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Chapter 11

The Environmental and Social Effects of Corporate Environmentalism in the Brazilian Market Pulp Industry

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Introduction

Responsibility for many of the world's environmental and social problems lies directly or indirectly with large corporations. People - their customers - are becoming increasingly aware of this and are demanding that companies include environmental conservation and social considerations in their productive activities. In the long run, "business-as-usual" could result in economic losses and even closure. In general terms, it can thus be said that corporations are being forced to change. Corporations have three possible alternatives: a) "business as usual" disguised under an environmentally and socially-concerned discourse; b) real environmental and social responsibility and c) a combination of "a" and "b".

Many corporations, particularly the largest, have in recent years acknowledged the need to incorporate environmental protection in their activities in response to growing public concern over such issue. The question is how much of their environmental policy is genuinely oriented to environmental conservation and how much is simply a public relations exercise. This chapter analyzes this question by examining a sector of Brazilian industry which produces market pulp. This sector was chosen for the following reasons.

It is dominated by five large corporations which, to some extent, have recognized the need to include environmental and social concerns in their discourse and/or activities. Their association has produced and distributed a booklet which explains the environmental and social advantages of eucalyptus cultivation by the industry (ABECEL undated). Each company integrates pulpwood production with pulp production and has modern pulp plants. They are owned by several powerful shareholders, including national economic groups and foreign investors, as well as state-owned enterprises. These corporations carry out large-scale operations, both in the plantation and in the industrial areas. Their raw material supply is produced in extensive plantations of few species of fast-growing tree monocultures, mostly eucalyptus, aimed at feeding their large mills which produce, on average, approximately 500,000 tons of pulp annually. Production is oriented towards three main northern markets: the European Union, the USA and Japan. The European market has been particularly influential in the inclusion of environmental issues by the five corporations.

By examining the policies and practices of the major companies in this sector this chapter will consider how much this discourse corresponds with reality and what are the underlying reasons for such discourse. To address these questions, I will examine in greater detail the policies and activities of one company, Aracruz Celulose. The reason for highlighting Aracruz lies firstly in the fact that it is not only the world's largest producer of bleached eucalyptus pulp, but it also operates the world largest pulp mill

of any kind (Swann, 1993). Secondly, it is the Brazilian pulp company that appears to be more committed to environmental conservation. An additional reason is that I visited the area where Aracruz operates during July 1997, and was able to dialogue with both the company and local people (indigenous peoples, trade unions, NGOs and some government officials), thus obtaining first-hand information.

The approach used in this inquiry consists of describing and commenting on the stated environmental and social concerns of several corporations and then confronting them with both documented evidence contradicting such claims and the perceptions of local people affected by the companies' activities. Although the results of this study cannot be extended to other corporations, they are of use in identifying ways to improve the performance of corporations with respect to environmental protection and social responsibility, as well as to further the debate on the currently prevailing development model.

The Brazilian market pulp industry

The Brazilian Association of Cellulose Exporters (ABCECEL) is composed of the five main corporations producing market pulp in Brazil: Aracruz Celulose, Bahia Sul Celulose, Celulose Nipo-Brasileira, Jari Celulose and Riocell. Together they produce 90% of Brazil's bleached eucalyptus pulp for export, averaging more than two million tonnes of exports annually, thus supplying half the world's bleached eucalyptus pulp. Only one of them (Jari Celulose), produces some long fiber pulp (from planted pines) in addition to eucalyptus pulp.

Aracruz Celulose S.A.: This is the biggest of them all. Aracruz is currently producing 1.2 million tons of pulp per year from wood fiber from its 132,000 hectares of eucalyptus plantations (its land holdings total 203,000 hectares in the states of Espírito Santo and southern Bahia). Aracruz also has a private port, specializing in pulp shipments. The company's shares are owned by the Lorentzen Group (28%), Mondi Minorco Paper (28%) and the Safra group (28%), while the Brazilian National Economic and Social Development Bank (BNDES) owns a further 12.5%.

Bahia Sul Celulose S.A.: This company produces 500,000 tons of bleached eucalyptus pulp, consisting of both market pulp (45% for export and 10% for the domestic market) and pulp for its own paper production (45%), three fifths of which is also exported. The company owns 114,000 hectares of land in the state of Bahia, of which 68,000 hectares are planted with eucalyptus. Its shares are owned by the Suzano group (35%), Companhia Vale do Rio Doce (29%), the Brazilian National Economic and Social Development Bank (26%) and the International Finance Corporation (3%).

Celulose Nipo-Brasileira S.A. (CENIBRA): Located in the state of Minas Gerais, this corporation produces some 400,000 tons of pulp, 80% of which is exported. Its land holdings consist of 155,000 hectares, of which 88,000 are planted with eucalyptus. Companhia Vale do Rio Doce (currently being privatized) owns 51,5% of the shares, while the Japan-Brazil Pulp Resources Development Co. (composed of the Japanese Overseas Economic Development Fund and some 20 private corporations of the pulp and paper industry) holds the rest of the shares.

Jari Celulose S.A.: The company's mill produces approximately 300,000 tons of pulp annually, 55% of which is long fiber and 45% eucalyptus. Eighty per cent of the pulp is exported. The firm's extensive land holdings in the states of Pará and Amapá include some 90,000 hectares of eucalyptus and pine plantations. The company is owned by a consortium of 23 Brazilian companies, among which the main ones are the CAEMI group (40% of shares) and AMCEL (Amapá Florestal e Celulose S.A.).

Riocell S.A.: Situated in the state of Rio Grande do Sul, it produces annually some 300,000 tons of bleached eucalyptus pulp, mostly for export. It is also the main pulp producer for the Brazilian rayon industry. The firm owns more than 70,000 hectares of land, 53,000 of which are planted with eucalyptus. Its main shareholders are Klabin (a large producer of pulp and paper), Votorantim (the country's largest private conglomerate) and the Iochpe finance company.

Aracruz

Aracruz is probably the company which has taken most seriously into account the need to respond to the growing international concern about the environment. Its directors participated actively in the preparation of the corporate community's position for the 1992 Earth Summit, which resulted in the publication **Changing Course** (Schmidheiny, 1992), published through what is now the World Business Council for Sustainable Development (WBCSD) and distributed to government delegates prior to UNCED. The company's environmental publicity has been widely disseminated, both by the company itself and through the WBCSD, as well as by journalists and researchers. Aracruz has also supported the London-based non-governmental International Institute for Environment and Development in a two-million dollar study on the "sustainable paper cycle" (IIED 1995), which aimed to provide a comprehensive, undisputed and **independent** analysis of the world's pulp and paper industry from a perspective of sustainable development" (emphasis added) (Aracruz 1997a). IIED had previously conducted research for Shell International's troublesome plantation project in Thailand - from which Shell later withdrew due to organized local opposition and delays in getting government approval. In 1992, IIED had praised Aracruz's activities in the following words: "Aracruz Celulose S.A., with government support, took control of much degraded land within the tattered fragments of natural forest, and has established major Eucalyptus plantations. In doing so, it has begun to improve the local environment and social conditions" (Sargent and Bass 1992).

The company produces printed and visual materials aimed at different audiences and is carrying out research on the potential environmental impacts of its activities, all aimed at proving that "all of the Company's activities are carried out under the principles of sustainable development, which involves promoting social and economic growth in harmony with nature" (Aracruz 1996a).

According to Aracruz, its activities do not appear to have negative impacts either in the plantation or in the industrial areas, because "the Company has been fully committed to the principles of sustainable development since its inception" (Kaufmann 1996). The company states that it preserves biodiversity, protects the soil and protects water resources (Aracruz 1997b).

In respect to biodiversity, Aracruz stresses that it "preserves tropical rain forests in the 56,000 hectares of native reserves on its properties that are interspersed with the eucalyptus plantations". In order to further reassure concerned people (particularly northern customers), it makes explicit that its 132,000 hectares of eucalyptus plantations are "some 3,000 kilometers from the Amazon rainforest region". It also states that the company "does not use any wood from tropical rain forests, nor from any other kind of native forests. Aracruz pulp is produced solely from sustainably managed eucalyptus plantations". Such plantations are publicised as "a complement to, and not a substitute for, tropical forests. Indeed, fast growing plantations actually help reduce the world's - and Brazil's - wood deficit by alleviating the main pressures on native forests and consequently helping to preserve them" (Aracruz 1996a).

The above statements demand comment. Aracruz operates in the area previously dominated by a type of forest - the Mata Atlantica - which is, in fact, under far greater threat of extinction than the Amazonian

forest. The Mata Atlantica is also more biodiversity-rich than the Amazonian forest. The company is therefore trying to mislead concerned citizens, assuming that they are unaware of these facts.

Secondly, the fact that the plantations are “interspersed” with native forests is not the result of the company’s initial concern over environmental conservation, but its simple adherence to government legislation, which established a ban on cutting native forests on a 10-metre strip along the margin of all watercourses. The company only later realized that these remaining forests helped to maintain an ecological balance, which had positive results for its plantations. The company is now planting native species to expand the riparian buffer zones in an extension of some 4,500 hectares. Again, this action aims at complying with new legislation, which establishes that the riparian forest areas must now be widened to a 30-metre strip. As this coincides with Aracruz’s experience concerning the importance of the buffer zones to protect its plantations, it is simply in the company’s interests to act in accordance with government legislation (ABECEL undated). Is this corporate environmentalism or just expedience?

Lastly, pulpwood plantations in Brazil do not alleviate pressures on native forests. Forest destruction in Brazil is mostly related to changes in land-use (conversion to cattle raising and agriculture), the use of wood as an energy source and the use of timber for the wood industry. The Brazilian pulp industry does not rely on native species, not because of environmental considerations but because wood from native mixed forests is not suitable for modern pulp production.

Aracruz also asserts that it has planted eucalyptus only in areas where the natural forest was cleared before its arrival. This claim contradicts accusations that Aracruz felled and burned more than 50,000 hectares of forest during its first phase of tree planting (FASE 1993, Miranda 1993a). Even when the exact number of hectares deforested by the company remains unclear, local indigenous people still remember forest being felled by chains pulled by two tractors. José Luís Ramos (head of Caieira Velha Tupinikim indian village) recalls that when he was seven years old “we went to see the cutting of the forest. We saw this big machine cutting down everything together with another machine, one on this side, the other on that side, and that way they cut the trees”. A Guaraní indian remembers that when they arrived in 1967 (the same year that Aracruz started its activities) “there was rain forest everywhere. We liked it because it was pure native forest” (ECTG/CIMI 1996). One of Aracruz’s minority shareholders (the Storebrand Scudder Environmental Value Fund) is somewhat more forthright than the company, recognizing that “Aracruz deforested small amounts of native forests”, when the level of environmental consciousness of the business community was extremely low in Brazil and “Aracruz was not an exception” (EVF 1997).

Aracruz’s plantations are composed of only two species of eucalyptus (*E. grandis* and *E. urophylla*). In order to achieve higher yields with the wood best suited for pulp-making and reduce risks associated with low diversity (for example, possible pest attacks), the company carries out important genetic research. Its plantations consist of separate blocks of clones of more than 100 hybrids of the two species mentioned above (Aracruz 1996a).

In answer to criticisms about low biodiversity, the company’s first answer is that “the biodiversity of eucalyptus should not be compared with that of native rain forests . . . but rather with other crops” such as wheat, soya, sugar cane and coffee. This answer is complemented by saying that “the ecosystem of eucalyptus and native reserves offers shelter, nourishment and even conditions for reproduction for the wildlife” and that in Aracruz areas “more than 1,700 species of fauna have been found” (Aracruz 1996a).

Such claim is strongly contested by local indigenous peoples whose hunting and fishing opportunities have declined since the introduction of eucalyptus plantations (ECTG/CIMI 1996). According to them, most of the wildlife has disappeared from the area as a result of the activities of Aracruz (pers.comm. with local residents).

With respect to soils, Aracruz claims that “independent research has proved the beneficial effects of Eucalyptus on many soil properties, including structure, water storage capacity, drainage and aeration, among others” and that a number of facts from its own experience contradict “the theory that eucalyptus plantations impoverish the soil”. Among those facts, the firm points to the “constant increase in forestry productivity, including the regions where the first plantings took place 27 years ago”. The company explains the improvement in soil in terms of “the intense deposition of organic matter on the soil” and the fact that eucalyptus seeks nutrients in the subsoil layers and brings them to the surface, thus recovering the soil’s fertility levels (Aracruz 1997b).

Three comments should be made on the above. First, the increased productivity after three rotations may in no way be considered proof of sustainability. Many other Green Revolution-type agricultural crops have been extremely productive during their first harvests, but have finally resulted in soil degradation. Increased productivity may simply be the result of increased chemical applications (fertilizers). Furthermore, while productivity measured in terms of wood production may increase, productivity in terms of other biomass and water production may in fact decrease. Second, the balance between deposition of organic matter (estimated by Aracruz at 7 tons per hectare/year) and wood extraction (some 200 tons/hectare every 7 years) is clearly negative. In the case of Aracruz, where trunks are removed together with their bark, the nutrient export is even greater, given that the bark contains many of the nutrients used by the trees. Finally, the surfacing of nutrients from the subsoil implies the use of the subsoil’s nutrient “capital”, which will eventually be depleted. Bringing subsoil nutrients (and deeper-lying water) closer to the surface is not necessarily desirable if it means merely the depletion of another layer of soil.

Aracruz has recently implemented a number of measures for soil protection. Based on the results of a study conducted jointly with EMBRAPA (the Brazilian Agricultural Research Company) “significant changes were implemented in soil preparation operations, the recommendation of genetic materials to be planted, weed control, fertilizer use and insect and disease protection”. As a result, there is now no burning during site preparation, no ploughing and no understorey removal (which were previously carried out as normal management practices). With respect to fertilization, a new technique to avoid the use of “excessive amounts” of chemical fertilizers “which otherwise could be leached to the water table or to the rivers”, was only implemented in 1994 (Aracruz 1997b), which means that the company polluted water in the region for more than two decades. While these recent improvements in the company’s environmental management are to be welcomed, they also prove that the company has not always adhered to sustainable development. The fact that Aracruz contradicts itself about its past performance raises the question as to whether its claims about the present and the future can be relied upon either.

Another contradiction can be found in the 1996 introduction of mechanized tree harvesting equipment. Aracruz’s publication “The Eucalyptus and Sustainable Pulp Production” (1996a) includes a box summarizing methods “used by Aracruz to lessen potential environmental impacts”. One such method establishes the “use of forestry equipment with suitable dimensions, tire gauges and working pressures, so as to minimize soil compacting”. Two months later, “Aracruz News” No.4, welcomed the introduction of large harvesting machines (fellers, log processors and forwarders), under the argument

that they would improve operational efficiency and productivity (Aracruz 1996b). These caterpillar tractors, however, will undoubtedly compact the soil. Clearly, in this case, economic interest has taken precedence over environmental considerations.

Aracruz also claims to be protecting water resources and has publicized -and even supported- studies proving that eucalyptus plantations have no negative effects on water resources. Like many other plantation advocates, the company stresses that this species “uses water more efficiently, consuming less water per unit of biomass produced than other species” (Aracruz 1997b). Such statements hide the fact the large-scale plantations consume enormous amounts of water and can deplete water resources at a regional level. It is therefore irrelevant to say that they use water “more efficiently” to produce biomass.

The fact is that only in 1994, when all of its eucalyptus had already been in place for many years, did Aracruz begin to monitor water in its plantation area. This research is being conducted at a 280 hectare watershed and none of its findings have yet been made public. Many of the impacts of plantations on the local water resources, however, had already occurred before this watershed experiment began. Rogério Medeiros, National Coordinator for the Environment of the National Federation of Journalists, who has been monitoring Aracruz's activities since their inception, states that 156 streams have disappeared in the region during that period and that wells are drying up in a number of areas; even a river, the San Domingos, has stopped flowing (FASE 1993). During our visit to the area, local residents showed us a number of dried up water courses where they used to fish. It was quite obvious that water used to flow there, but there was no trace of it. The depletion of water resources has impacts not only on local people and their productive activities but also on local fauna, which is highly dependent on water for survival. Even though part of the problem of the depletion of water resources in the State of Espírito Santo can also be attributed to large-scale deforestation processes, the problem, at the local level, seems to have a much more direct link with Aracruz's plantations.

Another fact contradicting the claim that “the Company has been fully committed to the principles of sustainable development since its inception” is its use of pesticides and herbicides. Leaf-cutting ants constitute the main threat to local plantations. For years, the company used Mirex, a toxic and persistent organochlorine, to combat these ants. It has recently changed to Mirex-S, a pyrethroid, more environmentally-friendly than organochlorines. More recently (1997), Aracruz has begun to use biodegradable bait bags that “exclusively attracts the main species of leaf-cutting ants”, which makes them “safer for non-target animals” (Aracruz 1997c). This means that past ant-killing activities did, in fact, impact on “non-target animals.”

Herbicides are also widely used by the company. It has changed from using Goal to using Roundup (Glyphosate) which, it claims, is less harmful than cooking salt. Given the company's forestry management practices, a vast amount of Roundup must be used. Such practices allow the trees to regrow after the first cut, but after the second cut, all the sprouts are sprayed with Roundup, in order to replace them with a new, faster-growing and higher-quality eucalyptus clone. During our visit we frequently came upon landscapes of brown-coloured coppice - killed with Roundup.

The activities of Aracruz have also had other important impacts on local people. First, the enormous area bought by the company since the 1960s was not, contrary to company claims, empty; rather, thousands of indigenous people and subsistence farmers lived there. In order to overcome local resistance to the takeover, mainly from black communities and small agricultural producers who had recently migrated from other states, a strategy which combined physical and symbolic violence was used. Land purchases were made through two people: a military officer and a local black leader, a combination which had an

especially clear meaning given the dominance at that time of the military dictatorship (Miranda 1993b). Approximately 7,000 families are said to have been removed, through violence and coercion, from the areas Aracruz occupied, including several thousand people who received no compensation (FASE 1993, Valarelli 1992). Crucial to these expulsions was the negligence or collaboration of local authorities, including the then governor of Espírito Santo state, Artur Gerardt, who later became president of Aracruz (FASE 1993).

Local indigenous peoples were also subject to expulsion. According to Eugenio Francisco, a Tupinikim Indian, ‘When the company came, the people left. They weren’t able to defy it. They were forced to leave and even threatened . . . The company took everything. They gave us some money, but what they had to pay they didn’t’ (ECTG/CIMI 1996). José Luís Ramos, the head of Caieira Velha village, recalls that in 1967, Aracruz, with the support of the state government, “felled large areas of forest and planted eucalyptus across the region, including on our land. In a little time, this company destroyed around seven Tupinikim villages, expelling us, and today we are surrounded by a sea of eucalyptus” (Miranda 1993a).

Three principal options were left to the people expelled: emigrate to other rural areas; move to a life of underemployment in the *favelas* or shanty towns of cities; or work for the company, mainly on the plantations. Aracruz plantation work, however, has been described as so dangerous and unhealthy that few workers can remain on the job more than ten years (Inyaku 1993). According to the same source, over 50 per cent of those who have worked for long periods on the plantations suffer from serious work-related health problems as a result of their tasks. It is also claimed that the company tends to dismiss long-term plantation employees without compensation, replacing them with younger people (Inyaku 1993). Salaries are kept low by the abundance of unemployed people in the region. Unemployment has increased due to the crisis of another export monoculture crop, coffee; by the company's dispossession of local people; and migration to the Aracruz “development pole”.

Yet opportunities for even low-paid, health-endangering jobs have become limited as tree harvesting and other plantation work have become increasingly mechanised (IBASE 1994). According to Aracruz, the new tree harvesting equipment has meant a “reduction of the workforce for this phase of operations from over 1,100 to under 350 people” (Aracruz 1996b). While these machines process 140 trees per hour, chainsaw operators process only 10. The company stresses that “worker comfort and safety have improved dramatically” with these machines, but says nothing of the 750 workers affected.

Plantation work has also increasingly passed to outside contractors, where working and salary conditions are even worse. In a process which began in 1993, Aracruz has reduced its workforce from 7,000 to 2,700 employees. Outside contractors supply another 2,500 workers for Aracruz activities (Aracruz 1997b).

Aracruz attempts to divert attention from its record by advertising itself as having voluntarily built several recreation centres, schools, vocational training centres and health centres, at a cost of over US\$15 million. What the company does not mention, however, is that as part of the plant expansion project, the BNDES (the Brazilian development bank) both demanded that Aracruz reinforce social structure in the regions where it operates and provide 80 per cent of the total funding required to do so (Goncalves et al. 1994).

Aracruz's claim that it does not usurp agricultural land is contradicted by the way the firm has bought land in some areas. In Bahia, for example, Aracruz purchased land previously dedicated to small-scale

cultivation of *mamao*, a local fruit. Although a company director suggested that *mamao* production was in decline, it had in fact provided a viable livelihood for local farmers (Goncalves et al. 1994). In general, the company's insistence that its activities are compatible with agriculture makes little sense given its propensity for buying the best agricultural land, on the grounds that it makes mechanization easier. Aracruz owns a full 15 per cent of the plains in Espírito Santo (FASE 1993).

The Tupinikim Indians, meanwhile, found that soils on land returned to them after having been used for eucalyptus planting did not regain their old levels of agricultural productivity, having become sandy. Furthermore, the indiscriminate use of the herbicides Goal and Roundup and the ant killer Mirex have been blamed for the wholesale poisoning of animals (FASE 1993).

The pulp and paper industry is considered to be one of the more polluting industries in the world. Aracruz claims, however, that its industrial processes are clean and that "strict controls over the pulping process guarantee the safety of the product, and effluent quality levels that meet international regulations".(Aracruz 1997b). With respect to liquid effluents, the firm states that "regular analysis shows no traces of dioxin while AOX (Absorbable Halogenated Compounds) concentrations - the parameter normally used for measuring organochlorines - are below 0.25 kg per tonne of pulp in the combined final effluent, which is considered very low". Tests carried out have "never discovered any significant alterations to the receiving body" (Aracruz 1996a). The firm goes as far as saying that "our effluents have caused virtually no impact on the ocean ecosystems" (Aracruz 1996c). Regarding atmospheric emissions, we were told by Aracruz managers that they consisted mostly of water and sulphur, with no harmful effects apart from the strong odor of the emissions.

The company incorporated new technology for non-chlorine pulp bleaching in late 1993. This was in response to foreign consumer demand for chlorine-free pulp. A company directive stated that "without the new technology, we would lose sales of 150,000 tonnes of pulp on the international market" (IBASE 1993a). It is for this reason that the firm runs three different types of industrial processes among its four production lines. One uses chlorine gas (43% of total output), two others are elemental chlorine free-ECF (47%) and only the newest one is totally chlorine free-TCF (10%) (ECTG/CIMI 1996).

Even though Aracruz is now investing in new equipment to eliminate the use of chlorine gas, it is important to look into its past record, to see if "the Company has been fully committed to the principles of sustainable development since its inception". The pulp mill was first inaugurated in 1978, but information on final effluent indicators are only available since 1984 (AOX only since 1990), and the evolution of these indicators seem to show that the statement that "our effluents have caused virtually no impact on the ocean ecosystems", is simply untrue. The following is official company information:

Aracruz Environmental Performance Indicators (Final Effluent)

Year	AOX (kg/adt)	BOD5 (kg/adt)	COD (kg/adt)	TSS (kg/adt)	COLOR (kgPT/adt)
1984	-	20.10	121.3	13.90	660.0
1990	2.90	21.12	104.0	24.63	428.8
1991	0.91	4.98	42.3	3.56	322.5
1996	0.27	2.10	25.0	1.90	77.5

Kg/adt - Kilos per tonne of air-dried pulp

KgPt/adt - Kilos of platen per tonne of air-dried pulp
 AOX - Absorbable Halogenated Compounds
 BOD5 - Biochemical Oxygen Demand (5 days)
 COD - Chemical Oxygen Demand; TSS - Total Suspended Solid
 COLOR - Color of Effluent

Source: Aracruz 1997b

According to the above indicators, the company has improved dramatically its effluent treatment since 1984: in most cases a 10-fold improvement. While this can be considered a major achievement, it also shows that the company's past performance has been appalling. The year 1991 seems to be the starting point of a new, more concerned attitude towards the marine environment, which does not appear to have been the case in the period 1978-1990. This conclusion coincides with a statement from Aracruz's environmental manager, who says that "results regarding offshore water quality improved significantly as of 1991, when the six biological lagoons entered into operation, providing intensive secondary treatment of effluents" (Aracruz 1996c).

According to some local observers, the company's control systems are aimed more at hiding pollution problems rather than curbing them. The company has a computerized system for monitoring atmospheric conditions. The system is allegedly used for the discharge of airborne emissions when the wind is blowing away from urban centres. The firm's incinerator which is used to burn containers of toxic chemicals is located near its tree nursery and is now hidden behind a eucalyptus plantation. Local people claim that it is used when the wind is blowing in the right direction and when there are no visitors in the area. Although such practices can be considered positive regarding urban people's health, they still hide the fact that the mill continues to pollute the air in the region, and that such pollution will affect rural populations. According to the same sources, liquid effluents are discharged into the ocean mostly at night, particularly when there are few fishermen in the sea. The Pulp Industry Workers Union (SINTICEL) has accused Aracruz of incorrect management of both waterborne and airborne emissions (FASE 1992). Local activists claim that chemical releases into the Atlantic have killed and poisoned both fish and vegetation.

One of Aracruz's main unsolved problems concerns its attitude towards the indigenous peoples that were already living in the area at the time of its arrival. What the firm conceives as "sustainable development" clearly differs from the indigenous peoples' view of sustainable development. According to the firm, it was in the mid-1960s when the state of Espírito Santo was in a situation of economic stagnation, that the federal government "set into motion a strategy ... to foster development and diversify the state's economic activities" and "Aracruz participated in this effort" (Aracruz 1997b).

From the perspective of the indigenous peoples, their area had been sustainably used for centuries and they had no major livelihood problems. In spite of the destructive activities of a "development" process which had begun in the 1940s (a process which included the granting of lands by the federal government to the Vitória Iron and Steel Company -CONAVI-, which deforested some 10,000 hectares of forest), 60% of the area of the municipality of Aracruz was still covered with native forests. These forests ensured food, housing, medicine and other goods and services for the indigenous peoples (ECTG/CIMI 1996).

The Tupinikim had been living in the area at least since the arrival of the Portuguese and, as owners of the territory, welcomed the arrival in 1967 of a group of Guarani Mbyá from southern Brazil. They did

not welcome, however, the simultaneous arrival of Aracruz Celulose, which purchased 10,000 hectares of land from CONAVI and a further 30,000 hectares from the federal government. Indigenous practices which had ensured the sustainable use of resources for the present and future generations, became unviable after the initiation of the activities of Aracruz. “The reduction of the territory and the deforestation of the native forest were two determining factors that jeopardized the physical and cultural survival of the Tupinikim and the Guaraní” (ECTG/CIMI 1996).

The indigenous peoples’ struggle began that same year, when two Guaraní and one Tupinikim went to Brasilia to denounce the invasion of their lands by Aracruz to the Indian Protection Service (SPI). The struggle has continued since, with Aracruz using its economic and political strength in order to avoid an equitable demarcation of lands where the Tupinikim and Guaraní people can live in accordance with their own cultural norms. In 1993, the indigenous people who had lost their land to Aracruz launched an international campaign to get it back.

As part of this campaign, indigenous representatives went to Norway in early 1997 to seek support for their struggle, given that the company’s chairperson, Erling Sven Lorentzen (who is also one of the principle shareholders), was born in that country. SINTICEL, the company’s main trade union, wrote a letter of “support and solidarity for the just struggle of the Tupinikim and Guaraní Indians” and made clear that “the retrocession of the lands to the Tupinikim and Guaraní Indians will not disadvantage the company, since it has been proved that Aracruz Celulose has been exporting wood because of the fact that the eucalyptus production exceeds the capacity of the pulp mill” (SINTICEL 1997). This was judged as high treason by the company, which not only suspended “sine die” all meetings with SINTICEL, but also banned the union leaders from entering the plant and held individual meetings with the company’s employees, trying to divide the trade union.

In summary, it seems relevant to quote the remarks of a team which carried out research in the area: “Aracruz assumes the image of protector of the environment, but its eucalyptus trees have dried streams, destroyed the local fauna, impoverished the soil, impeded the regrowth of native plant species, and drastically reduced the area available for cultivating basic foodstuffs (in a country where many people die of hunger). This is not to mention land concentration and the expulsion of the rural population, which has contributed to increasing the urban population and the degradation of living conditions in the cities. Where is the sustainable development here, we might ask?” (Goncalves et al. 1994).

Bahia Sul

Bahia Sul Celulose also presents itself as a defender of nature and blames the poor for environmental degradation. The hunting practised by local people to supplement their poor diet, for example, is treated in the company's literature as an “ecological crime” which the firm is striving to curb. The firm’s preservation of the remnants of native forests on its properties is presented as a guarantee for the survival of “nature” against degradation by the poor (Miranda 1992).

An industry journalist reported approvingly in 1992 that “environmental considerations were important both in the location of [Bahia Sul's] plant and in its construction”:

“Apart from Bahia Sul's conservation of 30 per cent of its forest land for native species and its planting of 20,000 such trees annually, extensive studies were produced prior to construction to assure the aquatic environment was safe. Features of the mill include oxygen delignification (a

cleaner bleaching process), primary and secondary effluent treatment and biomass energy production” (Higgs 1992a).

Such statements are misleading. They ignore the fact that, before the region was opened up to “development”, local people had been using natural resources in a far more responsible manner than the company is using them today (Miranda 1992). They are also contradicted by the fact that Bahia Sul used only an exceptionally low 7.2 per cent of its total mill construction costs on contamination control equipment (Goncalves et al. 1994). This is in sharp contrast to the approximately 20 per cent figure common in industrialized countries (CEPEDES/CDDH 1992).

Also unmentioned are other socio-economic dangers that Bahia Sul’s investments pose for the region as a whole, such as those related to dependence on a single monoculture. In the case of cacao cultivation in Bahia, this dependence led to repeated crises attributable to climatic irregularities, pests, and falling international commodity prices over which local producers had little control. Dependence on monocultures of eucalyptus for the pulp and paper industry may bring similar problems. The reduction in size of the state’s agricultural area has already forced it into greater dependence on costlier food imports from other regions, with negative repercussions on the quality of life of poorer groups (CEPEDES/CDDH 1992, Miranda 1992).

To make way for Bahia Sul, the families from nearly 8,000 small properties in the region were driven from their land. Evictees who became forestry employees are now by and large worse off than small producers who managed to keep their properties (Goncalves et al. 1994). Bahia Sul has not proved to be an efficient creator of jobs. Each one of the existing 5,500 jobs at the company has required an investment of between US\$226,000 and \$338,000, with much of the capital deriving ultimately from public funds. According to a study conducted by local NGOs (CEPEDES/CDDH 1992), an alternative development project (based on diversified agriculture) with a similar level of investment could generate 150,000 jobs at a cost of a mere \$8,300 each. In the forestry sector, the company employs only one person per 45 hectares, while agricultural activities provide work to at least 18 per hectare; *mamao* production requires 1.5 workers per hectare (CDDH 1993). Moreover, contrary to company claims, many of the jobs which have been provided have not gone to local people, who often lack the required qualifications (Miranda 1992).

In addition, living and working conditions have hardly improved. The large numbers of people attracted to the Bahia Sul site by the company’s advertisements for construction workers precipitated a sharp rise in housing rents. For labourers who lodged alone, living conditions were dreadful. Rooms measuring three by four metres lodged six or more workers, with one toilet per 32 men. Family problems were exacerbated by extended separations. Some 5,000 workers lived in such conditions over a three-year period, with the population around the construction site occasionally surging as high as 13,000. The resulting strikes delayed completion of the plant. The infrastructure for health, education, drainage, housing and security could not cope with the large influx of migrants. New shanty towns sprang up, and poverty, violence, crime, disease and prostitution increased (CEPEDES/CDDH 1992, CDDH 1993, Goncalves et al. 1994).

A mega project of the Bahia Sul variety implies enormous concentrations of capital, land and political power. As it generates little employment in relation to the level of investment, little of this capital and power ever filters down to the deprived in society. As a result, large firms such as Bahia Sul come to wield disproportionate political clout and the states in which they are located run the risk of suffering from a modern “feudal” syndrome in which large holders of land and capital become “lords” who

attempt to dictate policy. Before Bahia Sul even commenced operations, official complaints were being aired about the use of company funds in election campaigns (CEPEDES/CDDH 1992). Years later, an advance payment of taxes by Bahia Sul was used by the Bahia government to surface the roads most used by the company's lorries (Miranda 1992). Public reaction to the growing power of the company, eventually forced the state government of Bahia to demand, in 1989, that the firm suspend the acquisition of new lands - a situation which paralleled events in Espíritu Santo with Aracruz.

The environmental problems caused by Bahia Sul Celulose are also significant. In southern Bahia, where the company is located, only approximately 60,000 hectares survive of a forest which, in 1930, covered one and a half million hectares. These remnants are part of the Mata Atlantica, an endangered forest at least as rich in biodiversity as the Amazon rainforests (CEPEDES/CDDH 1992). Although the company was not responsible for this deforestation process, Bahia Sul's eucalyptus plantations threaten the survival of this forest mainly because it takes over crucial areas which would otherwise have regenerated into native forest. Unless these areas are allowed to regrow, the strict conservation of a few tiny areas of untouched Mata Atlantica forest, such as those preserved by Bahia Sul, has little meaning.

Bahia Sul's eucalyptus plantations are also affecting both the quantity and the quality of local water. Inhabitants of the town of Veracruz, for example, have declared that as the result of a nearby eucalyptus plantation, several wells have dried up and they have had to dig down a further three metres in order to find water. Insecticides, fertilizers and herbicides used on the plantations also contaminate watercourses, taking their toll on aquatic fauna. The inhabitants of the fishing community of Caravelas have gone to the courts to demand an investigation into the reduction in crabs and other species - a reduction which has been linked to the use of agrochemicals (CEPEDES/CDDH 1992). Local residents fear that water contamination from Bahia Sul's industrial plant will only add to their problems.

CENIBRA

CENIBRA's claim to green credentials comes in the form of a five-year strategic plan developed in 1991 to assure "sustainable development" (Higgs 1992b). As a result of this plan, 240 hectares of pine and eucalyptus surrounding the plant were to be enriched with local species in order to encourage the return of other indigenous species. In addition, some 1,000 hectares of Mata Atlantica forest on the River Doce were to be preserved, while company land on the banks of the same river was to be reforested with native species. At CENIBRA's mill, meanwhile, the plan called for company-monitored measures to control effluents, as well as the initiation of production of chlorine-free pulp.

Several aspects of this plan call for comment. First, the planting of indigenous species and the preservation of a few areas of native forest (the latter, far from being a voluntary measure, is a legal obligation) are essentially cosmetic measures to pacify local people increasingly concerned by the advance of eucalyptus, as well as environmental groups in the North, although they also limit the risk of pest infestations in the company's plantations. Second, effluent-treatment systems were installed only in 1988 - 11 years after the mill came on-line - and only after heavy pressure from local people (Goncalves 1995). Their installation thus hardly demonstrates trustworthiness regarding environmental matters. Similarly, chlorine-free bleaching techniques began to be used only as a result of demand from the European Community, and are used exclusively with pulp destined for the European market (JATAN 1993).

CENIBRA's "sustainable development" plan fails to mention a number of destructive realities about the company's operations. One such reality is the way CENIBRA's projects and those of other companies

such as CVRD, ACESITA and Belgo Mineira concentrate vast areas of land in a few hands in a process often marked by violence. For instance, according to JATAN (1993), FLONIBRA (a subsidiary of CENIBRA) used various methods to acquire land:

“sometimes it purchased land at above market prices; at other times residents were chased away with violence. It also often resorted to deception; for instance it would first move a FLONIBRA insider onto land adjacent to the farmer's land and set up a local conflict; then a third party would be sent in who would act as a ‘mediator’ between the two and offer to purchase the farmer's land.”

FLONIBRA is also reported to have felled secondary forest used by indigenous people, obliging them to emigrate to nearby towns (JATAN 1992). As elsewhere in Brazil, the concentration of land with good soils in a few hands has undermined subsistence agriculture and led to increased urban migration and the weakening of autonomy and local social ties (Guerra 1992, Goncalves 1995). Wage labour, meanwhile, has proved an inadequate substitute for small-scale farming in both economic and cultural terms. In the words of one worker, “the salary that we earn does not go very far . . . it is only enough to survive on” (Goncalves 1995). As a result of large plantations taking over agricultural areas, Minas Gerais has had to import food from other regions. As the holdings of plantation firms accumulate (ACESITA, for example, has 250,000 hectares, Belgo Mineira 100,000 and CENIBRA 155,000), the dependence of local towns on a few businesses grows, and the influence of such companies on decision-making processes increases. One result is yet more industrial projects and tree plantations (Guerra 1992, JATAN 1993).

CENIBRA's relationship with its workers, meanwhile, has been authoritarian and exploitative. While, according to one interviewed worker, wages were initially good and there was a strong trade union, salaries declined considerably after CENIBRA stepped in to manipulate union elections through pressure and fraud. The company also dismissed unionized workers and started contracting out both industrial and forestry tasks to other firms. This move, aimed at reducing costs, resulted in even lower wage levels and a smaller worker population, making unionization even more difficult (Goncalves 1995). Working conditions are often inadequate, with many plantation chainsaw operators suffering from nervous disorders and other health problems (JATAN 1993).

CENIBRA is also moving into contract farming through the Fazendeiro Florestal programme, operated in conjunction with a state agency. Through this programme, seedlings, fertilisers and ant poison are provided to individual farmers if they plant eucalyptus on their own land. This allows the company to increase its forestry base in a way other than through simple acquisition of land. The farmers are contractually obligated to sell CENIBRA wood at the “market price”, which is established by the company itself (Goncalves 1995).

The environmental impacts of CENIBRA plantations include destruction of native forests and loss of biodiversity (Guerra 1992, JATAN 1993, Goncalves 1995). Fertile agricultural land has also been taken over. Not only does CENIBRA not restrict its plantations to “degraded” land; contrary to its stated policy, it also plants on pronounced slopes (Guerra 1992) - a practice which can result in serious erosion.

Soil ecology has also been affected. Because the thick layer of plant material associated with plantations cannot be mineralised rapidly by microorganisms. Organic acids are formed and calcium, potassium and magnesium ions are replaced by hydrogen ions in the upper layer of the soil. This implies a lower pH, which affects the availability of nutrients to plants. The long term productive capacity of the soil is endangered and it is not known how much longer the same land can keep on producing eucalyptus wood

(Guerra 1992). Tree bark which, according to FAO, contains the best part of the nutrients taken from the soil by the tree, is removed from the site and used in the pulp mill for energy generation, further reducing soil fertility (JATAN 1993).

Local people have observed, moreover, that the rate of replacement of underground water tables has slowed. This is attributable to the increased surface runoff associated with plantations and with the high water consumption of eucalyptus. Finally, the use of pesticides such as Aldrin and Mirex has resulted in the contamination of soils and watercourses, with proven high rates of fish mortality (Guerra 1992). The company has even begun to spray herbicides from the air, endangering local agriculturalists (Goncalves 1995).

The environmental impacts at CENIBRA's pulp mill have been equally serious. The first complaints of water pollution date from 1977, the year the plant started up, and have continued ever since. Yet only at the end of 1986 did the company formally commit itself to installing an industrial and sanitary effluent treatment system, giving itself a 30-month deadline. Since 1990, CENIBRA has submitted monthly reports to the appropriate state agency but without making them public (Goncalves 1995). Although scientific data on air pollution around the pulp mill is unavailable, JATAN members visiting the plant in 1992 remarked that "we couldn't avoid noticing the horrible smell present in all of the plant and we felt sorry for the people who had to work there" (JATAN 1993).

Jari

According to journalist Richard Higgs, "Jari is very proud of its almost surgical blending of plantation species in among the predominant and thriving natural forest" - a practice which helps "to prevent the spread of pests and disease". The company also maintains reserve areas and carries out research into native species which may be of economic use. Like other pulp firms, Jari has recently displayed much concern about chlorine pollution, although this concern had remained dormant for 14 years before 1992, when European consumers began calling for non-chlorine-bleached pulp (Higgs 1993). Jari's own public relations efforts have received a boost from Paulo de T. Alvim, a leading Brazilian agricultural planner, who has claimed that the Jari plantations reduce global warming because they grow, whereas the tropical forest that had occupied the site previously had been in equilibrium with the atmosphere, neither absorbing nor emitting carbon (Fearnside 1993).

Such claims conceal a great deal more than they reveal. For example, although the company is legally obliged to preserve 50 per cent of the native forests it controls, it has already felled around a third of them in order to supplement shortfalls in gmelina (the tree initially adopted for plantations by the firm), with species such as *Jacaranda copaia*, which in 1982 made up around 20 per cent of its wood supply. Some 1,200 hectares of the forests Jari claims to be protecting are being felled each year (Shell/WWF 1993), mostly for energy generation and for the expansion of its plantations (Fanzeres 1995). In 1992, Brazil's official environmental conservation organization, IBAMA, rejected the company's request to cut 5,000 hectares of dense forest which it wanted to replace with plantations (IBASE 1993b). The felling of such native forests has resulted not only in loss of native trees but also in loss of habitat for a very large number of other species.

Additional environmental problems centre on the project's continuing reliance on monoculture. Forestry experts never tire of pointing out Jari's serious mistake in choosing gmelina as a plantation species (Sargent and Bass 1992, Shell/WWF 1993). This "error", however, is merely one instance of a much more general problem which foresters seem far less eager to acknowledge, and which the current Jari

project also exemplifies, namely, that in a large-scale monospecific plantation of any fast-growing species, a fungus, virus, insect or other animal which can find food may well be able to decimate the entire plantation in a short time.

Pest infestation, moreover, was only one of the environmental problems afflicting the Jari project. When the gmelina felling rotation was shortened to avoid fungus attacks, nutrients began to be extracted from the soil at a higher rate. It is estimated that most of the potassium and phosphorus will have disappeared from the estate by the end of the 21st century (Shell/WWF 1993). Meanwhile, soil compaction and erosion have resulted from the use of heavy forestry machinery (Sargent and Bass 1992).

Nor has the company shown itself to be particularly concerned about water and aquatic life. Effluents from the plant are eliminated by the simple traditional procedure of dumping them directly into the Jari river. This has resulted in fish kills downriver from the plant. The fertilisers and the agrochemicals used by the company also contaminate local watercourses (Shell/WWF 1993). Jari's "environmental answer" to its energy needs, a hydroelectric dam on the Jari river (Knight 1991, Higgs 1993), would destroy one of the most beautiful and historic sites of Amapá state, Cachoeira Santo Antonio (Fanzeres 1995).

The claim that Jari's plantations help alleviate global warming (an argument also used by Aracruz), has been convincingly refuted by scientist Philip Fearnside (1993), who points out that "the much greater standing biomass of the forest [replaced by Jari] as compared to the plantation means that the effect of Jari is emission rather than removal of atmospheric CO₂". This means that the CO₂ released through the cutting of the forest to make place for the plantation is more than the CO₂ sequestered by the trees growing in the plantation.

In the social area, Jari is accused of widespread abuse. When it was first set up, the company had to invest in a great deal of social infrastructure in order to attract the large forestry and industrial workforce which was needed. Some 3,000 housing units were built, as well as four schools, a 1,100-bed hospital, clinics, supermarkets, a radio station and 11,000 kilometres of roads (Higgs 1993). Despite these investments, however, "work-crew contractors were notorious for their treatment of workers brought in from the poor north-eastern states". This situation was reflected in a constant turnover of staff at all levels, which reached rates of 200-300 per cent per year (Sargent and Bass 1992).

After the company changed hands in 1992, new social problems emerged. Between 1988 and 1993 the number of workers fell from 8,000 to 4,500. In the forestry sector, many workers were replaced with machines. Many migrants were thus left unemployed in a region with few other potential employers. In the service sector, meanwhile, the company began to pass the responsibility for hospital, school and restaurant management onto local and federal authorities (Higgs 1993). In other words, having attracted a large number of workers and their families to the project in its initial stages, Jari then shunted off the long-term costs of their welfare onto the state. According to a local journalist, "the legacy of the Jari project has been a shantytown in the middle of the jungle" (M. A. Goncalves 1995).

Riocell

In recent years Riocell has responded to both domestic and foreign environmental pressures with various "green" claims. For example, Klabin, one of the main shareholders, invites visitors to view company operations "so they can see for themselves that we are not cutting down the rainforest". Alfredo Lobl, a Klabin director, has stated that of the 330,000 hectares owned by the company, some 100,000 are preserved as native forests. "We support environmental education programmes for 18,000 school

children”, Lobl adds (Marcus 1993). Another Klabin director, Celso Foelkel, has insisted that “rather than plant huge tracts of monocultural eucalyptus, the company has tried to integrate its growth as far as possible into the countryside ... nobody can say Riocell has a green desert” (Higgs 1992c). This last remark seems to imply that other companies (such as Aracruz, Bahia Sul, CENIBRA and Jari), do have “green deserts”. Riocell, like other Brazilian manufacturers, has also begun to produce non-chlorine bleached pulp.

These “environmentalist” initiatives, however, simply make a virtue of commercial necessity and hardly reflect a thoroughgoing commitment to change. It is the difficulty of finding large contiguous tracts of land for planting in Rio Grande do Sul, for example, and not a policy to “fit into the area”, that has forced Riocell into a pattern of dispersed holdings across the region. Similarly, it is pressure from the European market, and not a determination to be socially responsible, that is pushing the company into non-chlorine bleached pulp. As director Alfred Freund explains: “We decided to go this way [elemental chlorine-free pulp production] because we're market oriented. Europe's our main market and Germany's important to us” (Higgs 1992c). To discover where Riocell's priorities really lie, it is necessary to examine other aspects of its record.

When the firm began operating in 1975, it claimed to have invested US\$100 million in an effluent treatment system. According to environmentalists, however, the company installed a sludge treatment unit only in 1987 (AGAPAN 1992). In 1992, it was still being accused of dumping more than 60 tonnes of organochloride compounds yearly into the Guaiba river, which provides the drinking water for Porto Alegre (Schinke 1992a).

That same year, facing heavy opposition from environmentalists and others in its attempt to secure official approval to double its production capacity, Riocell apparently tried to bribe a local government official who opposed the expansion. When this did not work, the company went on to tell the state governor that if he did not approve the project, the company would move to another state. The governor finally passed the project when the state government received a US\$170 million loan from the Inter-American Development Bank for the decontamination of the Guaiba river basin (Schinke 1992b). Interestingly, Riocell had financed several studies at the local university which showed that fish bred in water contaminated with effluent from the plant had developed serious genetic abnormalities (AGAPAN 1992).

Conclusions

Corporations are not philanthropists: their business is making profits. This results in a contradiction with the concept of sustainable development. This is made clear in a statement by Aracruz CEO Luiz Kaufmann, who states that: “We share the opinion that the main responsibility of a company is to generate wealth through investment, carrying out its activities in harmony with nature and society”. Unable to solve the implied contradiction between “creating wealth” and “harmony with nature and society”, he admits that “before any other consideration a company must generate profits and cash flow to guarantee its own growth and survival, and adequately remunerate its shareholders” (Kaufmann 1996).

That is exactly what all five companies discussed in this chapter do. During the first phase of their activities, they concentrated on trying to reduce investment costs. This meant externalizing as many costs as possible, using their power for that purpose. Their political and economic strength allowed them not only to obtain subsidies from the state, but also to have the state's coercive power on their side

against local people's opposition. Externalization of environmental impacts was also made possible by the state's willingness to turn a blind eye to the companies' activities.

Corporate environmental concerns only surfaced once the companies began to make profits, which allowed them to make "green" investments to curb some of their more polluting activities (for example, industrial effluents). But even when they went into the black, two other conditions were necessary for corporations to take such steps: strong social pressure, either from customers abroad or from local organized citizens' groups; and approval and enforcement of strict environmental legislation.

Of these conditions, the first seems to have been the more important. Most of the companies' commitments on environmental protection constitute an answer to customer concerns and to a lesser extent, local pressures. Such is the case with the issue of the use of chlorine gas which pulp companies are being forced to phase out. Legislation, when it exists, has seldom been enforced; when it has, it has usually been with the approval of the corporations (for example, when patches of native forests have been conserved). In cases where pressures have not been sufficiently strong - and even when legislation exists - the companies have continued to externalize impacts, as is reflected in the attempt by the Tupinikim and Guarani to get their lands back from Aracruz.

When environmental or social concerns put the companies' future at stake, they tend to use their strength to misinform the public. For example, they cannot accept that their large-scale tree plantations have equally large impacts on the environment and on society, because that would jeopardize their activity as a whole. They therefore resort to public relations exercises aimed at convincing the uninformed public that plantations are good for the environment. Instead of trying to find an equitable solution to the indigenous land issue, Aracruz hired a well-known US public relations company, Burson Marsteller, to counteract the international campaign launched by the Tupinikim and Guarani Indians.

Rainforest conservation and environmental protection have become catchwords for many customers and therefore the companies must not only sell a product, but the product must also contain an answer to those concerns. The potential profits lost through the non-exploitation of rainforests, for instance, allow them to make more profits by selling an "environmentally-friendly product". Yet the analysis presented in this chapter shows that in spite of their stated policies, the activities of all five corporations have resulted in important negative impacts - both social and environmental - in the regions where they operate. One reason is simply the large scale of their operations, which results in equally large-scale impacts.

The main question is, therefore, not whether these companies are truly committed to work in "harmony with nature and society" - they are not - but whether this is, in fact, possible. It is extremely difficult for a large-scale, profit-oriented company to adapt without heavy and constant public pressure to the logic of sustainable development, and even less so if the concept also includes "social equity". If the negative impacts of corporate activities can be curtailed, it is through a combination of pressure from citizens groups and government enforcement of environmental legislation. This combination forces corporations to invest money which they would not have invested otherwise. Only then does such investment begin to make sense from a market perspective.

The introduction to this chapter noted three possible alternatives for corporations: a) "business as usual" disguised under an environmental and socially-concerned discourse; b) real environmental and social responsibility and c) a mix between "a" and "b". After having analysed the activities of the main companies in the Brazilian market pulp industry, the conclusion is that none of these firms can be

classified as “b”. Rather, all of them fall under “c”, with some much nearer to “a” than to “b”. Although it seems prima facie almost impossible for these corporations, due to their large scale, political power and profit-making profile, to carry out their activities while treating environment and society with proper respect, they will respond to pressures from society and governments aimed at mitigating some of their worst practices. The general conclusion is, however, that large-scale investments such as these are incompatible with both environmental protection and social equity.

It is therefore extremely important to go beyond the question of whether corporations are committed or not to environmental protection and to analyse seriously the issue of pulp and paper production and consumption. The current pattern of production in the South (large-scale fast-growth monoculture tree plantations, large pulp mills), aimed at supplying an ever increasing consumption of paper in the North, is proving to be unsustainable. It seems necessary, therefore, to downgrade the size of the pulp mills and to diversify raw materials used in pulp production, adapting the mills to a variety of resources available at the local level. At the same time, Northern countries must acknowledge that paper consumption cannot grow indefinitely and that current consumption patterns are already unsustainable and are affecting people’s livelihoods in Southern countries.

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