. They sent other people to steal from me, to steal the little that I had, a few animals, pigs, chickens… The people were being harassed and ended up leaving. They sold their land and left, because their things were always getting stolen…"[146]

• Employment generation

One of the main reasons that people agree to sell their lands to this foreign company is the promise of the jobs that the eucalyptus plantations will provide to the local population.

Little by little, the population disappears while the plantations expand. One by one, the promises made by the company are revealed as lies. And one day, the people who have sold their land realize that they have nowhere to work. The jobs offered by the company are temporary, lasting only for the first stages of establishing the plantations. Even worse, this short-term employment is given to people from outside the community.

"They didn't even get people from here to work for them. They brought people in from outside."[147]

144 Ibid.
145 Ibid.
146 Interview in the community of Bunche.
147 Ibid.

"The *forest ranger* said that he won't give work to people from the community. I don't know what they think, but when the company came in here, they came on the condition that they would provide work. But after that the *forest ranger* said that he won't give work to people here, and they can just *eat their shirts*…"[148]

In the case of the FACE-PROFAFOR project, the promise of "job creation" has not only proven fictitious, but has also constituted a negative economic impact that must be absorbed by the participating Andean communities. To begin with, the monetary "incentives" offered to the communities have not even covered the costs they have incurred in establishing the plantations. This means that the work required is very frequently carried out through the communal work system known as Minga, for which the community members receive no pay. Due to the penal clause included in the contracts – which requires the communities to pay enormous penalties if they do not comply with the plantation management plan or the technical guidelines set by the company – these contracts become a coercive tool that obliges community members to provide free labour to serve the company's interests.

It has now been more than six years since the initial contracts were signed with local communities, and the funds provided by PROFAFOR have been used up by the work required to establish the plantations, even though there are still tasks yet to be carried out.

The monetary "incentives" offered to the *beneficiary* communities should have covered, at the very least, the wages of all of the people who participated in the work needed to establish the plantation – plotting, dibbling, planting, replanting and firebreak construction – as well as the associated food and transportation costs. But this has not been the case, and the communities have had to devote not only unpaid Minga labour but also community funds to completing these tasks and fulfilling their contractual obligations. Even worse, they have lost the potential income that could have been earned through other activities, like livestock grazing, which they have been forced to give up for the plantations.

In the case of the community of Caguanapamba, which established a tree plantation under a contract with FACE-PROFAFOR, the community members who took part in the initial planting work were not paid, and many of the trees died. When trees fail to prosper because of "non-adaptation", the community is obliged to cover the cost of new seedlings and carry out the replanting.[149]

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148 Ibid.

149 This can occur frequently due to the extreme weather conditions: these are tree plantations located on the slopes of the Andes mountains at altitudes over 3,000 metres above sea level, where they are subjected to high winds, frost and very low temperatures. It has been estimated that the replanting rate for the PROFAFOR project is between 15% and 30%, and the resulting costs, ranging from $865 to $5,820, have had to be covered by the communities. Milne, Mary, Centre for International Forestry Research (CIFOR). In: Alban, M. and María Arguello, 2004. Un análisis de los impactos sociales y económicos de los proyectos de fijación de Carbono en el Ecuador: El caso de PROFAFOR-FACE. IIED, London.

The representative of the community has a responsibility towards the people who have worked on the plantation and not been paid, but he must also comply with the contract signed with the company. To meet his obligations to the community members, he is waiting to receive a pending payment from PROFAFOR which is supposed to be disbursed once there are trees planted on the entire area encompassed by the contract – including replacements for the ones lost in the first planting.

As well as paying the wages of the people who have contributed their labour to establishing the plantation, he must also attend to other tasks stipulated by the management plan. One of these was the construction of a firebreak to prevent the spread of fires. In order to construct the firebreak – which entailed creating a vegetation-free strip of land around the perimeter of the plantation, by clearing the páramo scrubland and leaving the soil completely exposed[150] – he rented a machine with community funds[151] and organised a Minga work party to carry out the task.

Now he is waiting for a final payment still owed to the community, in order to pay the people who worked on the initial planting. As he explained:

"PROFAFOR gives us a certain amount of money stipulated by the contract. They still owe us $2,600. Under the former leadership, they got the community members to work by offering to pay them, but they worked and were never paid. So what could I do? We had to replant the seedlings in order to be paid the amount still owed, and then use that money to pay off the debt still owing from before. So through the replanting, I'll be able to pay for the first planting. The replanting is extra planting, but we don't get extra money for it."[152]

• Offers of income

Just as the tree plantation business is promoted nationally as a means of generating foreign currency revenues, tree plantation projects are "sold" at the local level with the claim that they will generate income for the community.

The projects in the Andean region analysed for this study (promoted by FACE-PROFAFOR and FEPP) were accepted by the communities involved largely because of the promised prospects of future revenues. The main incentive was the large amount of income that would supposedly

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150 The soils of the páramo are estimated to store 1,700 tons of carbon per hectare. In terms of the soil, the páramo ecosystem can store even more carbon than a tropical rainforest. If the páramo is poorly managed, and especially if the land is left exposed, the topsoil dries out and decomposition increases. This results in oxidation of organic matter and emission of carbon into the atmosphere. Hofstede, Serie Páramo 1.

151 The community paid $600.00 for fuel and the rental of the machine for three days, at a cost of $12.00/ hour.

152 Interview in the community of Caguanapamba.

enter the community once the wood was ready to harvest, after 20 to 25 years. Other economic benefits would supposedly be obtained from the local sale or use of the wood gathered through pruning and thinning as firewood[153], and the harvesting and sale of mushrooms that would grow under the trees.

In the Sierra region the main reason that communities have embarked on the risky venture of planting pine trees on their páramo lands is the economic incentive offered for establishing tree plantations – combined with the possibility of a "highly profitable" new productive activity. This is why communities have signed contracts and turned their lands over to FACE-PROFAFOR or FEPP for use as plantations.

Unfortunately, during the process of "selling" the idea of tree plantations, the economic benefits that they offer are highly exaggerated, and *campesino* communities sign contracts without real knowledge of the income they will actually receive by harvesting the wood.

The pine plantations established in the central Sierra region under the FEPP programme have proven to be a losing proposition for the communities involved. In fact, when one takes into account all of the work already carried out and still left to be done, combined with the loss of resources (particularly land for grazing) entailed by the plantations, the current price at which the pine timber can be sold does not even compensate for the loss of grazing land.

As a result, the community has already lost out economically by allowing their land to be used for tree plantations, instead of continuing to use it for livestock raising as they did in the past. Moreover, although the price they receive for the timber could be higher if they were to carry out the pending pruning and thinning work, and if they harvested the timber themselves, the additional work and expenses required by these activities could likely result in even greater economic losses.[154]

In the case of the community of Caguanapamba, which has a contract with PROFAFOR and was referred to in the previous section, it is abundantly clear that the promise of future income was decisive in convincing the community to enter into the contract and to commit to fulfilling it.

The community receives gradual disbursements of the total amount offered for the full execution of the management plan – which must be complied with in order to receive the full amount of payment. In this case and others, the communities find themselves obliged to cover the expenses

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153 Firewood is a highly valued resource among the indigenous communities of the Andes, because it is their main fuel source. However, the wood gathered from the pine plantations could not possibly be used as firewood: pine contains too many resins, creates too much smoke, is irritating, and does not burn well.

154 Ricardo Carrere (with Ivonne Ramos). "Pinos y eucaliptos en Ecuador: símbolos de un modelo destructivo", WRM 2005.

generated by the establishment and maintenance of the plantation with community funds and free labour, because the funds provided by PROFAFOR were not sufficient to cover these costs.

• The loss of means of sustenance

The tree plantation programmes undertaken in the Sierra region have focussed on the páramo grasslands located in the Andes mountains between the tree line and the permanent snow line, roughly between 3,000 and 4,800 metres above sea level.[155]

When Andean communities have agreed to establish tree plantations on their *páramo* lands, this planting has been carried out in the highest reaches of community properties, because:

> "…At present the sub-páramos are almost completely cultivated (up to 3,600-3,900 metres asl) while the high páramos still serve as natural pasture for extensive livestock grazing up to 4,500 metres asl."[156]

If the upper reaches of the páramos are used for tree plantations, they are no longer available as pasture land for extensive cattle grazing. Despite FACE-PROFAFOR's claim that tree plantations are being established in "areas high in the Andes where agriculture is not profitable and most sites are unsuitable for livestock," the local economic activity that has suffered a direct impact from the plantations is precisely that of cattle and sheep raising.

The former grasslands now cleared and planted with pine trees were used in the past by local families to feed livestock, a traditional means of sustenance in *campesino* and indigenous communities in the Andes.[157]

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155 "… The páramo is the high plateau region of the Andes mountains that has given rise to a type of vegetation known as *paramal*, as well as a unique ecosystem (alpine grasslands) of the northern Andes (in northern Peru, Ecuador, Colombia and Venezuela). It occupies a strip between 3,200 metres asl and the permanent snow line, around 4,000-4,800 metres asl in Ecuador, although it is also referred to in general terms as between 3,000 and 4,800 metres." Vidal, Verónica, Impactos de la aplicación de políticas sobre cambio climático en la forestación del páramo de Ecuador, Ecología Política, 18:49-54, 1999, p.29.

156 Vidal, Verónica, "Impactos de la aplicación de políticas sobre cambio climático en la forestación del páramo de Ecuador". Ecología Política, 18:49-54, 1999. Vidal quotes the original source of this data : G. Medina and P. Mena, "El páramo como espacio de mitigación de carbono atmosférico", Serie Páramo, 1. GTP/Abya Yala, Quito, 1999. Also quoted in *El Comercio* (Quito), 3 November 1999.

157 "… small producers use flexible strategies of survival to confront difficult and changing environmental, social and economic situations. Short-cycle crops, cattle and sheep raising, and temporary work are part of a production scheme that generates income from different sources and diminishes the vulnerability of campesino economies." Albán, M. and Argüello, M., 2004. "*Un análisis de los impactos sociales y económicos de los proyectos de fijación de Carbono en el Ecuador*: *El caso de PROFAFOR-FACE"*. IIED, London, UK, p.39.

"It was all new and exciting when the money was coming, because it was as if they told you: plant (trees) on your land, we'll give you the money and then you can have the harvest. So people turned over their lands, and then the company fenced them off to keep everything out. They said that if our animals went onto the plantation, they would take them away from us, or we would have to pay a fine. So then people had to be careful that their animals didn't go in there."[158]

Because of the decrease in pasture land available, communities have either had to reduce the size of their herds or flocks, or incur additional expenses to rent grazing land or buy fodder for their animals.

For the communities affected by the plantations established by Eucapacific in the province of Esmeraldas, this project has meant the destruction of their former networks of economic support and sustenance.

"The people from the community were left without their land, without work in their pastures, their cacao fields, all the coconuts are gone, all of what you could call traditional plants have disappeared…"[159]

"Before the company came, you could go out and hunt. I'm a hunter, in the morning I would get myself a *guanta* (a large rodent commonly hunted for food), in the afternoon I'd go out to hunt a couple of rabbits. But I've been going out there for a while and haven't even heard animal sounds. You don't even see squirrels jumping around anymore. Now we don't know where they'll go to breed. And on top of that, the company didn't give us any work. All they think about is planting, planting, producing… If they had at least given work to the people here, so that they could live and support their families… but there's no work, and everyone is just like you see us now, every day…"[160]

The *campesinos* who have been forced to leave their lands have nowhere to work. The few who have remained have no one to sell their products to, and are also directly harmed by the company's policy of harassment:

"We have problems here because of the eucalyptus trees. No one here can raise pigs, because they go over there and they kill them, they take them. You can't raise chickens either, or they'll kill them. They poison the animals, and the animals die. When they see an animal around they toss it poisoned food, and the animals eat it and die, right there or somewhere else. That company is evil… People's animals have died. Before the people here used to live off of pigs, everyone had a pig, and now we have none, just a couple over there. Look how skinny they are, because they

158 Interview with Cléber Chacha, Guaranda.
159 Ibid.
160 Ibid.

live cooped up. If they go about 1,500 metres away they enter the company's property, so we have to keep them locked up, otherwise they'll go over there and we'll lose them, they'll never come back. They also steal them to feed the workers, the guards, the foremen…"[161]

This is an area rich in biodiversity, where the local population lives – or used to live – in close connection with the surrounding rainforests. The loss of biodiversity resulting from the wide-scale establishment of eucalyptus plantations has also led to the loss of important means of sustenance for local communities.

"I don't understand how people are supposed to live now. It seems like they want to exterminate everyone, they don't want to let them live. All the birds are gone, all the animals, there's nothing left around here now, and it's not by chance… I used to go out and hunt what I wanted to eat, and I didn't like to hunt more than I needed, but that's not even possible anymore, because there's nothing left."[162]

"Before, if we needed something, we'd go out and get it in the forest, a *tatabra* (medium-sized pig-like mammal), a rabbit. Now they've all gone far away. The people who know how to track down and hunt animals in the forest say there's nothing left to hunt, all the animals are gone. The company wiped out all the forests, and so the animals have gone far away"[163]

"There were times when you'd go out to wait for an animal to come along, and you'd grab it, and that was a help. But now that they've destroyed the forest, and even wiped out the scrubland, the animals have gone far away. There's even less water in the river and all the fish are gone. That was practically how you used to support yourself here, and from what you produced, but now that they've wiped almost everything out and planted eucalyptus trees, there's nothing left."[164]

• Access to land and roads

Tree plantations force people away from their lands. In the Sierra region communities that have agreed to take part in tree plantation projects, the contracts stipulate that community members cannot use the land involved for any purpose other than growing trees.

"In the area covered by the contract we can't touch or do anything…"[165]

In the region where Eucapacific operates, the company has attempted to buy up all of the land and convert it into its own private property. There are roads that run through its plantations that have been used by the local population for generations, but now that they fall within the company's property, their use by anyone from outside the company is prohibited. The few *campesinos* who

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161 Interview with Cléber Chacha, Guaranda.
162 Interview in the community of Bunche.
163 Interview in the community of Tortuga.
164 Ibid.
165 Interview in the community of San Sebastián de SigSig.

have refused to sell their small parcels of land have essentially been left trapped and stranded in the middle of hectares and hectares of eucalyptus trees.

"There's a road that goes that way and enters the plantation, and they won't let people use it anymore. So what are the *campesinos* supposed to do? How can they get out if they're surrounded? They're forced to sell, because they're left stranded in the middle. They hire guards who don't let the *campesinos* who live on the neighbouring lands cut through the plantation. They say it's private property, you can't go through there anymore."[166]

"The plan that they've organized here is not for the good of the community, it's for the good of the Eucapacific company. They're the only ones who benefit from it. The community hasn't taken one step forward, for the people here, everything has been a step back. In this community we've been left fenced in, the people here have no way out. We've been genuinely fenced in by them, on these three hectares of land."[167]

• Transportation

In addition to the prohibition on using the roads that have been used by the local population for generations, another aspect that has seriously affected the movement of the local people and their products is the marked decrease in water levels in the areas where eucalyptus plantations have been established. In the past, it was common for people to transport the crops they harvested along the area's rivers.

"The green plantains[168] are grown over there. The people over there can't load up their canoes with plantains and bring them down here anymore, because the river is dry. They used to come down in their canoes, or make rafts out of wood. Now they come down by canoe, but they have to pull the canoes most of the way. They have to pull the canoes for two or three days before they can find a spot where the river is deep enough. It used to take a day to get here by canoe, now it takes those poor people two or three days to get here… The people over there have a really hard time getting their products out to sell. They have a hard time with everything, with food, with selling the little bit they manage to produce… The people who live really far away sometimes have to get their products out on foot, carrying their products on their backs. The ones who have horses can do it by horse. But the ones who don't have horses? They have to walk for up to two days carrying their products, it's really tough. Back when there was a river they could get their products out that way."[169]

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166 Interview in the community of Bunche.
167 Interview in the community of Las Delicias, in the municipality of Quinindé.
168 Green or unripe plantain is a staple food in the diet of the local population and a source of carbohydrates and vitamins.
169 Interview in the community of Tortuga.

"They say they've given us public works, but look at that road. It used to be perfectly fine, and then they came in with those tractors and heavy machinery, and the earth collapsed and was left all full of holes. You can just imagine what it's like in the rainy season, nothing can get in here on that road, and they're never going to fix what they've done."[170]

• Displacement and impoverishment

After selling their land, believing that the company would provide them with work, the *campesinos* have been left without the possibility of producing what they need for their families to survive.

Many *campesinos* have had to ask for work from people who used to be their neighbours; they are forced to hire themselves out as day labourers, when they used to work their own land. Those who do not manage to find this kind of work in the area are obliged to migrate to the slums of the large cities.

"Now I have no land. People from the community have to go far away to work, where the people who still have farms can give them work as hired hands. You have to leave because there's nowhere to work here, and the company doesn't provide jobs… there's no more space, we don't have land anymore…"[171]

"The people who sold their land have to go around looking for work as hired hands to scrape together a living, because they're badly off. I've bumped into a few of them and they're out there doing odd jobs. None of the people who sold their land are doing well or working, they're just barely making enough to live day to day. Now they regret it, they say they're sorry they sold their land. Some said they were going to use the money to buy land somewhere else. But where? The money they got paid for their land wasn't enough to buy land anywhere else. When you live in the country you're never left without a way to survive. After you plant, you have something to harvest and eat, even if it's just what you've grown yourself. But if you're in the country and you have nowhere to plant, you're forced to move to town."[172]

"Now they have to work as hired help, and they didn't have to do that before, because they worked their own lands."[173]

"I don't know what they did or where they ended up, but the people just gradually started disappearing. People are crying about having sold their land, because it hasn't done them any good, it was a bad business, but they didn't know any better, so they sold their land and now they've been left with absolutely nothing to do…"[174]

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170 Ibid.
171 Ibid.
172 Ibid.
173 Ibid.
174 Interview in the community of Tortuga.

"They all regret it now. At least here they had food to eat and a place to live. Now they have to go around looking for somewhere they can feed their animals – just barely – in other places. Even just to have a few *guineos*[175] to eat, they have to go out and work on other farms, go around asking for work. Even the children say that they're sorry their mothers sold their land."[176]

"That family has nowhere to go, they have no land. They sold about 19 hectares and now they don't have even one hectare. All they have are the little shacks they built right next to this town to be able to live in the community. That's all they have now, nothing else."[177]

"After you've lived your whole life on these lands, with the animals in the forests, and the fish in the rivers, what good is the money they pay you? When you live on the land, you harvest what you plant, and even if you don't sell anything, at least you have enough to eat day to day. But with money, sooner or later it runs out. And since you've sold your land, you don't even have anywhere to plant. Look what happened to my father: he sold all the land he owned, and he gave all of my brothers 80 dollars each. He split up with my mother because she didn't want him to sell. And now of course he must regret it, because he lost his land, the land that belonged to him, and where everything he grew was his own. I think that everyone who sold their land must feel the same way, because, what are they going to do without their land?"[178]

4.2 Socio-environmental impacts

• Decrease and poisoning of water sources

"It's been pretty plain to see that the rivers are drying up…"

Large-scale tree plantations affect the availability of water. In the Sierra region, where pine plantations have been established on former *páramo* grasslands, they have proven to consume enormous quantities of water. The replacement of the natural *páramo* vegetation with tree plantations has drastically altered the soil structure. In its natural state, the *páramo* serves as a "sponge" that supplies the entire inter-Andean corridor with water year round. Its vegetation condenses the moisture from clouds, and this water, combined with the precipitation that falls in the rainy season, is absorbed and slowly filtered through the soil, so that it gradually but constantly feeds the underground and surface sources of water in the Andean valleys.

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175 Sweet banana
176 Interview in the community of Tortuga.
177 Ibid.
178 Ibid.

As a result, the *páramos* are crucial to the regulation of the region's water cycle, and serve as the source of water for the majority of the population in the Andes. *Páramos* are commonly referred to as water "factories", as "sponges" for the storage of water, or as the "birthplace" of the water system.[179]

Species like pine consume large amounts of water, diminishing the water supply and drying out the soil.

In Salinas (in the central Sierra region), the plantations are between five and seven years old, and the decrease in available water is already perceptible. The local population has noted that "the streams are disappearing" and the soil is drier than it used to be.

When these communities observed the impacts caused by the introduction of large-scale plantations of exotic species, some of them asked for the assistance of forestry technicians to undertake tree planting projects using native species. Nevertheless, the forestry technicians working on these supposed "development" projects insist on planting pines:

"They don't want plantations of native tree species (such as *yaguar* and *quishuar*) because they're not commercial species. At the very most, they plant a couple of rows alongside the streams, and sometimes not even that. The companies are only interested in business, and only plant pine. The FEPP even insists on planting pine up around 3,600 metres, but they don't seem to realize that's where the source of our water is…"[180]

In the areas of the coastal province of Esmeraldas where Eucapacific operates, the local population has reported a drastic decline in the water level of local rivers. One of the most troubling signs of this phenomenon is that people are no longer able to use the rivers for transportation, as was discussed earlier. Rivers that have traditionally been used by local communities as a primary means of transportation are no longer navigable because of the drop in water level.

The decrease in the water supply represents a major threat to the lives and health of all living beings, who need water as much as they need air in order to survive.

A local resident whose land borders on a eucalyptus plantation reported that these trees consume such large volumes of water that his own crops are drying up and dying:

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[179] Hofstede, R., "La importancia hídrica del páramo y aspectos de su manejo", EcoPar, August 1997.
[180] Interview with Cléber Chacha, Guaranda.

"The plantation is right next to us, and it absorbs all of the energies we put into our work, because it absorbs the water, and since it's next to our plants, our plants dry up and we can't produce anything…"[181]

"The people who used to have cattle can't have them anymore, because the streams where they got their water are all disappearing. The banana trees are dying, because all the water's gone. If even the big river is drying up, it's even worse for all those little streams, because they're drying right up, dry as a bone…"[182]

"Last year the Tortuga River dried up, and this year it's drying up too. It used to have more water, and it could withstand all these sunny days, but now it's running out of water. After just four sunny days this week the river is drying up. Back before they planted the eucalyptus, it had a really strong current, but it's not like it used to be. When it stops raining, there are clouds of dust in the river. Up around the headwaters of the Tortuga, it's just pure dust now."[183]

"The river never used to dry up so much, but now it does. After three months of summer, there's no water left, and the dirt in the stream bed is dry and cracked. This company has been here for three years now, and last year the stream dried right up. Around the headwaters everything's been knocked down, there's nothing to protect the water. The headwaters used to be protected by the trees and the scrub, but now there's nothing left, because everything is just one big field…"[184]

"The river has no protection anymore, everything has been cleared of trees…"[185]

"Right now there are just little trees over there, but when they're bigger, it will be much worse. This is the Tortuga River, and look at it, it's dry. How long ago did winter end? Just a little while ago, and look at how the river is… Later on there will be no water at all. I didn't know this would happen, but now we all know, because of them. If we'd known from the beginning that this would hurt us, they wouldn't have been able to plant the trees, we would have stopped them…"[186]

The water supply has diminished drastically since the arrival of the tree plantations, because in order to establish the plantations, the natural vegetation which formerly protected the water's sources was cleared away. The establishment and maintenance of the plantations also involve the use of chemical herbicides and pesticides. Spraying is regularly carried out on all monoculture tree plantations. In the province of Esmeraldas, after spraying the eucalyptus plantations, the

181 Interview with Cléber Chacha, Guaranda.
182 Interview in the community of Bunche.
183 Interview in the community of Tortuga.
184 Ibid.
185 Ibid.
186 Ibid.

Eucapacific workers rinse out the equipment used for this task and dump the waste in the area's rivers and streams.

"The rivers here have been poisoned. They've contaminated the Peninsula River, the Partidero de Bunche, the Santa Cruz, the San Isidro… People say that after they spray, when just a bit of rain falls, the liquid they use gets washed into the streams and mixes with the water, and contaminates it. And I for one can tell you it's true, I would even stake my life on it. It happened to one of my sons, he was poisoned. They sprayed before planting, and I brought my sons here to play, just like those kids over there are playing now. And the water had been contaminated, you could see a kind of oily patch. My sons went swimming in the water, and one of them – his name is Daniel Díaz – got sick from it. I had to spend my own money to help him, around 300 dollars or more…"[187]

• Soil

The páramo soils are composed of complex connections between mineral and organic particles that retain large amounts of water and organic material, which is protected from decomposition by the moisture of the soil.

Because pine trees consume large amounts of water, the soil in and around plantations tends to dry out. As a result, the connections between mineral and organic particles break down, the organic matter decomposes and diminishes, and the soils go from being water-retentive to water-repellent.

"To recover the land, after a harvest, it takes about one to six years before something can more or less grow in the soil. People think that since you can't grow anything else there, they might as well just keep planting pine. But it starts to grow more and more slowly every time, because the soil gets worn out. Everything disappears, there isn't a single rabbit, or a frog, or even a blade of grass, nothing goes in there, everything disappears…"[188]

Planting exotic trees that are alien to the páramo does not contribute in any way to the stability of the ecosystem, and much less to the *recovery* of degraded soils. The removal of existing vegetation to prepare the land for planting results in alterations of the soil; once the trees are planted and growing, the effects are even more serious.

In the pine plantations, the roots of the trees are visible above the ground, which is evidence of a significant degree of erosion. The local population has observed the way the pine trees are modifying the texture and structure of the soil: "The pines make the soil sandy."

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187 Interview with Manuel Chacha, Guaranda.
188 Ibid.

• Spraying and chemical use

In Esmeraldas, the impacts of spraying on the Eucapacific plantations are being felt by the population living downstream. This practice, combined with deforestation and the enormous amounts of water consumed by the eucalyptus trees, is destroying the biodiversity of the last remaining vestige of the Chocó rainforest region in Ecuador and important sources of sustenance for the local population.

"Sometimes you see dead shrimp and fish in the river. The shrimp and fish come rushing madly downstream from up there, because they rinse out the pumps they use to spray in the river, or they collect water with the containers that have those liquids in them. Last year a lot of shrimp and fish died because they were planting that eucalyptus field. It was heartbreaking to see all those shrimp and fish dying up there. And we eat shrimp and fish. Sometimes we go fishing on a Saturday or Sunday when the weather is nice, when it's pleasant to go out fishing. We don't eat them every day."[189]

"I didn't know about the eucalyptus. They spray so that the eucalyptus will grow, and then they wash the things they use in the river, and the fish and shrimp die. Now it's not like it was before, when there was a lot of everything, all those economies that used to exist are gone now. They wash those things up there in the rivers and streams, and no food comes downstream anymore."[190]

"All the land they bought from us is covered with eucalyptus trees now. It's not good to sell the land, because now we're left without an environment, the environment is disappearing… the birds, the butterflies are all disappearing, because everything is dying, from all the chemicals they use to fumigate the eucalyptus trees."[191]

By contaminating the surrounding waterways, this fumigation is also a threat to the health of the poor *campesinos* who have refused to sell their land to the company and still live in the area.

• Deforestation / Changes in soil use

Although tree plantations are frequently promoted as an activity that serves to "recover degraded soils," as we have seen earlier, the claim that a company would want to invest in degraded lands *simply is not credible*. According to the testimony of the people we interviewed and the impacts we witnessed ourselves, we can state for a fact that native vegetation was cleared in order to establish the Eucapacific plantations in Esmeraldas.

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189 Interview with Cléber Chacha, Guaranda.
190 Ibid.
191 Ibid.

"They sent some people to work over there, to cut down the forests. They cut everything down, and only planted that plant. The company cleared primary forest, because over here there was a forest that had been preserved…"[192]

"That company only came here to cause trouble and damage, it hasn't brought anything good, I can tell you that much. Look, now the river doesn't even run, there's nothing left in what's left of the forest or the river, things keep getting more and more scarce. There's nothing left in those forests because they went in with those machines, the chainsaws, and they cut all the wood down and planted. With all that noise, and with all the trees cut down, what animal would want to live there, I'd like to know? None, there's nowhere left for them to live, they don't have anything to eat anymore."[193]

• The loss of native fauna

Serious impacts on biodiversity have been documented in both the pine plantations in the páramos of the Andean Sierra region and around the eucalyptus plantations on the Pacific coast.

At a workshop held during a visit to the central Sierra region, the local participants were able to rapidly name 22 native species of plants and their multiple uses, as well as 29 local animals, most of them edible. The majority of these plant and animal species are no longer available to local residents, because their habitat has been taken over by pine plantations.

In Esmeraldas, the testimony we gathered from the local population was even more troubling. The people who live in communities that were dependent on the forests have lost their land, are losing their water supply, and can no longer find the animals that used to live in the forests, due to the large-scale deforestation carried out to make way for the eucalyptus plantations, which are veritable "food deserts" for the local fauna.

"They cut down the primary forest, where you used to be able to hunt *guanta*, and different kinds of birds to eat, like parrot, partridge, wild turkey, *pitón*, *piguala*, and now they're all gone, you can't find them anymore. The people who go out to hunt say, I'm going to go out and get myself a rabbit, but they don't catch anything anymore, because that's all just bare fields now."[194]

"The people feel the impact. The rivers are drying up, the trees are gone, the animals are fleeing. They destroy everything to plant that stuff of theirs, and there are no more of the species there used to be. People used to go out to hunt *guanta*, rabbit, all those things, but they can't anymore, because there's no forest left to go and hunt in. All of nature is fleeing. Before at least

[192] Interview in the community of Tortuga.
[193] Ibid.
[194] Interview in the community of Bunche.

they had trees where they could live and make their homes, but now there's nothing like that because they cut it all down. Now there's nothing but eucalyptus."[195]

"There are hardly any forest animals left, almost none. To be able to catch a deer or a *tatabra* you'd have to wait three months. In those eucalyptus fields there are no more animals. They destroyed the forest, that's why all the animals went away. I don't know when they'll come back, but as for now, there are no more animals. Before, the poor people could hunt, they lived off of those animals, because they had no other way to support themselves…"[196]

"There's been something like a drought in the river because of that eucalyptus, the water is drying up. There's not enough water anymore for the cattle and pigs, not even for the human beings and the plants that people grow, because all plants need water, and there's no water anymore. And it must be because of that eucalyptus. There's less water in the river, and less fish and shrimp too, of course, because they depend on the river. Before everything was abundant, even if you didn't earn any money you were all right, because at least you always had food to eat, the coconut trees were loaded with fruit, the cacao trees, you could get everything, everything…"[197]

"Before the Japanese planted that field there were birds like the *palonga*, *pichilingo*, *paletón*, parrots, wild turkeys, and also *guantas*, rabbits, deer… people used to hunt here. I have a rifle, but I tell you, it almost breaks my heart to take it to the forest, you don't even see so much as a squirrel anymore. When you head right up into the forest now, it breaks your heart. I go in by myself, and there's complete silence, you don't hear a single animal. Before we used to hear the birds singing, it was such a beautiful sound! And you could see them jumping around from tree to tree. But when the Japanese planted that field, all the trees where the animals and birds used to live got cut down. Before there were monkeys in the forests, but not now, not a single one…"[198]

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195 Ibid.
196 Interview in the Unión de Matambal Cooperative.
197 Interview in the Municipality of Quinindé, Community of La Y de San Isidro.
198 Ibid.

5. CONCLUSIONS

The "development" model that Ecuador has attempted to implement is destroying its natural ecosystems through the introduction of large-scale tree plantations.

One by one, we have considered the arguments used to promote tree plantations, and contrasted them with the experiences of the communities who have been obliged, through different mechanisms, to suffer the impacts of these plantations and the concomitant destruction of natural ecosystems.

There are some very dangerous ideas behind the policies that promote tree plantations, and a whole series of myths that have proven to be utterly false: that they contribute to environmental recovery, that tree plantations are only established on "degraded" soils, that they are good for the environment because they absorb CO2, that they contribute to the stability of ecosystems, that they generate employment, and so on. Perhaps the most dangerous idea of all – which has come to be accepted as a fact – is the belief that any land not suitable for agriculture or stock raising should be viewed as land suited to "forestation" through the establishment of tree plantations.

This extremely limited way of perceiving the diversity of ecosystems has led some policy-makers to mistakenly think that "Ecuador is a country ideally suited to forestry." On the basis of the senseless logic, various forestry projects have been promoted in the country in a largely unsystematic and unreflective fashion, for the sole benefit of companies that sell wood and wood products, and to the great detriment of local communities and natural ecosystems.

More recently, as environmental concerns have grown alongside the increasing magnitude of the effects of global warming, the list of pro-tree plantation arguments has come to include the notion that these plantations could help to combat climate change. Once again, this claim is little more than a publicity ploy, since there are no actual scientific grounds to support it, and yet it has managed to capture significant attention. This new argument is largely a political tool, which takes advantage of the growing concern over the climate-related threats now facing the planet, but serves to cover up a radical extension of worldwide capitalist systems: the carbon market. This is a market that will commercialize an environmental service, a market that is impossible to quantify and control, but will generate enormous profits.

While the countries and economies of the industrialized North evade their responsibilities with respect to the global climate problem, large-scale plantations of exotic tree species continue their relentless spread in Ecuador.

In its endless efforts to seek the favour of the international community, by facilitating foreign private investment and implementing "forestation" plans designed in other latitudes, the Ecuadorian government has forgotten that the country's greatest wealth is its extraordinary

degree of biodiversity, a self-generating resource – when properly preserved – that sustains highly fragile *campesino* economies while helping to conserve the water and climate cycles.

This brings to mind an important lesson that a *campesino* in Esmeraldas was forced to learn after he had sold his land:

"People shouldn't sell their land if they come to buy it. What are we going to do if they take away our land? Where are we going to go? To buy land somewhere else? Then why sell our land in the first place?"

Ecuador is facing the urgent need to conserve its unique natural ecosystems, like the páramo and rainforest. But in addition to preserving the ecosystems that are still intact, the magnitude of the climatic problems, water shortages and impoverishment of the population make it crucial for the Ecuadorian government to undertake forest restoration programmes using native species, as local communities are now demanding.

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