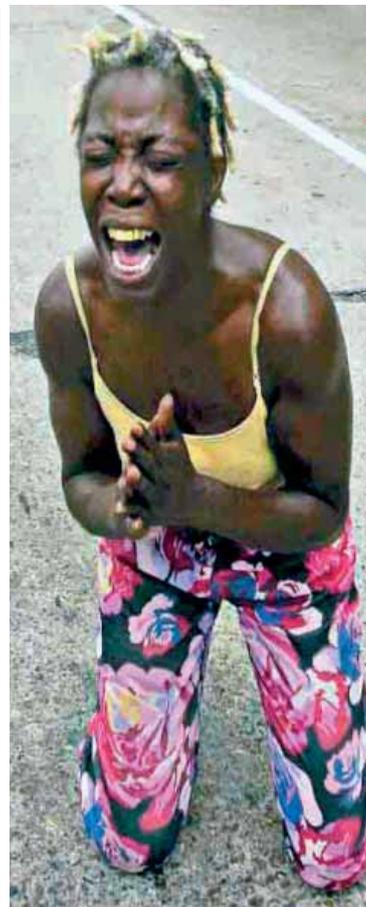


To keep the oil flowing



Oil rig, Ecuadorean Amazon.



*A woman appeals for help
after Hurricane Katrina, New
Orleans, September 2005.*

*A Conversation on
Carbon Credits*

Extract
from forthcoming issue of
Development Dialogue,
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1 Introduction

The climate crisis is, above all else, a problem of oil, coal and gas. It's a problem that has come about mainly through fossil carbon being taken out of the ground, run through combustion chambers, and transferred to a more active and rapidly-circulating carbon pool in the air, oceans, vegetation and soil.

Fossil carbon is plentiful. It's the final resting place of carbon removed by plants from the atmosphere over millions of years. But the carbon-absorbing capacity of oceans, vegetation and soil at any one time is limited.^a Something has to give. Inevitably, some of the huge amounts of carbon being transferred from underground to aboveground builds up in the atmosphere, destabilizing the climate.

This overflow cannot go on indefinitely. As biologist Tim Flannery notes, "there is so much carbon buried in the world's coal seams alone that, should it find its way back to the surface, it would make the planet hostile to life as we know it".^b If even a substantial fraction of remaining fossil fuels is burned, the result could well be catastrophic.^c

In the end, then, climate politics boils down to finding ways of keeping most remaining coal, oil and gas in the ground.

Given industrial societies' dependence on fossil fuels, this isn't easy to do.

But it may help to remember one thing that's often forgotten in all the panic over the new problem of global warming. This isn't the first fossil fuel crisis. Coal, oil and gas have been associated with environmental degradation, damaged lives, social conflict and war for a long time.

For decades, exploration for new oil and gas fields has gone hand in hand with encroachment on people's land and with preparations to dispossess them.



Road built through forest in Ecuador to extract oil.



Oil spill in the Ecuadorean forest.

Extraction, meanwhile, has provoked resistance all over the world. From Ecuador to Sakhalin, from Nigeria to Burma, fossil fuel corporations, usually backed by governments, have stolen or contaminated local land, forests and water, and communities affected have responded accordingly.



Gas flaring in Delta State, Nigeria and protests, right.

Refining and transport have brought their own legacy of impairment, disease, dispossession and contamination.



Women from coastal communities in Songkhla, southern Thailand, protest a gas pipeline and separation plant project which threatens local fisheries, common land and livelihoods. Below, the polluting ENGEN oil refinery in Durban South Africa, another focus of community resistance.



And pollution from industrial and power plants burning fossil fuels has left a mark of suffering, disease, and conflict on affected communities for over 150 years.

Finally, militarization and the craving of industrialized societies for oil has endangered security, poisoned lives and blighted politics around the world. Today, wars costing uncounted lives and billions of dollars can be fought over only a few months' or years' worth of oil.



US soldiers in Iraq.

The struggle to stabilize climate – to stop the world's above-ground carbon dump from overflowing – takes

its place as merely one more aspect of this long history. Nevertheless, there's a sense in which this latest battle throws a new light on the older ones. It suggests, more strongly than has been suggested before, that all these struggles against the damage wrought by fossil fuels must ultimately point in one direction: toward the need to find ways of leaving coal, oil and gas in the ground.

The Empire Strikes Back

Predictably, however, many powerful groups are working to obscure this emerging vision.

Shell, BP, and ExxonMobil continue to act as if it is a foregone conclusion that all remaining oil and gas will have to be taken out of the ground. Other energy firms appear to think the same about coal. Many governments, United Nations bodies, business consultancies and intellectuals claim that perhaps we don't need to phase out fossil fuels, or that we can wait a while before thinking seriously about doing so.

Instead of halting the flow of fossil carbon to the surface, they say, perhaps we can carve out more space to put our emissions in, so that they don't build up in the atmosphere.

Perhaps we can park carbon dioxide in holes in the ground, or liquefy it and inject it into the bottom of the ocean.

Perhaps we can put carbon in trees that we grow for the purpose, and keep it out of the atmosphere in that way.

Or perhaps we can "compensate" for extracting remaining fossil fuels by making extra efforts to "save" them or use them more efficiently. Or by cutting down on the use of other greenhouse gases like HFCs or NO_2 . Or by building more windmills than we were planning to. Or by burning off the methane that coal mining releases rather than just venting it into the atmosphere.

And if all of these things are just as good as halting the extraction of fossil fuels, perhaps we ought to be able to construct a market to exchange the one for the other. A market of a new kind. A market in which you pay for continuing to drill oil by screwing in efficient light bulbs, or in which you pay for continuing to dig up coal by burning the methane that seeps up out of the same mine – a market that strikes a counterblow against the view that stopping the flow of fossil fuels is the only realistic approach to global warming.

The "carbon-saving" projects that generate the credits bought and sold in this market thus become a new frontier in the defence of fossil fuel use.

But they are also a new battlefield. In addition to helping perpetuate the old problems of coal, oil and gas, these “carbon-saving” projects bring new problems as well.

In order to generate carbon credits from trees, plantation companies have to maintain their hold on land ordinary people need for other purposes. In order to generate carbon credits from burning the methane bubbling out of landfill sites, authorities have to keep the sites open. In order to keep track of the carbon their agroforestry schemes generate, rural development organizations have to divert resources from their traditional work. In order to get carbon credits for halting flaring, oil companies have to keep their polluting extraction sites open.

And all the while, new strip mines continue to be opened, oil to be spilled, and chemical pollutants to waft over power-generating plants. Every Clean Development Mechanism or Joint Implementation project set up under the Kyoto Protocol, or “carbon offset” scheme launched by a private firm, helps perpetuate the fatal flow of fossil carbon out of the ground and into the air just as surely as any drill bit or transcontinental pipeline.

The fossil fuel economy’s new frontier, in short, has become a new battlefield. Added to classic local conflicts over extraction, pollution, and labour abuse are now, increasingly, local conflicts over “carbon offsets” – the projects that justify the extraction, the pollution and the abuse.

At first glance, these conflicts may seem to be only indirectly connected to fossil fuels. People fighting industrial tree plantations in Brazil, for example, may never catch a whiff of the hydrocarbons whose release in Scotland the plantations sanction. But the struggle of the exploited community in Brazil and the polluted community in Scotland are, in a sense, one. The Kyoto Protocol and other carbon markets springing up around the world, in globalizing the defense of fossil fuels in a new way, have also globalized conflicts over fossil fuels in a new way.

About this Booklet

It is this new set of struggles that this booklet attempts to introduce, in the only way it can be introduced: through looking at what actually happens on the ground.

In the past, the deeper meanings of dependence on coal, oil and gas could be understood by coming to grips with the experience of things like oil wars, polluted farmland, lung disease, militarization, disappearing forests, and ever more threatening tropical storms.

But this is no longer enough. Today, anyone who wants to understand what coal, oil and gas dependence means also has to look closely at the “carbon offset” and “carbon saving” projects now being set up around the globe, under the auspices of the Kyoto Protocol’s “flexible mechanisms”, the World Bank and innumerable consultancies and other private firms; to ask questions about them, and to listen to the voices of those who are affected.

Looking at tensions and conflicts in Brazil, India, Uganda, Costa Rica, Sri Lanka, Tanzania, Ecuador, Guatemala, Thailand and South Africa, this draft document – one part of a forthcoming special issue of *Development Dialogue* produced by the Dag Hammarskjöld Foundation on carbon trading – brings together a few of these questions and voices.

The topic is difficult. The market in credits generated by the “carbon saving projects” involves some of the most arcane and convoluted technical, legal and intellectual exercises ever devised in the service of perpetuating inequality and environmental folly.

But by putting the issues in question-and-answer form, and enlivening them with the voices of many actors and many authors, we hope to have taken one step in bringing the question of the new carbon market closer to open public debate. The authors and other contributors would welcome comments and criticisms as a sign that this effort has succeeded.

(Endnotes)

- a Falkowski, P. et al., “The Global Carbon Cycle: A test of Our Knowledge of Earth as System”, *Science* 290, 13 October 2000
- b Tim Flannery, “Monstrous Carbuncle”, *London Review of Books* 27 1, 6 January 2005.
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2 The Beginnings: A Story from Guatemala

The beginnings of the “carbon offset” idea can be traced back at least as far as 1977, when the physicist Freeman Dyson speculated that large-scale planting of trees or swamp plants could be a cheap means of soaking up excess carbon dioxide in the atmosphere.^a That, Dyson figured, would buy time during which ways of phasing out hydrocarbon use could be found.

But it wasn't until 1989 that the first forestry project funded explicitly to offset greenhouse gas emissions was set up.^b

Applied Energy Service, Inc. (AES), a United States-based independent power producer, had been looking for a cost-effective technique for reducing carbon dioxide emissions at a new 183-megawatt coal-fired power plant in Connecticut in order to make the plant more acceptable to state regulators.

On the recommendation of the Washington-based World Resources Institute (WRI), AES decided to try to “mitigate” the plant's carbon emissions by offering US\$2 million to finance ten years' worth of “land-use activities and multiple-use forestry projects” in Guatemala.

The activities would be undertaken by the organization CARE with the help of USAID and the Guatemalan Directorate General of Forests.^c CARE had been working in agroforestry since 1974 in the Western Highlands -- one of the country's few remaining highland areas with existing forest and the potential to offset significant quantities of carbon – and it was hoped that the AES money could leverage additional funds from other sources (debt-for-nature swaps) as well as volunteer services from groups such as the US Peace Corps.

Some 40,000 smallholder farmers would plant 50 million pine and eucalyptus trees in the course of establishing 12,000 ha of community woodlots, 60,000 ha of agroforestry and 2,880 km of live fences. Some 2,000 ha of vulnerable slopes in local watersheds would be protected and training provided for forest fire brigades to reduce the threat of fire and potential CO₂ release. All these activities would either increase sequestration potential or decrease carbon emissions in the project area. During its first ten years, the project would also train local communities so that its activities would become self-sustaining. In all, AES finance would make possible the sequestration of 15.5 to 16.3 million tonnes of carbon in Guatemala – more than enough to cover

the 14.1 million tonnes the Connecticut plant would emit over its 40-year lifetime.^{d e}

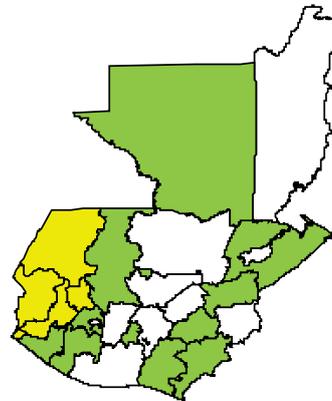
Did it work?

No. In 1999, an external evaluation of the AES-CARE project showed that, even by its own carbon-accounting standards, it was falling far short of the one million tonnes of carbon it was supposed to have “offset” to date.^f

What happened?

The project was built around the assumption that using the area for carbon production would be compatible with improving local quality of life through increasing agricultural productivity, watershed protection, and improved fuelwood access. But the designers didn't sufficiently grasp what the project would mean for farmers given their local political context.

First, many of the mainly indigenous subsistence farmers in the project area in the Western Highlands had been pushed by extreme land concentration by the agri-business sector in the fertile lowlands to the edge of the agricultural frontier. The Western Highlands encompass the country's poorest communities and most environmentally degraded areas. More than 90 per cent of rural households live in absolute poverty,^g and with population densities exceeding 100 people/km² and a deforestation rate of 90,000 hectares/year, erosion and land degradation have led to an intensification of rural land use even as poverty rates increase. The average family in the Western Highlands has farming access to less than one hectare of land.



The Western Highlands of Guatemala (five provinces at left).

Yet the same time, land with official forest status was often declared off-limits to continued agricultural use under Guatemala's 1996 forest law. The government was trying to re-locate control over communal forests into the hands of municipal authorities, and the law criminalized subsistence activities such as fuelwood gathering.

Well, wasn't that a good thing? It helped protect the carbon stored in the trees.

What it did first and foremost was to take access to the trees out of the hands of ordinary people. One result was that conflict grew between municipal and village authorities and individual landowners. Another was that reforestation looked less attractive. Who wants to plant trees if by doing so you deprive yourself of daily necessities? A third result was increasing distrust of government forest offices, some of which were partly funded by the CARE/AES Agroforestry Project. Not a good outcome, whether your objective was people's welfare or long-term carbon savings.

Then, too, in the early years of the project, the tree species promoted were often inappropriate for the climate and for degraded land areas. Damage by animals and sabotage of replanted areas also limited the expansion of reforested areas.

But what about agroforestry systems, which allow farmers to make use of the carbon-sequestering areas?

Agroforestry systems are indeed more attractive to local farmers, as they serve multiple purposes (grazing, fodder and fuelwood provision, and subsistence or cash-crop components). But they typically take three to five years to become productive. That also makes them a difficult option for families with limited land.

So it was hard to reconcile local people's needs with the goal of carbon production.

In more ways than one. Another problem was CARE's need to channel more and more of its limited personnel and finance toward monitoring and measuring carbon instead of trying to improve people's lives.

In the past, CARE had had a respectable record of promoting sustainable agriculture and agroforestry, and even some success in protecting water sources through reforestation, although less so in the Western Highlands. The organization had a great deal of experience in training local community extension agents, providing seeds and tree nursery supplies, and training local people in soil conservation, fodder

production, and watershed management. That was the sort of thing it did. CARE extension agents also provided advice and materials for improving grazing areas and soil recuperation, services that local project participants continue to evaluate positively.

The new carbon focus for its work, however, meant that finance and staff time began gravitating away from agroforestry toward reforestation, and away from farm extension work toward unfamiliar work in modeling and monitoring carbon emissions benefits.

Couldn't the staff do both things at once?

It's not so easy. Carbon accounting is specialized, complicated work. The market needs hard carbon numbers. You can't just look at a couple of trees and say that they will have soaked up the carbon equivalent of one 1000-km airline flight by 2020. You have to look at growth rates, soil changes, interactions with local communities, counterfactual scenarios. In fact, if you look carefully enough, you find you can't do the calculations at all.^h

The complexity (or impossibility) of this new job played real havoc with CARE's original mission. CARE was used to training and agricultural extension, not carbon monitoring. In 1999, the organization still didn't have a methodology in place for measuring and monitoring carbon in agroforestry plots and forests.

An external evaluation conducted in 1999 by Winrock International laid down the law: the project's certified carbon production had to be improved to make it "more acceptable as a CDM-type of project".ⁱ A land-use mapping system using a Geographic Information System had to be developed together with remote sensing technologies that could track project changes. "Proxy areas" had to be identified to serve as a "without-project" baseline, and a carbon monitoring program for all project activities for which carbon credits would be claimed had to be set up.



The research on Guatemala on which this section draws was carried out by Dr. Hannah K. Wittman of Simon Fraser University. It was conducted in the context of a participatory evaluation (that included community mapping and a household-level questionnaire) of CARE's agroforestry extension program operating in two villages in the municipalities of San José Ojetenam and Ixchiguán in the state of San Marcos in the Guatemalan Highlands.

In short, the Winrock evaluators, the needs of the carbon market in the front of their minds, reversed CARE's own emphasis on livelihood over carbon sequestration. By 2000, CARE officials were openly discussing the possible need to redirect resources formerly channeled to extension activities to pay outside consultants to develop carbon accounting methodologies. From being a development organization focusing on extension, livelihood provisioning and poverty alleviation, CARE was increasingly being pushed into the role of carbon technician.

And given the infinite complexity of the task of getting the right carbon numbers, there was no end in sight to the potential questions. For example, was the burning of fuelwood from agroforestry systems or reforestation projects properly accounted for in the project's carbon budget?

But surely most of CARE's agricultural extension work went on as before?

There were changes there as well. Another side effect of the new carbon money, and CARE's need to show good carbon numbers, was that CARE's work began to be more directed toward larger farmers than in the past. It was large farmers who were friendlier to reforestation and who were more likely to approach CARE extension workers for help with their own reforestation efforts, becoming an essential partner in helping CARE to achieve and to comply with its commitment to sequester carbon.

The new carbon focus of CARE's work also made its objectives and premises harder to share with farmers.

Farmers were, even as of 2000–01, not being told what the project was about, nor how their reforestation and fire brigade efforts contributed to carbon mitigation, nor what the impacts on them of a changing climate might be. Nor were they even directly paid for their reforestation activities. That, of course, made it impossible to discuss with them their responsibility or role in, or rewards for, offsetting Northern carbon emissions, or to ask them how their own knowledge might improve carbon sequestration design or dissemination. "Participatory" carbon sequestration it wasn't.

(Endnotes)

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- c See www.careusa.org/careswork/project.asp.
- d World Rainforest Movement Bulletin No. 37, August 2000, available at www.wrm.org.uy/bulletin/37/Camerica.html. Guatemala Agroforestry estimates 100 tonnes of carbon sequestered per hectare for forests and 30 tonnes for regrowth.
- e See www.careusa.org/careswork/project.asp.
- f Brown and Delaney, op. cit.
- g World Bank, *Guatemala – Integrated Management of Natural Resources in the Western Altiplano (MIRNA). Project Appraisal Document*, World Bank, Washington, 2001.
- h Larry Lohmann, *Democracy or Carbocracy? Intellectual Corruption and the Future of the Climate Debate*, Corner House Briefing No. 24, pp. 36–44, available at <http://www.thecornerhouse.org.uk>.
- i Brown and Delaney, op. cit.

3. From The Netherlands to the Andes: A Tale from Ecuador

The Dutch FACE Foundation or “Forest Absorbing Carbon Dioxide Emissions”, was established in 1990 by the Board of Management of the Dutch Electricity Generating Companies, N.V. Sep. The original idea was to set up 150,000 hectares of tree plantations to compensate for the emissions from a new 600 MW coal fired electricity generation plant to be set up in the Netherlands. “For reasons of land availability and cost-effectiveness,” FACE explained, “greater emphasis has been placed on collaboration with developing countries and countries in transition.”^a

Since 2000, the FACE Foundation has been producing and selling carbon credits from tree plantations independently, without Sep funding. It trades the credits through two Dutch companies: Business for Climate (set up by FACE in 2002 jointly with Triodos Bank and Kegado BV) and Triodos Climate Clearing House.

The FACE Foundation has five projects worldwide: in Malaysia, the Netherlands, the Czech Republic, Ecuador and Uganda. The FACE Programme for Forestation in Ecuador S.A., or PROFAFOR, currently the largest, is a company incorporated in Ecuador in 1993, with FACE finance, to establish tree plantations to “fix” CO₂ from the atmosphere. PROFAFOR has not been approved as a UN Clean Development Mechanism project. But it does see itself as “potentially CDM-compliant” – as sequestering carbon over and above what would have been the case otherwise, as providing social, economic and environmental benefits, and so on.

PROFAFOR originally thought to plant 75,000 ha of trees, but later revised this goal downward 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. Initially, PROFAFOR activities were focused on the Andean region, or Sierra, and 8,000 hectares have been planted under contract with 39 indigenous mountain communities. However, since 2000, contracts have also been signed in Ecuador’s coastal region.^b

Well, planting trees is bound to be a good thing for everybody involved, isn’t it?

It’s not so simple. The Sierra sites used by PROFAFOR are located in a biome known by the colonial Spanish term *paramo* – which denotes high altitude

plains or barren plateaus without woodlands. This zone was never forested and supports few trees. The dominant vegetation is Andean grasses from the genera *Festuca*, *Stipa*, *Calamagrostis* and *Deyeuxia*.

The dark, volcanic *paramo* soils have a complex particulate structure that, in the cold, moist climate of the Sierra, enables them to retain a great deal of water and organic matter. The soils have a far greater capacity to hold water than the vegetation covering them, although a layer of plants is important to keep moisture in the soils during dry seasons. In the humid but not high-rainfall Sierra environment, *paramo* soils are believed to be the main water reservoirs for the local inhabitants.

Although indigenous agriculture has been practiced for hundreds of years up to 3,500 metres (the Sacred Valley of Cuzco, a shrine of indigenous agriculture, lies at around 3,000 metres), the ecological balance of the *paramo* above 3,200 metres is very fragile. If the plant cover is removed even temporarily, evaporation from the surface increases and organic matter in the soil begins to decompose, resulting in reduced capacity to hold water. Once dry, the soils cannot recover their original structure and organic content, even when they get wet again.

The monoculture tree plantations PROFAFOR sets up to fix carbon are a bizarre and damaging innovation in this environment. The species used are exotics used in industrial plantation exotics. Some 90 per cent are pine, either *Pinus radiata* (particularly in the provinces of Carchi and Chimborazo) or, to a lesser extent, *Pinus patula* (mainly planted in Cañar and Loja). Eucalyptus and cypress species make up another four per cent.

But what’s wrong with pine trees? PROFAFOR says that experiments with pine in different places get different results and that “it cannot be categorically stated that pine is noxious for paramo soils.”

PROFAFOR’s non-indigenous pines dry out and crack the soils, not only because they disturb the existing vegetative cover, but also because their nature is to use a great deal of water. Organic matter and biological activity decline, uncompensated for by the fall of pine needles. Soils tend to be transformed from water retainers to water repellents, and surrounding flora and fauna are deprived of food habitat.^c

The threat is not only to local hydrology, but also,

ironically, to local carbon storage capacity. Subject to less extreme variations in temperature and humidity than the drier Southern Andean zone known by the indigenous term *puna*, the *paramo* stores in its thick layers of soil vast amounts of carbon – perhaps 1,700 tonnes per hectare in the case of Carchi province, more than a tropical forest – but only as long as the soils are not exposed to the air and to increased erosion through planting operations and firebreaks.

In addition, the carbon in the trees is at risk from fire. In the community of SigSig in Azuay province, fires have already killed or stunted the growth of many pines. And fires are likely to recur continuously, given a fire-prone natural flora, traditional burning practices used to encourage fodder regrowth, strong winds, firebreaks that are too few and too narrow, and the lack of permanent wardens or fire-fighting equipment. The yellowish needles appearing on numerous local stands of *Pinus patula* signal the species' poor adaptation to the Andean environment, possibly indicating lack of a crucial micronutrient or of the mycorrhizal fungi that facilitate the tree's nutrient absorption in its native environment. Animals have meanwhile broken off many terminal shoots, giving rise to a bushy growth which may prevent the trees from developing trunks suitable for the sawmill. Growth is also noticeably slow.

Wait a minute. Are you telling me that a project which was designed to absorb carbon may actually be emitting it?

That was exactly the conclusion reached by scholar Veronica Vidal in a recent doctoral dissertation on environmental management at the Autonomous University of Barcelona. Vidal found not only that the soils under PROFAFOR plantations are releasing more carbon than the firm takes account of, but also that the pine plantations are capable of absorbing less carbon than it claims. She concluded that the net carbon balance in PROFAFOR plantations may well be negative: "We are facing a lose-lose situation, in which those who most lose are the future generations that will have to face the problems of climate change."^d

But according to PROFAFOR, local soils have been "degraded by extensive use", and planting pine and eucalyptus in the paramo will restore them and prevent erosion.

Although some of the sites used by PROFAFOR, situated between roughly 3,200 and 4,800 metres, have been used for grazing, they have not usually been cultivated, due to their remoteness and harsh climate. The idea that the soils on these sites, which still fulfil their original functions, are being degraded in any way that pine plantations could remedy is sim-

ply false. As for erosion, it is the pine plantations and their firebreaks themselves that are likely to create the greater problem.



Under the PROFAFOR project, villagers are obliged to construct firebreaks in which the pajonal grasses protecting the soil of the paramo are uprooted in a strip bordering the plantation, leaving the soil exposed.

Wait, I'm getting confused here. PROFAFOR says that this environment is in bad shape. And, after all, doesn't their claim stand to reason, with the zone's history of overexploitation? I know that following the Spanish conquest, many indigenous peoples had to retreat to high altitudes because Hispanic and mestizo communities were spreading out in the inter-Andean valleys and the Spaniards were taking over land for large estates or private ranches. And I understand that the land reform laws of 1964 and 1973 helped intensify the exploitation of the paramo even further by transferring higher, less productive areas of hacienda lands to indigenous peoples. Today, I hear, agriculture is being practiced up to 3,900 metres and cattle-raising up to 4,500 metres^e. On its plantation sites, PROFAFOR says, the land is so degraded that farming is just "not profitable and the land is not suitable for subsistence activities"^f. In this context, surely pine trees will be both an ecological and an economic improvement, no? And a way, as PROFAFOR puts it, of "taking advantage of land that is not being used and that could generate income to the local economy"?

Well, confusion is only to be expected in a situation like this, in which PROFAFOR is saying one thing

(largely to an international audience) and local people are saying another thing (largely to themselves). But it's useful to remember that there's a long global history to the kind of claim that PROFAFOR is making, that a certain set of common lands are "waste", "degraded" or "unused", and are idly waiting to be brought into the commodity market before they can become "productive".

It's a claim that was used in the Americas during the colonial era to seize indigenous people's cropland and hunting and gathering grounds and transform them into the private property of Europeans. It was used again in India, with more mixed success, during the colonial era there, and in Africa as well. And it was used in Europe during the great eras of enclosure 200 and more years ago. In each of these cases the claim concealed and justified takeovers of land that was not only usable and ecologically rich, but used for all sorts of livelihood purposes. And the same is true of the *paramo*.

That doesn't fit very well with PROFAFOR's claim that it would have liked to use native species but that "the majority of native species have almost disappeared, and local knowledge of indigenous tree species has been lost with the trees."⁸

Well, now that you mention it, although the *paramo* is a zone that has never been forested, people there in fact retain a remarkable knowledge of native trees. In one PROFAFOR area, San Sebastián de SigSig in Azuay province, villagers are easily able to name and describe uses for a dozen native species.^h Yet the only Andean tree species used by the PROFAFOR project, and on a very small percentage of its sites, is *Polylepis incana*. This is a sub-*paramo* species and it too is being planted in monoculture.

Well, that's interesting, but so what? The English-language PROFAFOR brochure says that local people "have a say in species selection and they prefer planting non-indigenous pine and eucalyptus species."ⁱ And I also notice that when it arrived, PROFAFOR gained the immediate support of what is now the

Ministry of the Environment, too. The Ecuadorean government saw PROFAFOR as contributing to its own plans for afforesting or reforesting 250,000 hectares in the Andean zone over 15 years.

Well, I don't want to try to explain the government's position, but to see what local people think of the pine plantations now, we need to look at the story of how the project was introduced and what happened next.

Yes, let's get on to that. Because whatever ecological problems you think these plantations create, surely they must be bringing social benefits to these marginalized mountain communities!

That's certainly the way they were presented. PROFAFOR said the communities would get both income and employment from the project. In addition to payments per planted hectare, they would get seedlings, technical assistance and training. They would have work for many years. They would have access to the plantations to collect mushrooms, resins, firewood and wood from thinning. And after 20-30 years they would be allowed to harvest the trees and sell the timber. All PROFAFOR asked in return was 100 per cent of the rights to the carbon fixed in the trees. It sounded terrific.

I have a feeling you're going to tell me that things didn't turn out as promised.

That's an understatement. Let's start by looking at what happened in three communities that that signed contracts with the company between 1997 and 2000. Communities were offered payments of between US\$165 and \$189 per hectare planted. But the cost of plants and technical assistance during the first three first years of plantation was then deducted, leaving the communities about half of what they were initially offered (see Table 1).

Table 1

Community	Area leased	Payment agreed per hectare	Total amount offered	Deductions for plants and technical assistance	Amount disbursed to the community	Percentage deducted
San Sebastián de SigSig	400 ha	US\$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

When SigSig community asked how much technicians were being paid for this technical assistance, they were told that PROFAFOR did not have the “capacity to ask for these reports . . . it is an administrative matter.” Meanwhile, the price of the planting stock doubled or tripled. And in the end it was the commune, and not PROFAFOR, as specified in the contract, that had to transport the stock from the nursery.

Well, but little misunderstandings like this will crop up in every business transaction. You just have to get on with it. What does this have to do with the big picture of addressing climate change?

It doesn't end there. After having deducted the cost of the seedlings and technical assistance, PROFAFOR was obligated to pay 80 per cent of the remainder in three instalments during the first year after the contract was signed – as long as it wasn't necessary to replant more than 25 per cent of the seedlings. The remaining 20 per cent was then to be handed over to the community “following complete fulfilment of the activities foreseen” by the company for the second and third year after the contract was signed.

There were several problems here that villagers weren't ready for. First, when trees die because they “do not adapt”, the community has to take on the cost of new seedlings for re-plantation. This happens quite frequently, because of the quality of the plants, the cold and windy conditions of the high-altitude plantation areas, or for other reasons. According to Mary Milne of the Centre for International Forestry Research, the re-plantation rate for PROFAFOR is “between 15 and 30 per cent and costs range between US\$865 and \$5820, which have to be absorbed by the communities.”⁷

A bigger problem is that because of the necessity of guaranteeing a long lifetime for the carbon sequestered in PROFAFOR's trees, each community has to maintain the trees itself for 20–30 years before being allowed to harvest them and sell the timber. (More recent PROFAFOR contracts demand even longer terms, of up to 99 years.) But the money runs out long before that. Nor are the communities given any information on where or how they might market the timber.

“At an assembly this engineer came, he told us that thousands of dollars would enter the commune [for tree-planting] . . . that afterwards we were going to have sources of work till after the harvest, that we were going to collect who knows how much money. And the assembly signed . . . you know, sometimes we country people, we don't know, we fall for it naively . . .”

SigSig community member

But it's not only a money matter. Essentially what the PROFAFOR contract does is ensure that the community turns over communal land and communal labour to the company for carbon production for free.

How does that work?

Well, take land first. Under the contract, PROFAFOR gets – rent-free – large tracts of community land which then cannot be turned to any other purpose than the production of carbon credits for the international market for 20 or 30 years.

This is not farmland. Cultivation goes on in other zones of communal property where the land has already been divided up among families. But PROFAFOR's claim that the land is “degraded”, “not being used” or “is not suitable for subsistence activities”, and that it is idly waiting to be transformed into an asset by being “incorporated into the national economy”, is simply false.

In addition to having important hydrological functions, much of the land is used for grazing or could be rented out for that purpose. When the plantations are set up, families owning cattle may have to rent other lands for their animals, purchase fodder, or reduce their herds. This has an impact on family savings, not only because the monetary compensation villagers get from PROFAFOR is too small and must be used immediately for plantation expenses, but also because, by its nature, cash cannot play the role of the more stable, less liquid, traditional savings embodied in family cattle.⁸

Small wonder that local people feel that they have essentially transferred the land and its potential to generate savings for exclusive PROFAFOR use. As one said, “We cannot touch or do anything on the area signed over.”

OK, but you also said PROFAFOR also appropriates communities' labour for free. How does that happen? PROFAFOR says that the locals get good wages for the work they do on its plantations.

PROFAFOR maintains that it provides thousands of jobs to indigenous communities in Ecuador. But a lot of these jobs are extremely onerous and unremunerated tasks that the communities find themselves unwillingly taking on because of debt.

In fact, PROFAFOR has not only failed to provide the jobs it has offered, but has also forced communities to hire people from outside to carry out PROFAFOR work. Local people, it turns out, often do not possess the necessary technical skills PROFAFOR management plans require.⁸ PROFAFOR's train-

ings – workshops for two leaders from each community, held in hotels or other venues in nearby cities – are widely seen as insufficient and too theoretical. xiv In addition, the plantations are often too mote or subject to too extreme climatic conditions for local people to work on themselves.

Where tasks remain incomplete, the community has to fall back on its own unpaid labour pool – a system called *minga* – to fulfil its contractual obligations. Essentially, villagers are forced to exploit their own system of free communal labour in order to escape debt.

Minga: Organizing Labour without a Market

Minga is a communal pool of nonmarketed labour typical of the indigenous communities of the Andes. Among the Quichuas, *minga* is directed at a specific collective material objective: planting and harvesting, or building or maintaining access routes, irrigation channels, schools or health centres. It is a complex mechanism for social interaction in which, generally for one day each week, both men and women, adults and children, are mobilized.

People working under *minga* receive no money. Rather, the system is one of reciprocity and mutual help. When *minga* is granted to achieve individual purposes, the *mingado*, or beneficiary, enters into an obligation to return *minga* to the *mingueros*, or workers, at some point in the future.

As one villager from Chuchuqui said:

“... they paid for dibbling for pine only not for eucalyptus. And they did not pay me, I worked under *minga* ... Where we could not work, they hired people from Quito and Chimborazo and the community paid the workers.”

But surely the communities must have made some money out of the deal?

Well, it's instructive to try to do the math. Look at what happened to SigSig. The community was to receive about US\$75,000 for 400 hectares of *Pinus patula* plantation to be sited on land a three- to four-hour walk from the settlement's centre, at approximately 3,700 m. Plotting, dibbling, planting and construction of the fire-break was carried out between June 1998 and December 1999. But some the seedlings didn't take, and the community had to hire outside labor to replant, using the funds supplied

by PROFAFOR. The community built a house in the area of the plantation mid-1999 and a guard was hired for the first two years.

Then, in 2000 and again in 2004, fires swept through large parts of the plantation. The community had to take on most of the costs of replanting – including labour, transportation and food – with PROFAFOR picking up only the costs of seedlings. The community has also had to take responsibility for replantings due to maladapted trees dying. Yet the 20 per cent of the funds that should have been disbursed to the community three years after the contract was signed in 1998 have still not been received. And the plantation has to be maintained for nearly 15 more years until harvest. To top it off, if the community decides not to continue carrying out PROFAFOR's plantation work at that time, it must hand over 30 per cent of the income from the sale of the timber to the company.

“We made an assessment and ... it was like a bucket of cold water. On doing our accounts, we realized how much money we have put in, and the trees are still small. ... Although we have no money left, ... we have to look for a warden to look after the plants and pay him, we have to prune, we have to put down manure, all the care and then the harvest. ... we ourselves have to find a [timber] market. ... How is that! We are depleting our land, we are providing labour, harvesting and also giving 30 per cent.”

SigSig community member

In a workshop conducted with SigSig residents, an attempt was made to draw up a balance, showing how much the community had gained and lost from its agreement with PROFAFOR, although much of what the community put into the plantations cannot be satisfactorily quantified, such as the *minga* and the work of the community leaders. Calculations were made for plotting, dibbling, firebreaks, right of way, replanting, seedlings, maintenance, management, training and so forth.

The community concluded that, even without taking account of the value of the environmental liabilities the project has saddled local inhabitants with, or the cost of the plantations for another 15 years in terms of labour, inputs, insurance, security, tools, harvest and timber marketing, its losses already amount to over US\$10,000.

Isn't there anything the community can do to save the situation?

PROFAFOR has a lot of power in this context. Once a contract is signed, there isn't much communities can do to modify it, even when, as in SigSig, the

agreement with the company was signed by only fifty community members when there were over two hundred registered.¹

PROFAFOR can even claim payment of compensation if its staff decide that a community has not fulfilled its obligations. This compensation can amount to up to triple the original payments to the communities, or many tens of thousands of dollars (see Table 2).

Table 2

Communities	Amounts initially offered	Amounts disbursed to community	Amount of penalty clause	Penalty/disbursement ratio
Caguanapamba	n.a.	\$15,716	\$42,660	271%
San Sebastián de SigSig	US\$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

One villager reported:

“When I told the engineer Franco Condoy that we wanted to undo this agreement, he told us: You cannot rid yourselves of the agreement, the commune is mortgaged.”

According to Ecuadorian law, Condoy is wrong. Communal property of indigenous communities is not subject to mortgages or land tax. Mortgages can only be contracted with private estate and land holders, individuals or corporate bodies. In practice, however, Condoy is right, since even contracts involving common property are subject to penalty clauses and fines in the event of a breach, and PROFAFOR is well able to enforce mortgage-like arrangements by taking advantage of the inter-ethnic power relations which are a legacy of the colonial era in the region.

In one community, Caguanapamba, where the leaders who had signed the contract mismanaged the PROFAFOR funds they were entrusted with, community members did not get paid for the first planting operation and many seedlings were lost. The leader who succeeded them will now have to use the last instalment of funding in order to pay off the people who did the original planting. To complete the firebreak, he has had to rent a machine with community funds and rely on labour from *minga*.

All right, I can see that things haven't all gone according to plan with carbon sinks in the Andes. But so what? Can you draw any general conclusions from all this?

In Ecuador, as elsewhere in the South, “carbon-saving” projects funded by industrialized countries, with their promises of income and “development”, have attracted a lot of official attention.

The theory is that Southern countries have a hitherto unrecognised and unpriced resource in the form of spare or unused carbon-absorbing potential. By bringing this dormant, unexploited resource into something called “the market”, the theory goes, the South will be able to transform it into living capital or exchange it for cash or other things, adding to its wealth and to that of world society as a whole.

Over hundreds of square kilometres of the Ecuadorian Andes, new transactions involving carbon are indeed being made. But for the most part, they are not textbook “market” transactions, nor do they address climate change, nor have they resulted in communities realizing new value out of formerly unused assets.



This section is extracted from the research of Patricia Granda, who studied the FACE-PROFAFOR project for Accion Ecologica, an Ecuadorian NGO.

What has happened instead is that common land, community labour and much of the paltry but crucial savings of peasant communities have been transferred to a private firm for production of a new commodity which, although largely notional, has the material effect of shoring up an anachronistic pattern of fossil fuel use in The Netherlands. While claiming to “absorb” carbon, PROFAFOR has in fact been absorbing Andean wealth while helping to enlarge the North’s ecological footprint in the South. Indirectly, it is also transferring wealth from future generations to the present, through its failure to address climate change.

The mechanisms that have done the real work in making this transfer possible are not the abstract, benign “wealth-creating” trade mechanisms of economics texts or manuals on “markets in environmental services”. On the contrary, they are mechanisms that compel, discriminate, narrow choices, increase dependence, reduce transparency, and centralize power and knowledge in bureaucracies and expert institutions – just the sort of thing that this ghostly entity called “the market” is advertised as freeing us from. These mechanisms include:

- Unfamiliar tree species planted in exclusive monocultures and requiring extensive technical intervention.
- Non-transparent and exploitative written legal contracts backed by historically-ingrained unequal power relations, through which a private company retains 100 per cent of the carbon sink credits from plantations while local communities take on debt and responsibilities for maintenance and managing environmental impacts.
- An internationally-disseminated discourse according to which the lands to be used for plantations have been “degraded” by excessive use and where subsistence activities such as cattle-raising are “not profitable”.
- Expert procedures of “verification” of carbon flows that by their nature are resistant to public scrutiny.

One last technocratic mechanism that makes PROFAFOR’s manufacture of carbon credits possible is “forest certification”, a seal of environmental and social approval that was granted to 20,000 ha of PROFAFOR’s plantations in 1999 by the Forest Stewardship Council (FSC). The FSC is an independent international body with membership from both industry and NGOs, but the actual job of deciding whether a plantation meets FSC standards falls to private firms hired by the plantation company. In PROFAFOR’s case, this was the Societe Generale de Surveillance (SGS), which has also certified PROFAFOR’s carbon sequestration.

These certifications are important for PROFAFOR’s international transactions, since they reassure buyers who will never visit the Andes that PROFAFOR’s product is a valid, environmentally- friendly commodity. Buyers of FSC-certified products generally assume that they come from plantations that “strive to strengthen and diversify the local economy” and “maintain or enhance the long-term social and economic well-being of forest workers and local communities”. They assume that workers have been adequately trained. They assume that local communities have been comprehensively advised in advance about the impacts of the relevant project and participate fully in decision-making (FSC Principles). Finally, they assume that an environmental impact assessment has been conducted, that threatened species have been identified, and so on.

The SGS certifiers boosted PROFAFOR’s credibility on all these points, noting as one of PROFAFOR’s strong points the “participation of local communities in decision-making.” While recognizing that pine and eucalyptus can contribute to the degradation of soils rather than to their protection, they also praised PROFAFOR’s continued “commitment” to use native species.

Local communities’ lack of power to intervene in the certification process helps lubricate PROFAFOR’S international trade in carbon credits. No community member interviewed in 2004 even knew of the existence of the FSC, nor of its Principles and Criteria, nor how they might be enforced. The public summaries of the visits by SGS are available on the internet only up to the visit of the year 2000, and only in English. Asked for information at its office, PROFAFOR demands that a signed memorandum be submitted beforehand, and even then fails to provide the information requested.

(Endnotes)

- a Verónica Vidal, *La Aplicación de Políticas Sobre Cambio Climático en el Sector Forestal del Ecuador*, Memoria de Investigación Doctorado en Gestión Ambiental y Economía Ecológica, Autonomous University of Barcelona, October 1999.
- b Since 1994, PROFAFOR has established forestation contracts in the provinces of the Ecuadorian Sierra: Imbabura, Pichincha, Chimborazo, Cañar, Azuay and Loja. It has also signed contracts in coastal provinces, in the buffer zone of the Mache-Chindul Ecological Reserve within the polygon formed by El Carmen, Pedernales, Cojimíes, Muisne, Atacames, Bilsa and Quinindé, that is to say, in the north of the province of Manabí and in the south of the province of Esmeraldas.
- c Robert Hofstede, “Impactos Ecológicos de Plantaciones Forestales”, in R. Hofstede, J. Lips, W. Jongsma and J. Sevink, *Geografía, Ecología y Forestación de la Sierra Alta del Ecuador: Revisión de Literatura*, Editorial Abya Yala, Ecuador, 1998. See also Robert Hofstede, “La Importancia Hídrica Del Páramo y Aspectos de Su Manejo”, *EcoPar*, August 1997.
- d Vidal, op. cit.
- e G. Medina and P. Mena, “El páramo como espacio de mitigación de carbono atmosférico, Serie Páramo, 1”, GTP/Abya Yala, Quito, 1999, quoted in Verónica Vidal, “Impactos de la Aplicación de Políticas sobre Cambio Climático en la Forestación del Páramo de Ecuador”, *Ecología Política*, 18, 1999, pp. 49-54.
- f See <http://www.stichtingface.nl>.
- g Ibid.
- h See also C. Borga and S. Lasso, *Plantas Nativas para Reforestación en el Ecuador*, Fundación Natura, Quito, 1980, available at http://www.fao.org/documents/show_cdr.asp?url_file=/docrep/t2354s/t2354s0w.htm
- i Profafor, op. cit.
- j Mary Milne, “Transaction Costs of Forest Carbon Projects, Center for International Forestry Research, available at <http://www.une.edu.au/febl/Economics/carbon/CC05.PDF>
- k Montserrat Alban and María Arguello, *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, 2004.
- l The agreement was signed using as a reference a document from the property registry and some false title deeds.

4 The Story Continues: Carbon Forestry in Uganda

One thing can be said for the US-Guatemala carbon trade mediated by CARE described in chapter 2: it at least *attempted* to square the production of carbon for the North with local social goals. It would be difficult to say the same for a Norwegian project to grow carbon credits in Uganda that started up a bit later. Journalist Harald Eraker, who investigated the project, labeled it as a case of “CO₂-lonialism”.

The Uganda project was closely tied to the construction of conventional gas-fired power plants in Norway by Naturkraft and Industrikraft Midt-Norge. The plants were supported by Norway’s Labour Party, Conservative Party and Progress Party on the ground that they could be made environmentally-friendly through the purchase of carbon credits.^a

Some of these credits were to be provided by Tree Farms, a Norwegian forestry company operating in Africa. In 1995, Tree Farms (or Fjordgløtt, as it was then called) had been awarded a grant from NORAD, the Norwegian aid agency, to explore the scope for activities in East Africa.^b The following year, the company set up in Tanzania and Uganda, and, later, in Malawi as well. In Uganda, it obtained from the authorities an extremely low-cost 50-year lease on 5,160 hectares east of the town of Jinja in the Bukaleba Forest Reserve on Lake Victoria, which it planned to plant mainly with eucalyptus and fast-growing pines. Bukaleba is one of more than 700 large and small state-owned Central Forest Reserves set aside for forestry and forest protection, covering in all seven per cent of the land area of Uganda.^c

Shortly after the Kyoto Protocol was adopted in December 1997, Fjordgløtt increased its capitalization and invited outside investors to buy shares. By 2000, Tree Farms controlled at least 20,000 hectares of land in the region, and was in the process of acquiring a further 70,000 in Tanzania (see BOX: Tanzania). The firm had had planted 600 hectares, mainly with fast-growing pines (*Pinus caribaea*, *P. oocarpa*, *P. tecunumani*) and eucalypts (*Eucalyptus grandis*), with Industrikraft Midt-Norge securing a first option on the associated carbon credits.

What does the Ugandan government get in return for turning over its land to this company for 50 years?

They get a one-off fee of US\$410 and an annual rent of about \$4.10 for each hectare planted with trees.

The rent, paid in fast-depreciating Ugandan currency, is adjusted every ten years according to the index of inflation as defined by the Bank of Uganda. No rent is paid for areas that the companies have not planted with trees. For six square kilometres of plantation established by 2001, then, Tree Farms had paid Uganda, when inflation is factored in, less than \$11,000. For fifty years’ use of the same area of land, given current rates of inflation, it was set to pay less than \$110,000.

That’s outrageous!

Yes. Several years after the deal was made, the deputy commissioner for forestry in the Ministry of Water, Lands and Environment, Ignatius Oluka-Akileng, told the Norwegian NGO Norwatch that the authorities had recently realized that investors were “taking advantage of the system” to get cheap land. Of course, the fact that no rent is paid for areas not yet planted with trees makes such arrangements particularly attractive to land speculators. Yet it has proved hard for the Ugandan authorities to negotiate better terms. According to one reliable source, when Ugandan officials tried to negotiate a higher rent for 12,000 hectares in the Kikonda Forest Reserve with the Institut für Entwicklung und Umwelt (IEU), a German company headed by a former Green politician from the European Parliament, the company refused, saying: “Our plane to Germany leaves tonight; if you don’t sign now, there will be no deal.”

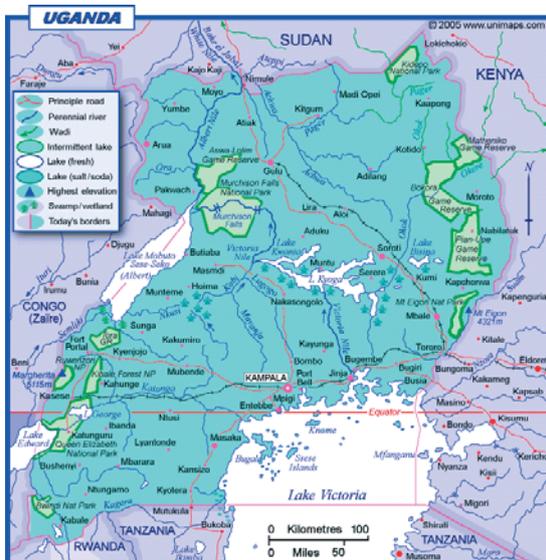


Norwegian journalist Harald Eraker investigated early attempts by Norwegian power and forestry firms to sequester carbon on Ugandan land.

One problem is that forest authorities often simply don't know how much foreign companies might profit from carbon trading (see BOX: No Need to Know? The Secret Economy of Carbon, chapter 6), or how long they plan to keep plantation land out of other uses to ensure that carbon continues to be stored on it. Forest authorities, to say nothing of local people, are also poorly equipped to confront ministers, politicians and government climate negotiators who take advantage of their position and inside knowledge of European corporate and governmental carbon plans to get funding that helps them gain control of "degraded" state forest land.

Well, it's not as though the land is being used for anything else.

Well, actually, it is. Since the 1960s and 1970s, local farmers and fishermen have moved in and out of Norwegian as well as German concession areas in Bukaleba. In fact, many people had migrated into the area already by the early 20th century. Although an outbreak of sleeping sickness then caused people to flee, when the tsetse fly vector was brought under control in the 1970s, people moved back to Bukaleba, and Idi Amin authorized a cattle-herding project in the middle of the reserve. Politicians under the Obote regime in the 1980s also supported settlements in the forest reserve, one minister observing that "trees don't vote, but people do."^d People were once again evicted in 1989-90. Crops were destroyed and houses torn down. Most evictees settled just outside the borders of the forest reserve, but then slowly started venturing back into the reserve to farm and fish. By 2000, five fishing and farming villages were inside the Tree Farms area in the Bukaleba Forest Reserve, and people from at least eight villages outside the reserve were cultivating the earth on Tree Farms' lease. Iganga district, the location of the reserve, was densely populated with migrants from other parts of Uganda, as well as from neighbouring countries. With scant opportunities for work outside agriculture, and with growing numbers, pressure on land was strong.^e



Neither the authorities nor Tree Farms knew how many people were living or farming within the company's concession area. Estimates of the population of one fishing village alone, Walumbe Beach, varied from 700 people to several thousand. One 1999 EU-supported study suggested that about 8,000 people earned a livelihood from farming and fishing inside the reserve.

But these people must be there illegally.

According to state law, yes. But some farmers claim they rightfully bought the land they are now working back in the 1980s, or that the land they are farming has been owned by their family for generations.

In any case, in 2000, forest authorities told Tree Farms that farmers and fishermen now living in or using the Bukaleba reserve had been served notice to vacate – although one official accused the Norwegian company of not telling the local people the truth about their illegal presence in the reserve.^f Although Tree Farms has said that it can accept the presence of fisherfolk in the reserve, if the forest authorities agree to designate an area for them, Tree Farms' managing director has placed the job of evicting others in the authorities' lap, stating that the company will not do "the dirty job of throwing them out" itself.

Apart from the people from the fishing village Walumbe Beach, however, no one interviewed by NorWatch in 2000 said that they had been given notice to leave the reserve. Several had heard rumours about it, while others were clearly surprised at the news. Some hoped that they might be allowed to stay – a hope perhaps based on the fact that the environmental impact assessment comes close to recommending that fishermen be allowed to stay to avoid social unrest.^h Almost every farmer and fisherman told NorWatch that they had no other place to go, let alone land to farm. All expressed fears for the future, and asked NorWatch to convey to the Norwegian owners of Tree Farms their request that they be allowed to stay or farm or fish in the reserve.ⁱ

Can't Tree Farms provide jobs for local people to do?

Tree Farms originally employed several hundred people to manage the Bukaleba plantations. In 2000, however, only 43 were left, according to the assistant administrator at the company's forest station, with only 20 working on the plantations themselves.

Tree Farms did allow farmers to grow maize, beans, and other products between the rows of planted trees during the first few years, until the trees grew too high for other plant life to grow beneath them. According to the EU-supported study mentioned

above, however, this *taungya* scheme, as developed by Tree Farms, “resembles a Middle Age feudal system but without the mandatory ‘noblesse oblige’ and with the farmers paying for the bulk of the investment cost of the plantation establishment.”^{ji}

First, local farmers clear, plough, weed and manage the plantation areas at no cost; indeed, Tree Farms actually encourages agricultural encroachment because it depends on farmers to “provide free labour to ground clearing and weeding.”^{kk} Yet many farmers reported having to pay the firm cash or a share of their crop to be allowed to farm on the company’s lands. One extended family with five adults working on one acre told NorWatch that the previous year they had had to pay 100 kilogrammes of maize to Tree Farms out of a harvest totalling 250 kg.^{ll} Conflicts over land and unpaid labour were seen by several locals as threatening the project’s future as a provider of both wood and carbon credits. Farmers have reportedly overpruned trees, uprooted seedlings, and neglected weeding in efforts at surreptitious sabotage.^{mm} The Ugandan forest authorities, meanwhile, reprimanded Tree Farms for low technical standards and demanded that the company abandon *taungya* and “do some real investment to produce quality tree stands.”ⁿⁿ The eucalyptus plantations have also suffered termite attacks. By 2001, the Tree Farms project was way behind schedule and suffering from lack of funds. To raise some quick money, the company was even forced to clear 50 hectares for commercial maize crops, arousing further criticism from the forestry authorities.

But is the project at least storing some carbon?

Tree Farms’ original management plan called for their plantations in the Bukaleba reserve to cover some 4,260 hectares of the company’s total area of 5,160 hectares by 2005. The firm anticipated being able to sell 500 tonnes of CO₂ credits per hectare, or 2.13 million tonnes of CO₂ in all.^{oo} The accounting that resulted in this figure was wildly optimistic, ignoring not only risks, but also uncertainties and indeterminacies (see BOX: Global Warming and the Ghost of Frank Knight, chapter 5). As with other biological carbon projects, it is in fact impossible to say what climatic effect the project would have.

For one thing, proper carbon accounting for the project would require following around thousands of evictees, many of whom would probably have to clear land elsewhere, resulting in carbon emissions attributable to Tree Farms. This would be impossible, particularly in a country such as Uganda, where poverty, landlessness, and political instability keep people constantly moving from one end of the country to the other.

For another, advance sale of carbon credits would require that the long-term political future of Bu-

kaleba be known in advance, so that any re-invasion of the area could be predicted and its effects on carbon storage precisely quantified and insured against or compensated for. Yet no basis exists for deriving numbers of this sort.

The future investment climate for such projects would also have to be calculated, as well as the probability of fires; the ecological effects of plantations on local patches of native vegetation through hydrological or other changes; the soil carbon loss attributable to clearing, ploughing and erosion caused by the project.^{pp} Even to attempt to do all this would drive the costs of the project through the roof.

If the original easy numbers posited by Tree Farms were accepted by the market, however, they would translate into carbon profits on the order of US\$10 million, well over a dozen times Tree Farms’ outlay on land. This would not include possible income from timber and wood sales. Turning Bukaleba into a Norwegian carbon plantation, moreover, would mean that its lands would not be available for long periods either for agriculture or for plumping up Uganda’s own carbon accounts.

It’s worth noting, incidentally, that if Norway tried to avoid all the emissions cuts it has to make by 2012 under the Kyoto Protocol by planting trees in Uganda, then, even on Tree Farms’ untenably optimistic original carbon accounting, 40,000 hectares of Uganda would have to be converted into tree plantations every year.

In sum, the project was not just a “lose-lose” initiative for forestry and local people, as concluded by the EU-funded study,^{qq} but in fact a “lose-lose-lose” state of affairs. The forestry effects of the scheme were unhealthy, local villagers were suffering, and, as Trygve Refsdal, advisor to the Ugandan forest authorities, warned, Uganda was in danger of being subjected to a “new form of colonialism”:

“Forest-planting in Uganda and other poor countries must, firstly, aim to meet the needs of the country and the local people, not the needs of the ‘international community.’ If these can be combined, it’s OK, but experience from similar initiatives show that local interests, local needs, and traditional land rights are easily pushed aside, and that land conflicts arise when outside commercial interests enter.”^{rr}

Growing international criticism ultimately prevented Tree Farms from claiming carbon credits for the project. But trees continued to be planted. After lengthy negotiations, the Norwegian owners conceded a little under five per cent of the land they had leased from the government to local people, but locals complained that they were still paid badly and that most of the labour was not sourced locally.

“The Money Came from a Place Far Away”: Tanzanian Land, Norwegian Carbon

In addition to its project in Uganda (see main text), Norway’s Tree Farms company was also, by 2000, trying to acquire savannah land totalling over 70,000 hectares in Tanzania. Between 1996 and 2000, some 1,900 hectares of trees were planted in Mufindi and Kilombero Districts at about 2,000 metres above sea level, where a seasonally moist climate provided lots of water for thirsty industrial monocultures of *Pinus patula* and *Eucalyptus saligna*.

The land had been leased from the government at US\$1.90 per hectare per year for a 99-year period on condition that it be used solely for forestry. Industrikraft Midt-Norge, the Norwegian power utility, meanwhile signed an options contract to pay Tree Farms nearly \$4.50 per tonne of CO₂ supposedly sequestered. Over a 25-year period, this would give Tree Farms a carbon profit of about \$27 million for one plantation complex, Uchindile, compared to \$565,000 paid to the Tanzanian government in compensation for losing the opportunity to do anything else with the land.

Yet according to Tree Farms Managing Director Odd Ivar Løvhaugen, the firm would have invested in Tanzania’s forestry sector regardless of possible carbon money. Løvhaugen emphasised that the company considers any trade in carbon credits merely as a supplement to those from conventional forestry. The Tree Farms carbon project would thus be in breach of the requirements for carbon projects outlined by the Kyoto Protocol, which disallow credits from activities that would have been undertaken without special carbon finance.

Promising various social benefits, the company had succeeded in overcoming villagers’ reluctance to cede their uncultivated land to the project, but in the end pledges to provide health and education services were not kept. There were also labour problems. Up to 500 local villagers were hired to plant and nurse the trees, build roads, or watch over the plantations. But planting took place only between December and March, so the work could not replace agricultural or animal husbandry occupations. In addition, the promised wage was too low – US\$1 a day, less than the government’s recommended minimum – for anything other than daily subsistence. More seriously, many workers were not paid at all. Some workers interviewed by NorWatch in 2000 had eight months of wages owing to them, while others complained that payments had been irregular and unpredictable from the beginning.

“When we asked about the salaries,” commented the residents of Uchindile village, “the company told us that the money came from a place far away and that there was nothing that could be done about it.”

The Tree Farms’ monocultures’ impact on biodiversity is unclear, since very few ecological studies have been carried out in this part of Tanzania. Even the impact assessment for the project, however, notes three endangered plant species within Tree Farms’ project area (two orchids and one *Aloe* species).

Source: Jorn Stave, NorWatch/The Future in Our Hands, “Carbon Upsets: Norwegian ‘Carbon Plantations’ in Tanzania”, in Friends of the Earth, *Tree Trouble*, Friends of the Earth, Asuncion, 2000.

But perhaps the Tree Farm experience will lead to less exploitative arrangements in the future.

Sadly, the evidence suggests otherwise. The international carbon economy has subsequently played a big part in stimulating land grabs by private developers in Uganda's state forests. In 2003, several officials of the Ugandan government, including not only former vice-president Dr Specioza Kazimbwe but also officials familiar with the international climate negotiations, received large concessions for land suitable for afforestation and reforestation, while communities also applying for concessions were left empty-handed and may be excluded from access to the forests in the future. The World Bank has meanwhile named Uganda as one of the African countries to benefit from three of its carbon finance funds, the Prototype Carbon Fund, the Bio Carbon Fund and the Community Development Carbon Fund.



Recent carbon forestry initiatives in Uganda have been researched by Timothy Byakola of the Ugandan NGO ACS.

Meanwhile, a carbon project of the Uganda Wildlife Authority (UWA) and The Netherlands's FACE Foundation⁷ to plant trees in a national park has contributed to a raft of social and environmental problems.

Not again!

I'm afraid so. The idea, as usual, sounded innocent enough: to plant mainly native trees in encroached-upon areas inside and along the boundaries of Mt Elgon National Park near the Kenyan border. In 1994, FACE undertook planting and in return was given rights over the carbon supposedly sequestered – expected to amount to 2.11 million tonnes of CO₂ over 100 years.⁸ UWA's role was to manage the plantations, protecting biodiversity, safeguard park borders and so on.

As documented by Timothy Byakola of the Ugandan NGO ACS, no one denies that the project has had some good effects. It is acknowledged by locals as having improved regeneration on the boundaries of the park, particularly in areas that had been badly encroached on by agriculture, and as having increased

streamflow from the forest. In 2003, the UWA-FACE project was even certified by Societe Generale de Surveillance as a well-managed forest according to Forest Stewardship Council principles. But the evictions associated with the project have contributed to a whole raft of social and environmental problems.

Like what?

Homeless and hungry people, for one thing. In 2002, for instance, 300 families were evicted from disputed land by park rangers in Wanale, Mbale District. Complaining that they had lived on the land for 40 years, with some even holding government land titles, the families said that they were forced to seek refuge in neighbouring villages where they now live in caves and mosques. Fires have to be kept burning the whole night in the caves to protect against cold, and school-going children have had their studies disrupted. Dodging armed ranger patrols, children slip back to their families' former gardens to steal what they regard as their own food. Local people have lodged a case seeking compensation for destroyed property and the return of their land with the Mbale district court.

Hundreds of families have also been evicted in other locations, increasing social tensions.⁹ In 2003, villagers disgruntled at UWA's militarized approach destroyed over 400 hectares of eucalyptus plantations in one night. At a November 2004 community meeting held in Luwa trading center, Buwabwala sub-county, evicted locals insisted that they would go back to the forest rather than face starvation. The park warden, for his part, promised that whoever would be caught in the forest would be shot.

In fact, so tense has the atmosphere become that members of parliament from eastern Uganda have appealed to the government to degazette Mt Elgon's boundaries to ease the suffering.

Conservation Enforcement and Local People: Voices of Protest

“The boundaries were made unilaterally, displacing over 10,000 people. The wildlife people who operate the park are very militarized, and have killed over fifty people.”

David Wakikona, Member of Parliament, Manjiyav

“The biggest problem is how to secure food for the family. All our gardens, where we used to get food, have been taken over by the park rangers”.

Amina Gidongo, widow and mother of seven children living in a cave as a result of having been evicted

But maybe a little short-term pain was necessary in order to preserve the forest and its carbon.

But what else gets destroyed in the process? It's not just a matter of temporary social dislocation, but also farmland shortages, environmental damage outside the park, and disrupted relationships between local people and the forest.

Today, with a population density of over 450 people per square kilometre in the farmlands around Mbale town and 250 per square kilometer in Kapchorwa district, the village areas bordering Mount Elgon National Park are the most densely populated in Uganda, partly due to UWA evictions. Communities living close to the forest mainly grow food crops like bananas, yams, sweet potatoes and vegetables at bare subsistence levels with few surpluses remaining for sale in local markets. Production of a few cash crops like coffee and wheat is fast dwindling due to fragmentation of land. A typical peasant holding in the area averages between 0.25 – 1.0 ha, with a household having an average of 10–15 members.

One result is that soils are quickly losing fertility. Most of the trees and other vegetation in the villages outside the park have been cut to provide fuel-wood for cooking and building materials, leaving open and denuded slopes. Deforestation has left the land open to erosion as more areas are being converted to agriculture. In 1996, a one-kilometre landslide killed nine people in Budesi and Buwali parish, and during the heavy rains of the 1997 El Nino, another five by landslides in Bunabokha village in Budesi parish. Many locals are concerned that rivers flowing from the mountain are now carrying higher sediment loads, especially during rainy seasons. Communities and community development organizations alike note that fisheries have suffered.

All this is due to there being too many people. That's not UWA-FACE's fault.

It's not so simple. Land scarcity in the area is partly a result of the "encroachment" of the national park on longstanding farmland, and the hand of the eviction authorities has unquestionably been strengthened by the project.

Survival and the preservation of social networks have also been endangered when UWA cuts off villagers' access to intact forest and its animals, bamboo shoots, firewood, mushrooms, vegetables, herbs, medicines, building materials, and wood used in circumcision ceremonies.

“When the UWA people came with their tree-planting activities, they stopped us from getting important materials from the forest. We were stopped from going up to get *malewa* (bamboo shoots), which is a very important traditional food in the area and is a source of income. They were certain products that we used to get from the forest for the *embalu* ceremony (circumcision ritual) to be performed in the proper traditional way.”

Cosia Masolo, evicted village elder and father of 20 now living on a 0.3 hectare piece of land in Mabembe, Buwabwala sub-county.

In Bubita sub-county, council officials reported that firewood is now hard to find and that people have resorted to using banana leaves to prepare food, meaning they can no longer eat foods that require long cooking. Goats and cows have to eat banana stems because the forest where they used to graze on grass is now a no-go area. In Buwabwala, many young girls are crossing over to neighboring Kenya to earn money to buy land for their parents. Some have moved into prostitution and contracted HIV.

But hasn't the project improved the economy of the region?

Locals indignantly reject FACE Foundation claims that the project has increased incomes, improved standards of living work, provided jobs in planting and nurseries, and given out seedlings for villagers to plant on their farms.

A Funny Place to Store Carbon: The History of Land Disputes at Mt. Elgon

Mt. Elgon was first gazetted as a Crown Forest in 1938 and became a central Forest Reserve in 1968 and a National Park in 1993. But the area has a long history of human occupation and use. Already in the 1930s, many families were living within the boundary, with about 70 heritable licences issued to families living and cultivating the forest reserve. In 1954, when the first working plan for Mount Elgon forest reserve was written, there were still around 30 licensed families living there.

Forest boundaries were originally marked by holes. In 1962, the forest was resurveyed and live boundary markers, including trees of exotic species, were put in place. However, the boundaries were not plotted on the national land grid, making it hard later on to establish where they had been when the markers were destroyed.

Between 1970 and 1985, during an era of breakdown of law and order, high levels of industrial timber exploitation and confused forest policy, some 25,000 hectares of prime high montane forest between 2000 – 3000 metres in altitude were destroyed or degraded through clearing for agricultural activities. Pit-sawing combined with swidden cultivation reduced the densely-forested lower slopes to barer landscapes colonized by Kikuyu grass (*Pennisetum clandestinum*).^w

In 1993, the forest was designated as a national park amid acrimonious intra-governmental wrangling, politicking and donor pressure. In 1989, Uganda National Parks had unilaterally requested the cabinet to endorse designation of Mt Elgon as a national park.

But local people were not consulted, in violation of the law. Families found inside the 1963 boundaries – some of whom had occupied the land for over 40 years – were given nine days to vacate, despite the understanding among many of them that the land was theirs and that such arbitrary evictions are in breach of land laws as well as the subsequent 1995 Constitution, which recognizes customary ownership.

(Endnotes)

- a See the website of the Norwegian organization Joint Action Against Gas-Fired Power Plants (<http://www.grida.no/ngo/fmg/eng/index.htm>).
- b NORAD (Norwegian official aid agency), letter to NorWatch, 30 March 2000.
- c Trygve Refsdal in telephone conversation, March 2000.
- d Ibid.
- e B. Koppers, *Social Impact Assessment of the Proposed Natural Forest Resources Management and Conservation Program*, K Consult, Oslo, October 1999.
- f D. N. Byarugaba, Commissioner for Forestry, *Utilisation of Bukaleba Forest Reserve*, 25 January 2000.
- g MP Bunya West, letter regarding utilisation of Bukaleba Forest Reserve, 25 January 2000. This harsh letter was a reaction to a proposed solution for the land conflict put forward by a parliamentarian from the district on behalf of the Norwegian and the German company. The proposal entailed (e.g.) that those only engaged in fisheries could keep a landing site for the fishing boats, and that the rest of the intruders had to leave the reserve by the end of July that year.
- h John R. W. Aluma, Report on Environment Impact Assessment of the Management Plan for Bukaleba Forest Reserve under Busoga Forestry Company Limited, consultant's report, September 1999.
- i The company's environmental impact assessment, too, has noted the fears of local people: "The [local] communities have expressed very strong desire to be permitted to continue to stay there [in the reserve] as it would be extremely difficult to find alternative locations and activities for livelihoods" Yet the summary of the impact assessment states that the farmers and fishermen "consider the project as a positive socio-economic development" for the area. Ibid.
- j Koppers, op.cit.
- k Nsita Steve Amooti, Forest Officer, *Field Visit to Bukaleba Forest Reserve*, 24 November 1999.
- l According to one report, farmers must also pay a cash rent ranging from 10,000 to 85,000 Ugandan shillings per hectare, at a time when Tree Farms is only paying 5,000 shillings per year to the authorities for every hectare planted with trees. *Ibid.*
- m Koppers, op. cit.
- n Nsita Steve Amooti, op. cit.
- o Odd Ivar Løvhaugen, email, 20 January 2000.
- p Intergovernmental Panel on Climate Change, *Special Report: Land Use, Land-Use Change, and Forestry, Draft Summary for Policymakers*, Oxford, Oxford University Press, 2000.
- q Koppers, op. cit.
- r Trygve Refsdal, email, 24 March 2000.
- s FACE Foundation (Forests Absorbing Carbon-Dioxide Emissions) contributes financially to the "reforestation" of about 150,000 hectares worldwide. FACE is an initiative of the Dutch Electricity Generation Board.
- t According to a Societe Generale de Surveillance assessment report done in 2001, the project is expected to result in an increase in the average storage capacity of 3.73 million tones of CO₂ over its 99-year lifespan. SGS is the world's largest inspection, verification and testing organization.
- u *New Vision*, Monday, 15 April 2002. *New Vision* is Uganda's leading daily newspaper.
- v *New Vision*, 30 June 2004.
- w Miriam van Heist, *Land Unit Map of Mount Elgon National Park*, IUCN technical report, Gland, unpublished, 1994.

5 Costa Rica: “Environmental Services” Pioneer

Costa Rica has always been one of the countries in Latin America keenest to host carbon forestry projects and other “environmental services” schemes. In the mid-1990s, looking for new ways to derive value from its forests, it decided to become the first country to bring its own government-backed and -certified carbon forestry credits into the global market,^a and even before Kyoto was signed was selling them to the Norwegian government and Norwegian and US corporations.

To work on the scheme, Costa Rica hired Pedro Moura-Costa, a Brazilian forester with experience on early Malaysian carbon forestry projects backed by The Netherlands’s FACE (see chapters 3 and 4) and New England Power of the US. Moura-Costa in turn convinced Societe Generale de Surveillance (SGS), one of the world’s leading testing, inspection, and certification companies, to use Costa Rica as a test site for learning how to make money as a carbon credit certifier, and on the back of his own experience set up a new carbon consultancy, EcoSecurities. An early Costa Rican project called CARFIX – implemented by the voluntary organization Fundacion para el Desarrollo de la Cordillera Volcanica Central and funded by US Aid for International Development (USAID), the Global Environmental Facility and Norwegian financiers – earned its North American sponsors carbon credits by promoting “sustainable logging” and tree plantations on “grazed or degraded lands”, claiming to provide locals with income they would otherwise have to earn through forest-endangering export agriculture and cattle production.
^b Following the emergence of the Kyoto Protocol in 1997, Costa Rica pushed for the same certification techniques it had pioneered to be adopted around the globe, and signed further carbon deals with Switzerland and Finland.

Costa Rica’s enthusiasm for carbon offset projects seems to suggest that there are a lot of benefits in this market for the South, after all.

The enthusiasm is not unanimous, even in Costa Rica. In fact, the boom in carbon forestry fits into an existing trend of support for monoculture tree plantations that has aroused much concern among local environmentalists. Between 1960–85, about 60 per cent of Costa Rica’s forests disappeared due to cattle farming. Then there was a “wood shortage” scare, and the government subsidized monoculture tree plantations extensively between 1980–1996. Helped by government incentives, over 130,000 ha has been

covered by monoculture tree plantations over the past 20 years, with the total plantation area in 2000 standing at 178,000 ha (well over three per cent of Costa Rica’s territory).



A typical ecosystem on which a Costa Rican plantation might be established. The carbon released from the standing trees removed to make way for the plantation often will not appear in project accounts.

The CDM, Costa Rican environmentalists fear, may help spread monoculture tree plantations even further. In the late 1990s, a government official active in the climate negotiations helped promote a new law supporting monocultures. Half of a 3.5 per cent fuel tax went into an “environmental service programme” designed largely to give incentives to private landowners to be “green” in a country in which 20 per cent of the land is national parks, a few per cent indigenous territories and the rest private land. Under the programme, a landowner might get, for example, US\$90 per hectare per year to conserve forest, or \$500 per hectare over five years to establish a plantation. In return, the state gets rights to the carbon in the plantation, which it can use to bargain with in international negotiations.

How much of this tax money goes to forest conservation, and how much to plantations?

Most payments under the environmental services programme go to forest conservation, but 20 per cent is used to subsidize monoculture plantations and agroforestry. This has roused objections from ecologists, academics, indigenous peoples who argue that monoculture plantations, often lucrative in themselves, can damage the soils, water and biodiversity that the programme is supposed to protect. The programme may also soon be supported by a tax on water and electricity.



A 12-year-old plantation of Terminalia trees. The carbon released from eroded soils such as appear in the photograph often does not appear in project accounts.

Still, twenty percent is a pretty small proportion, isn't it?

Overall, Costa Rica is today putting US\$1.5 million annually into financing 4–6,000 ha per year of new plantations. That may not seem much, but Costa Rica's total territory is only a bit over five million ha. A UN Food and Agriculture Organization consultant's study has suggested that the country set up even more plantations, up to 15,000 ha per year, using carbon money. Another study estimates that, during the period 2003–2012, some 61,000 hectares of monoculture plantations, or 7,600 a year, could be established in so-called "Kyoto Areas". That's well above the current rate,^c implying that plantations could start competing aggressively with land that might otherwise be given over to secondary regeneration and conservation of native forest.

In addition, because CDM forestry projects, for economic reasons, would probably have to cover 1000 ha and up (see below), they could well threaten the land tenure of people carrying out other forest projects in Costa Rica. The average landholding in the country is less than 50 ha, with most parcels belonging to families, although of course huge corporate farms also exist. Land concentration in connection with monoculture tree plantations is a familiar phenomenon from around the world,

including areas of Costa Rica where pulpwood plantations have been set up.^d



Research for this section was done by Javier Baltodano of Friends of the Earth-Costa Rica.

But again, sacrifices do have to be made for the climate, don't they?

Ironically, one of the things that the Costa Rican case reveals is the impossibility of determining whether the climate in fact would benefit from a policy of pushing such projects – or even of fulfilling the conditions set out in the Kyoto Protocol and the Marrakech Ministerial Declaration^e for reforestation and forestation carbon projects.

Take, for example, a study on carbon projects done by the Forest and Climatic Change Project (FCCP) in Central America, jointly executed by the Food and Agriculture Organization of the UN and the Central American Environmental and Development Commission (CCAD).^f

Research done for the FCCP report shows that available soil use maps are not precise enough to show how carbon storage in prospective carbon sink areas (or Kyoto Areas) has changed since the 1990s, and are also hard to compare with each other. That would make accounting for increased carbon storage over the period since then impossible.

The study's conclusions also suggest that it would be impossible to show to what extent Kyoto carbon projects were additional to "those that the country implements as part of its forestry development projects": "it is not possible to predict in what exact proportion these activities will be in or out of the Kyoto Areas and any assumption in this respect is enormously uncertain". In addition, Kyoto carbon projects could find it hard to factor out the anthropogenic activities to encourage natural seed nurseries that are being promoted and funded without carbon finance. One example is landowners' protection of their lands against livestock and fires that has been paid for since 1996 by the National Fund for Forestry Financing (FONAFIFO).

The FCCP study reveals, above all, the tensions between accounting convenience and accuracy in measuring carbon. For example, it considers that measurements of soil carbon before and after the start of any carbon forestry project would be too costly, even

though such measurements are widely held to be a key to carbon accounting for plantations, which disturb soil processes considerably.^g Similarly, the study accepts for convenience a blanket carbon storage figure of 10 tonne/ha for grassland sites that could be converted to carbon forestry. However, Costa Rica boasts too wide a variety of grasslands and agricultural systems – most of them comprising a lot of trees – for such a figure to be used everywhere.^h



A new teak plantation near the San Carlos River in northern Costa Rica. Exposed soil heated by direct tropical sunlight is likely to release significant quantities of carbon.

But can't you cover such unknowns just by taking the amount of carbon you think you might be sequestering and reducing the figure by a certain percentage, just to be on the safe side?

That's what many carbon accountants do. The FCCP study, for example, suggests a 20 per cent deduction from the figure designating total potential of carbon sequestered to compensate for political and social risks and a 10 per cent deduction to compensate for technical forestry risks.

The problem with such "risk-discounted" figures is that carbon sequestration is characterized by far more than just risk. This goes back to a distinction first made by the economist Frank Knight 80 years ago between *risk* and *uncertainty* (see BOX: Global Warming and the Ghost of Frank Knight).

In situations characterized by *risk*, all possible outcomes are known in advance and their relative likelihood expressed as probabilities. In such situations, it makes sense to talk about "margins of error" and safe levels of discounting.

Where the probabilities of outcomes are unknown, however, you're faced with a situation of incalculable *uncertainty*.

The situation is even more serious when not even all the possible outcomes are known.ⁱ Such conditions

of uncertainty and ignorance, and not simply risk, are the typical realities that biological carbon accounting has to cope with.^j In these conditions, it's impossible to be sure whether any particular numerical risk factor is conservative enough to compensate for the unknowns involved.

In Costa Rica, for instance, most monoculture tree plantations are less than twenty years old, with a trend toward planting just two species – *Gmelina arborea* and *Tectona grandis*. Pest or disease epidemics can therefore be expected, but their extent is incalculable at present. Furthermore, El Niño climate events may propagate enormous fires whose extent, again, cannot be calculated in advance. During the dry season of 1998, in the humid tropical zone where uncontrollable fires had never been reported before, over 200,000 hectares were burned. Part of this territory is under monoculture tree plantations. Given such realities, it's unsurprising that the FCCP carbon project study could give no reasons for its low "technical" risk figure of 10 per cent. There is in fact no scientific basis for the assignment of any such number.

At present, there is also little basis for guessing how much carbon sequestered in Costa Rican trees will re-enter the atmosphere and when. The FCCP study simply assumes that 50 per cent of the carbon sequestered by a given project will remain so once the timber has been sold and used. However, the most common plantation species in the country (*Gmelina arborea*) is logged at least once every 12 years and most of the timber is used to manufacture pallets to transport bananas. The pallets are thrown away the same year they are made and probably – though no one has done the empirical studies necessary – store carbon no longer than a few years.

The FCCP study also assumes that anthropogenic activities to foster natural seed nurseries will result in secondary forests that will be in place for at least 50 years. Accordingly, they make no deductions for re-emission of carbon. However, although current forestry law prohibits transforming forests into grasslands, both legal changes and illegal use could result in large re-emissions whose size would be impossible to determine in advance.

It seems that one of the big problems with doing the accounts for forestry "offset" projects is that you can't store carbon permanently in trees.

The impermanence of tree carbon isn't itself a problem, but rather the fact that you can't verify *how* impermanent it is.

Everyone knows that the carbon stored in trees has a different lifespan from the carbon left underground in coal, oil and gas deposits. Over historical time

spans, the carbon in fossil deposits will stay pretty much where it is unless somebody disturbs it. You don't need to worry too much about it leaking out to the atmosphere. But once carbon enters the above-ground system consisting of the air, oceans, trees, grass, soil, fresh water, and so forth, things change. No part of the above-ground pool of carbon can be permanently separated from the atmosphere. It belongs to a system in which carbon is always cycling into and out of the air in hard-to-predict ways.

So when you try to "sequester" this carbon in trees – to separate it from the atmosphere – you know this separation is going to be temporary compared to the separation between underground fossil carbon and the atmosphere. Eventually the carbon in the trees is going to go into the air. The only question is when. The carbon in grass or a tree trunk, in the top seven inches of soil, in furniture or paper or a cigarette, may all be separated from the atmosphere for a while, but in a way much harder to predict than the way the carbon in coal deposits a kilometer underground or in carbonate rock dozens of kilometers beneath the surface is separated from the air. To put it another way, fossil carbon flows into the biosphere/atmosphere system are essentially irreversible over non-geological time periods, while those from the atmosphere into the biosphere are easily reversible and not easily controlled.

Fossil Carbon vs. Forest Carbon: Two Environmental Historians Speak

"Carbon cannot be sequestered like bullion. Biological preserves are not a kind of Fort Knox for carbon. Living systems store that carbon, and those terrestrial biotas demand a fire tithe. That tithe can be given voluntarily or it will be extracted by force. Taking the carbon exhumed by industrial combustion from the geologic past and stacking it into overripe living woodpiles is an approach of questionable wisdom . . . Eliminate fire and you can build up, for a while, carbon stocks, but at probable damage to the ecosystem upon the health of which the future regulation of carbon in the biosphere depends. Stockpile biomass carbon, whether in Yellowstone National Park or in a Chilean eucalyptus plantation, and you also stockpile fuel, the combustion equivalent of burying toxic waste. Refuse to tend the domestic fire and the feral fire will return – as it recently did in Yellowstone and Brazil's Parc Nacional das Emas, where years of fire exclusion ended with a lightning strike that seared 85 per cent of the park in one fiery flash."

Stephen J. Pyne, Arizona State University^k

"Undeniably, having more trees will work in the right direction – but to a minute degree. For its practical effect, telling people to plant trees is like telling them to drink more water to keep down rising sea-levels."

Oliver Rackham, Cambridge University

But storing carbon for even a short time in biological systems can still delay carbon buildup in the atmosphere and therefore delay climate change. So biological carbon, even though temporary, is still highly relevant to climate change and should be preserved wherever possible. Accordingly, carbon forestry projects needn't be permanent to be useful.

Exactly! So why can't we just figure out how much temporary carbon storage in trees is equivalent to keeping X amount of fossil fuels in the ground?

That's the unjustified leap that many technicians and politicians make. They assume that just because trees are good for climate, there has to be a way of *measuring* how many trees equals, in climatic terms, how much fossil fuel emissions.

The officials and diplomats responsible for the CDM, for example, have committed themselves to the claim that a world that closes a certain number of fossil fuel mines ought to be equivalent to a world that leaves them open but plants a certain number of new trees. They have embedded in the Kyoto Protocol the doctrine that planting a certain number of trees can make industrial emissions "climate-neutral" or "carbon-neutral".

What has arisen is what scholar Eva Lovbrand calls a "political requirement" to "determine the long-term fate of carbon stored in biomass and soils"^l and to commensurate it with underground fossil carbon. To meet this politics, technicians have been busy coming up with accounting methods for trying to tackle the problem that carbon stored in trees may be re-emitted to the atmosphere at any time.

The Global Change Group of the Tropical Agronomic Centre for Research and Teaching (CATIE), for example, has been assessing ways of putting non-permanent biological carbon in the same ledger with fossil carbon emissions, so that the two can be added and subtracted, in ways relevant to Costa Rica and Central America.^m

Trust Me, I'm a Doctor: Three Professionals on How to Measure Carbon Offsets

"...I've often myself, when I've been flying in an aircraft, and I've flown over complex landscapes, and... how the hell can you measure carbon down there to a few per cent? The people that measure the carbon, either by satellite measurements or by flux towers, or by, sort of, sort of looking at the forest... all claim that within some reasonable degree of accuracy or precision you can do it. But when I look down on a complex landscape, I have to be honest, it's... um... I get very impressed if these guys are indeed correct. But, hey, the fact that when I look down in an aircraft and I think its going to be complicated, that's my gut instinct versus the scientific community's. And they claim they can demonstrate what precision and accuracy they can get... One has to go with what these scientists are saying."

*Dr. Bob Watson, Ex-Chairman,
Intergovernmental Panel on
Climate Change, interview with Cathy
Fogel, Washington DC, 6 October, 2001.*

"If you know that saving the Amazon is better for the atmosphere than keeping one car off the road, then you ought to be able to calculate how many cars are equivalent to saving the Amazon. The calculations may be difficult, but I don't see why the problems should be insurmountable."

*Dr. Richard Tipper, Edinburgh
Centre for Carbon Management*

"Baselines are not a question of imagination. At the International Centre for Research in Agroforestry, we have developed a method for monitoring and evaluation of environmental and development projects that involves project baseline measurement for any response variable that one deems important (e.g. household income, adoption of improved farming technologies, etc.). This same method could easily be used for carbon accounting and take the guesswork out of 'without-project' baselines, additionality and leakage. The simple solution to a problem that has been overcomplicated in the debate is: just measure it! It is really not that hard. Environmental monitoring is a mature field and rigorous methods exist for attributing project impact."

*Dr. Louis Verchot, Lead Scientist for
Climate Change, International
Centre for Research in Agroforestry*

It sounds like a great idea. What's the problem?

Well, let's look at one proposal for biological carbon accounting surveyed by CATIE. This is "tonne-year" accounting.

The first step in tonne-year accounting is to determine the period that a tonne of carbon has to be sequestered in order to have the same environmental effect as not emitting a ton of carbon. Because the lifetime of greenhouse gases in the atmosphere is limited, this time period should be finite. If the "equivalence factor" is set at 100 years, then one tonne of carbon kept in a tree for 100 years and then released to the atmosphere is assumed to have the same environmental effect as reducing carbon emissions from a fossil-fuelled power plant by one tonne.

The second step is to multiply the carbon stored over a particular year or decade by the complement of this equivalence factor to find out what the climatic benefits are of that project for that year, and to limit the carbon credits generated accordingly. So the forestry project doesn't have to be permanent to generate carbon credits, it will just generate fewer credits the more short-lived it is.

You still haven't mentioned any problems.

The first problem is that you still have to measure the carbon stored by a project over a particular year or decade. That runs into the same problems with ignorance, uncertainty and all the rest mentioned above. Second, no one knows how long the "equivalence time" should be. Figures ranging all the way from 42 to 150 years have been mentioned.⁹ Another difficulty is that even if one settles on a figure of, say, 100 years, it does not necessarily follow that carbon sequestered for ten years will have 10/100th of the climatic effect of being sequestered for 100 years. Again, the problem is not that any given patch of trees is temporary, but that there's so much uncertainty and ignorance about how to measure its relevance to climate. It's not a matter of calculable "risk", but something far more recalcitrant to market accounting.

In addition, tonne-year accounting can make what allowances it does make for uncertainty only at the cost of generating carbon credits very slowly. That makes it unattractive to business. It also militates against small projects. The CATIE study found that at prices of US\$18 per tonne, the tonne-year methodology allows for profitability only in projects of over 40,000 ha.

Aren't there other possible accounting methods?

CATIE surveyed several, but they all run up against similar problems of uncertainty, scientific ignorance and the impossibility of reconciling cost and verifiable climatic effectiveness.

For example, a method called “average storage adjusted for equivalence time” (ASC) gives you more credits more quickly, but only at the cost of making unwarranted assumptions about how long biological carbon can be verifiably sequestered.



A Costa Rican acacia plantation. The logs in the foreground have been discarded and left to rot. In a few years, they will release all their carbon back to the atmosphere.

Then there are the UN's “temporary” CERs, which expire at the end of the Kyoto Protocol's second commitment period and must be replaced if retired for compliance in the first commitment period; and “long-term” CERs, which expire and must be replaced if the afforestation or reforestation project is reversed or fails to be verified. These beg the question of how such credits are to be verified in the first place and also involve complex accounting and high economic risk to business.

In the end, CATIE came to the conclusion that CDM forestry projects had to be big in order for it to be worthwhile to fulfil all the accounting and other requirements. Out of a total of over 1500 simulated scenarios, only eight per cent made it possible for projects under 500 ha to participate. The mean size of a project for the sale of carbon to be profitable was 5,000 ha. One way out would be to bundle smaller projects together and employ standardized assumptions and procedures, but again that would magnify accounting mistakes and also would be hard to achieve given the Costa Rican land tenure system.

You've talked a lot about how much harder it is to measure how much carbon is sequestered in tree projects than simply to keep fossil carbon in the ground. But maybe we don't need to compare carbon sequestered

in trees with carbon stored for the long term in fossil deposits. Isn't it true that about a quarter of the excess CO₂ in the atmosphere comes from deforestation? The atmosphere doesn't care whether its carbon dioxide has come from burning coal or from burning forests. We should think of forestry carbon projects like Costa Rica's as replacing carbon released from forests, not as replacing carbon released from fossil fuel combustion. The point of carbon forestry should be to help stabilize biospheric carbon releases to the atmosphere by returning more carbon from the air to the land, not to compensate for fossil fuel use. This should solve the measurement problem, since all we have to do is compare biospheric carbon with other biospheric carbon.

No, that has no effect on the measurement problem. It's impossible to quantify verifiably the effect any particular forestry project has on the climate, whether the project is taken to be “compensating” for fossil fuel burning or “compensating” for forest destruction elsewhere.

What makes comparison between biospheric and fossil carbon impossible is that the whole above-ground carbon system is fluid, with relatively weak boundaries between trees, atmosphere, water and so on, compounded by the inclusion of all these things within social systems. Unfortunately, the same characteristic – fluid boundaries and entanglement with social systems – also makes it hard to verify how much carbon is being saved as a result of a particular project, and thus whether a project is changing the balance of the above-ground carbon complex.

Yes, climate change can be addressed by trying to conserve forests just as it can be addressed by keeping fossil fuels in the ground. But it can't be verifiably addressed by burning forests and then “compensating” for this burning with biospheric projects any more than it can be verifiably addressed by mining fossil fuels and then “compensating” for their transfer to the biosphere with biospheric projects.

What's the future for Costa Rican carbon forestry projects?

The government has recently declared that it will put more effort into non-forestry projects such as windmills and hydroelectric schemes on the ground that they are less complicated and yield higher-priced carbon credits. On the other hand, companies such as the US-based Rainforest Credits Foundation^o continue to be eager to set up new carbon schemes in Costa Rica, often without much prior consultation with the government.

Global Warming and the Ghost of



Frank Knight

Frank H. Knight (1885–1972), a University of Chicago economist recognized as one of the deepest thinkers in 20th century US social science, is famous for his distinction between *risk* and *uncertainty*. Although he could never have anticipated all the ways it could be applied, Knight's 1921 distinction helps explain why it is confused to put any faith in a market for emissions credits generated by carbon-saving projects.

Risk, in Knight's sense, refers to situations in which the probability of something going wrong is well-known. An example is the flip of a coin. There is a 50–50 chance of its being either heads or tails. If you gamble on heads, you risk losing your money if it turns out to be tails. But you know exactly what the odds are.

Uncertainty is different. Here, you know all the things that can go wrong, but can't calculate the probability of a harmful result. For example, scientists know that the use of antibiotics in animal feed induces resistance to antibiotics in humans, but can't be sure what the probabilities are that any particular antibiotic will become useless over the next 10 years.

Still worse, as Knight's successors such as Poul Harremoës and colleagues have pointed out,^P are situations of *ignorance*. Here you don't even know all the things that might go wrong, much less the probability of their causing harm. For example, before 1974 no one knew that CFCs could cause ozone layer damage. Obviously, this ignorance would have

invalidated any attempt, at the time, to calculate of the probability of ozone depletion.⁹ Similarly, before 2000, it was not known that the albedo of trees could change a forest's effect on global warming;^r before 2005, how much carbon recently sequestered by land plants is being moved by the Amazon to the oceans and the atmosphere;^s and before the 1990s, that certain factors including release of methane from ocean floors or the switching off of the Gulf Stream were capable of "flipping" the earth's climate rapidly from one state to the other.

In situations of *indeterminacy*, finally, the probability of a result cannot be calculated because it is not a matter of prediction, but of decision. For example, it might be "implausible" for subsidies for fossil fuel extraction to be removed within five years, but you can't assign a numerical probability to this result, because whether it happens or not depends on politics. In fact, trying to assign a probability to this outcome can itself affect the likelihood of the outcome. In such contexts, the exercise of prediction can undermine itself.

Problems posed by risk, uncertainty, ignorance and indeterminacy all call for different kinds of precaution.

Risk fits easily into economic thinking, because it can be measured. For instance, as Knight pointed out in 1921, "the bursting of bottles does not introduce an uncertainty or hazard into the business of producing champagne":

"[S]ince in the operations of any producer a practically constant and known proportion of the bottles burst, it does not especially matter even whether the proportion is large or small. The loss becomes a fixed cost in the industry and is passed on to the consumer, like the outlays for labor or materials or any other. . . . This, of course, is the principle of insurance, as familiarly illustrated by the chance of fire loss."^t

Uncertainty, ignorance and indeterminacy, however, call for a more precautionary and flexible, and less numerical, approach.

Take the carbon credits to be generated by tree plantations. If these credits were threatened by nothing more than risk, insurance-type calculating techniques would be enough to handle the problem. You could insure carbon credits from a plantation just as you take out fire insurance for a building.

But such credits are threatened not only by risk, but by uncertainty, ignorance, and indeterminacy as well. For example:

- How long will plantations last before they release the carbon they have stored to the atmosphere

again, through being burned down or cut down to make paper or lumber, which themselves ultimately decay? This is not simply a risk, in Knight's sense, but involves uncertainties and ignorance that can't be captured in numbers. For example, it is still not known what precise effects different degrees of global warming will have on the cycling of carbon between different kinds of trees and the atmosphere.

- How will plantations affect the carbon production associated with neighbouring ecosystems, communities, and trade patterns? Again, uncertainty and ignorance, not just risk, stands in the way of answering such questions.
- How many credits should be subtracted from the total generated by plantations to account for the activities that they displace that are more beneficial for the atmosphere in the long term, for example, investment in energy efficiency or ecological farming? No single number can be given in answer to this question, since "it is inherently impossible to verify what would have happened in the absence of the project".⁴ That is, the answer is indeterminate.

By mixing up "the analytically distinct concepts"^v of risk, uncertainty, ignorance and indeterminacy, schemes such as the Clean Development Mechanism and Joint Implementation have blundered into what Knight called a "fatal ambiguity".^w In this case, it is an ambiguity that undermines the effectiveness of the entire Kyoto Protocol and one that can only be remedied by the suspension of such projects.

(Endnotes)

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6 India: A Taste of the Future

If countries in Latin America pioneered carbon projects, one of the countries that has attracted the greatest longer-term interest among Northern carbon traders and investors is India.

The interest is reciprocated by many in India's government. Three of the first dozen or so CDM projects to be registered – an HFC-23^a destruction project, a small hydropower project, and a biomass project – are located in India. The country is currently second only to Brazil in volume of CDM credits in the pipeline, although China, Mexico, Argentina and Chile are also prominent.^b

As elsewhere, most of the money would go to end-of-pipe projects that destroy non-carbon-dioxide greenhouse gases. According to the Delhi-based Centre for Science and Environment, some 77 per cent of Indian CDM credits currently in the pipeline would be derived from projects which destroy HFCs, which are extremely powerful greenhouse gases used in refrigeration, air conditioning, and industrial processes.^c Inevitably, social activists are raising questions about whether such projects provide “any credible sustainable development” to local communities.^d

Why shouldn't such projects be beneficial to local communities?

First, because HFCs are so bad for the climate, projects that destroy them can generate huge numbers of lucrative credits merely by bolting a bit of extra machinery onto an existing industrial plant. As a result, there are no knock-on social benefits other than providing income for the machinery manufacturer and some experience for a few technicians. Second, such projects don't help society become less dependent on fossil fuels. They don't advance renewable energy sources, and they don't help societies organize themselves in ways that require less coal, oil or gas. Third, by ensuring that the market for credits from carbon projects is dominated by large industrial firms, they make it that much more difficult for renewable energy or efficiency projects to get a foothold.

Don't such projects also provide perverse incentives for governments not to do anything about pollution except through the carbon market? After all, if I were a government trying to help the industries in my country get masses of carbon credits from destroying a little bit of HFCs, I would hesitate to pass laws to clean up HFCs. After all, such laws wouldn't make industry any money. In fact, they would cost industry money. Instead, why not just allow the pollution to go on until someone comes along offering money if it is cleaned up?^e

That's a question that's understandably going through the minds of government officials in many Southern countries. As a result, it's not clear whether the CDM market is actually a force for less pollution or not.

But at least such projects don't do any harm to local people, right?

That's a matter of opinion. If the industry getting the credits is hurting local people, local people may well disagree with the project. Near Gujarat Fluorochemicals Limited, one of India's first projects to be registered with the CDM, villagers complain of air pollution's effects on their crops, especially during the rainy season, and believe the plant's “solar oxidation pond” adds to local water pollution. Of course, theirs are not the only voices. D. K. Sachdeva, a vice president of the company, insists locals' claims were politically motivated. “As we are the only factory in this area, people make allegations to make money,” he asserted.^f

Meanwhile, villagers near another factory hoping to benefit from CDM credits, Rajasthan's SRF Fluorochemicals, believe that their aquifers are being depleted and their groundwater polluted, leading to allergies, rashes, crop failures, and a lack of safe drinking water.

What about smaller projects – the ones that don't generate so many credits? Are there any local objections to them?

Some of the many biomass carbon projects planned for India are also rousing local concerns. One example is the 20-megawatt RK Powergen Private Limited generating plant at Hiriyur in Chitradurga district of Karnataka, which is currently preparing a Project Design Document for application to the CDM. According to M. Tepaswami, a 65-year-old resident of nearby Babboor village, RK Powergen is responsible for serious deforestation. “First, the plant cut the trees of our area and now they are destroying the forests of Chikmangalur, Shimoga, Mysore and other places. They pay Rs 550 per tonne of wood, which they source using contractors. The contractors, in turn, source wood from all over the state.” Another villager claimed that “poor people find it difficult to get wood for cooking and other purposes.” Jobs promised by the firm, Tepaswami complains, were in the end given to outsiders. Employees at the Karnataka Power Transmission Corporation meanwhile claim that its “equipment is adversely affected due to the factory's pollution”, while local villagers complain of reduced crop yields and plunging groundwater levels.

Again, predictably, project managers deny the allegations. “If there is deforestation,” said plant manager Amit Gupta, “then local people are to be blamed because they are supplying the wood to us.”^g But such disputes may be a sign of things to come.

What about plantation projects and other forestry “sink” projects? Are they also running into trouble?

Currently, no legal framework to deal with CDM carbon forestry exists, so proposals for such projects are on hold. But carbon forestry is definitely on the cards for India. The World Bank and forestry and private sector interests are studying, experimenting with and promoting a number of ideas. A National Environment Policy Draft circulated by the Ministry of Environment and Forests (MoEF) in 2004 confirms a new, “liberalized” environmental policy that promotes carbon trading and other environmental services trades. The move toward carbon forestry also chimes with a grandiose existing plan on the part of the MoEF to bring, by 2020, 30 million hectares of “degraded” forest and other lands under industrial tree and cash crop plantations, in collaboration with the private sector.



Village in the Handia range.

Among the scores of CDM projects being contemplated for India are forestry projects in Madhya Pradesh and Andhra Pradesh states. Here, an organization called Community Forestry International (CFI) has been surveying opportunities for using trees to soak up carbon. CFI helps “policy makers, development agencies, NGOs, and professional foresters create the legal instruments, human resource capacities, and negotiation processes and methods to support resident resource managers” in stabilizing and regenerating forests.^h Its work in Madhya Pradesh has been supported by the US Agency for International Development and the US Department of Agriculture’s Forest Service. CFI’s work in Andhra Pradesh, meanwhile, has been financed by the Climate Change and Energy Division of Canada’s Department of Foreign Affairs and International Trade.

CFI suggests that, in India, the CDM would be a viable income-generating activity for rural indigenous communities. But there are strong reasons to doubt this.

Why?

In India, as everywhere else, it’s not abstract theory, but rather the institutional structure into which CDM would fit, that provides the key clues both to its likely social outcome and to its likely climatic outcome.

Take, for example, a CDM scheme investigated by CFI that would be sited in Harda district, Madhya Pradesh state. Here CFI sees CDM’s role as providing financial support for an institution called Joint Forest Management (JFM).

What’s that?

Joint Forest Management (JFM) is supposed to provide a system for forest protection and sustainable use through the establishment of Village Forest Protection Committees (VFPCs), through which government and development aid funds are channelled for ‘forest management’ and village-level development works. Formalised by state governments and largely funded by the World Bank, Joint Forest Management (JFM) was designed partly to ensure that forest-dependent people gain some benefit from protecting the forests. It’s already implemented in every region of India. Long before carbon trading was ever conceived of, JFM had become an institution used and contested by village elites, NGOs, foresters, state officials, environmentalists and development agencies alike in various attempts to transform commercial and conservation spaces and structures of forest rights for their respective advantages.ⁱ

So there should be a lot of evidence already for whether it works or not.

Yes, but there’s not much agreement about what that evidence means, or for whom JFM works and in what way. CFI sees the JFM programme as having improved the standard of living in Adivasi villages, as well as their relationship with the Forest Department. It also found that JFM had helped regenerate forests in Rahetgaon Forest Range, resulting in higher income for Village Forest Protection Committees, although admitting that in Handia Forest Range, social conflicts had resulted in decreased JFM-related investment by the Forest Department and less positive outcomes. CFI thinks that for JFM to expand its role on India’s forest land would be “both desirable and necessary”.^j

On the other hand, many indigenous (or Adivasi) community members, activists and NGOs see

JFM as a system which further entrenches Forest Department control over Adivasi lands and forest management, although the practices of different village committees vary.^k Mass Tribal Organisations, forest-related NGOs and academics have published evidence that JFM Village Forest Protection Committees (VFPCs), composed of community members, function principally as a local, village-level branch and extensions of state forest authority.^l Communities interviewed in Harda in 2004 said that VFPC chairmen and committee members have become to a large extent “the Forest Department’s men”.

What’s wrong with that?

These local JFM bodies are accused of imposing unjust and unwanted policies on their own communities, of undermining traditional management systems and of marginalising traditional and formal self-governing local village authorities.^m In one Madhya Pradesh case, forest authorities and the police shot dead villagers opposing JFM and VFPC policies, in an echo of hostilities between the Forest Department and various classes of other forest users that go back a century (see BOX: Who Is Encroaching? Forest Peoples and the Law).

According to many Mass Tribal Organisations, communities and activists, JFM was effectively imposed on them without appropriate consultation during project identification, planning and implementation, and has resulted in the marginalisation, displacement and violation of the customary and traditional rights of the Adivasis in the state.ⁿ Contrary to MoEF circulars issued in the 1990s regarding regularisation of lands cultivated by Adivasis and settlement of land disputes, many state governments implemented JFM programmes on disputed lands. JFM has been implicated in involuntary resettlement of forest “encroachers”, resulting in many Adivasis losing land and access to essential forest goods.

Who Is Encroaching? Forest Peoples and the Law

Milestones in the state’s efforts to appropriate land from forest-dependent communities in India include the Indian Forest Act of 1878 and the 1980 Forest Conservation Act, which theoretically provided the central government with ultimate control over most forest land. In 2002, quoting a Supreme Court ruling, the Ministry of Environment and Forests issued a circular to all state/union territory governments to evict all “encroachers” from forest land, according to the definitions, procedure and authority claimed by

the state under the Forest Conservation Act. Between March 2002 and March 2004, it is estimated that “encroachers” were evicted from 152,000 hectares of forest land in India, despite neither the Supreme Court nor the MoEF having clarified whether the term included peoples carrying out illegal, commercial logging activities, or Adivasi peoples, or both. In 2002, an estimated 10 million Adivasi people faced the threat of eviction. On 23 December 2004, the MoEF issued a further circular confessing that due to the lack of definition of “encroacher”, many Adivasi people had been unjustly evicted from their lands.

Following heightened protest by Adivasis and support organisations in late 2004, the Central Government agreed in early 2005 to introduce the *Scheduled Tribes and Forest Dwellers (Recognition of Forests Rights) Bill* before Parliament. The Bill would provide Adivasi communities with legal recognition of their forest rights in areas of traditional occupation and use. The law would help regularize lands being cultivated by Adivasis, convert so-called forest villages^o to revenue villages (with title deeds), and settle disputed land claims. But Adivasi and support organisations still have to fight to prevent the Bill being diluted before it is passed by Parliament.

Current problems with JFM in Madhya Pradesh, according to many local people and activists, include:

- Conflicts within communities as a result of economic disparities between VFPC members and non-members.
- Conflicts between Adivasi groups and other communities generated by the imposition of VFPC boundaries without reference to customary village boundaries.
- Curtailment of nistar rights (customary rights to local natural goods).
- Conflicts over bans on grazing in the forest and on collecting timber for individual household use.
- Indiscriminate fining.

According to some Harda activists, JFM has opened deeper rifts within and between Adivasi villages and between different Adivasi groups, and has engendered conflict between communities and the Forest Department. Although funding for the local JFM scheme is now exhausted, VFPCs are still in place in many villages, recouping salaries from the interest remaining in their JFM accounts and from fines imposed on members of their own and neighbouring communities. Communities interviewed also claim that VFPC financial dealings are not transparent. In July 2004, non-VFPC villagers in Harda reported that they would like to see funding for VFPCs stopped and, ultimately, the committees disbanded; and

would also like to see forest management returned to them and their rights to their traditional lands and resources restored.^p



Village in the Handia range.

That's not to say there are not other stories about JFM and the forest protection committees, which are institutions whose meaning and functions are competed over among many conflicting groups inside and outside villages. It is merely to emphasize that, in the words of anthropologist K. Sivaramakishnan, "when environmental protection is to be accomplished through the exclusion of certain people from the use of a resource, it will follow existing patterns of power and stratification in society."^q

So maybe these embattled Village Forest Protection Committees are not the ideal bodies to carry out CDM carbon projects.

That would be an understatement. CFI's proposal that, in order to reduce transaction costs, a federation of VFPCs ought to be created in the Handia range to carry out a pilot carbon offset project is also questionable. Equally dubious is CFI's suggestion that the Forest Department should adjudicate cases of conflict there, a statement that many people in the communities interviewed would find unacceptable.

If there are all these problems, why didn't the CFI studies detect them?

Much of the data used in the CFI studies came from the Forest Department and possibly discussions with

VFPC members rather than from independent field work with communities and non-VFPC community members. Significantly, both MoEF and the Madhya Pradesh forest department were supporting agencies for the CFI study.

But it seems there could be an even more fundamental problem. If JFM projects are going forward anyway, even without the CDM, they're not saving carbon over and above what would have been saved anyway. So how could they generate credits?

That's not clear. JFM has been implemented in Madhya Pradesh since 1991 and so hardly qualifies as a new project.

But there are plenty of other problems with CFI's carbon sequestration claims as well. For example, CFI doesn't take into account the changes in numbers of people and in community and family composition to be expected over the project's 20–25 year lifetime. CFI's estimates of fuelwood carried out by communities in the Rahetgaon range are also inaccurate. CFI believes every family uses two head loads of fuelwood per week, but recent interviewees suggested that a more realistic figure would be 18–22, especially during the winter and the monsoon season. CFI also makes the questionable assumption that local communities would relinquish their forest-harvesting activities for the sake of very little monetary income from carbon sales, and that income flowing to VFPCs would be transparently distributed.

In order to assess how much carbon would be saved, CFI compared vegetation in forest plots at different stages of growth and subject to different kinds of pressure from humans. Yet while the total area of forest to be considered is 142,535 ha, the total number of 50m x 50m plots assessed was 39, representing a total study area of only 9.75 ha. That may be an adequate sample in biological terms. But it's hardly enough to assess the range of social influences on carbon storage in different places.

Will Carbon Forestry Exclude People from Their Land? Some Cautionary Voices

"Joint Forest Management and Community Forest Management are being used as tools to exclude the Adivasis from their survival sources, and are compelling them to slip into poverty and migrate in search of work. Instead of . . . recognising Adivasi rights to the forest, the government is seeking their eviction through all possible means."

Local activist

“Government figures show that there are about 5 crores (50 million) hectares of ‘waste land’ in India, land which . . . now lies open to exploitation through carbon forestry schemes. What the central government does not say is that most of this ‘waste land’ belongs to Adivasis and other forest dependent communities, who will be the first to lose out from the development of such schemes.”

Madhya Pradesh activist

“If large protected areas or plantations are managed for long-term carbon sequestration and storage, local people may lose access to other products such as fibre or food. . . governments and companies are best placed to benefit from such schemes. . . the frequently weak organization (or high transaction costs of improving organization) of the rural poor and landless will reduce their access to the carbon offset market, particularly given the many complex requirements of carbon offset interventions. Other barriers to the involvement of rural people centre on their prevailing small-scale and complex land use practices, without clear tenure systems.”^r

Stephen Bass

Have any prospective carbon forestry projects been looked at in other parts of India?

Many. To take just one more nearby example, in Adilabad, Andhra Pradesh state, CFI saw possibilities of sequestering carbon by reforesting and afforesting nonforest or “degraded” forest lands whose carbon content has been depleted by a large and growing human and cattle population, uncontrolled grazing of cattle in forests and ‘encroachment’ on and conversion of forest lands for *podu* (swidden) cultivation.

The best option, CFI felt, would be to regenerate teak and mixed deciduous forests. Clonal eucalyptus plantations would, it thought, accumulate carbon faster, and would have other commercial uses such as timber and pulp, as well as incremental returns for any interested investor, but would cost more to establish and maintain, and would be sure to be condemned by Adivasi communities and activists as a new form of colonialism.^s

So who would carry out these regeneration projects?

Here CFI came to a different conclusion than in Madhya Pradesh. In Andhra Pradesh, it decided, the best agencies for taking on forest regeneration would be Women’s Self-Help Groups (SHGs).

Which are what?

SHGs were set up by the state-level Inter-Tribal

Development Agency during the 1990s as a mechanism for improving the finances of households through micro-credit schemes and capacity-building, as well as linking households with financial institutions and government authorities. CFI says that they’re much more dynamic, accountable and transparent than other local institutions, such as Forest Protection Committees (known as Vana Samrakshana Samithi or VSS in Andhra Pradesh), which are viewed as inefficient, untransparent, untrustworthy, and troubled in their relationship with the Forest Department.

Sounds perfect.

Except that it’s hard to see how the virtues of the Women’s Self-Help Groups could work for the carbon economy. For one thing, CFI states that only if the SHGs come together in a federation would carbon offset forestry projects be financially viable, given the high transaction costs involved in preparing and carrying them out. Yet it does not explain how such a federation could come about among rural communities, nor how SHGs could become involved in CDM projects and link themselves to the carbon market. Nor does it mention that SHGs currently work in relative isolation from the Panchayat Raj institutions (the ultimate village-level formal self-governing authority in rural India), the Forest Department and local Forest Protection Committees.



Fieldwork on the likely consequences of carbon forestry in India was undertaken by Emily Caruso (right) of the Forest Peoples Programme in collaboration with Vijaya Bhaskara Reddy (left), Yakshi Shramik, Adivasi Sangathan and local activists in July 2004.

In addition, the income families would receive from carbon – 150 rupees per month for protecting 1.5 ha of forest, according to CFI – is less than they get from other forms of forest use. While CFI estimates the total cost of a 2000-hectare CDM project covering 20 villages in Adilabad as US\$270,000, it is difficult to imagine how such small areas of forest regeneration could provide enough carbon to provide reasonable

and usable benefits to the communities. Moreover, few Adivasi communities have exclusive rights to the extensive area of 250 ha of “degraded” land envisaged by CFI. If instituted near Adivasi communities, CDM projects would likely eat up land elsewhere, including Forest Department land. And if *podu* lands are excluded from CDM use, the potential for reforestation would be reduced to 10 per cent of the total forest area.

Well, assuming there are some problems with these preliminary ideas about how carbon projects might be implemented in the Indian countryside, surely there's nothing to worry about yet. After all, these are only a few studies done by a single organization. We'll have to learn as we go along.

The problem is that the mere fact that studies like CFI's are being carried out already gives legitimacy to the idea of using carbon offsets in the South, as well as other ‘flexible mechanisms’, to tackle climate change.

Nor are CFI's studies the only ones claiming that Joint Forest Management provides a sound basis for carbon forestry projects. International research institutions such as the Centre for International Forestry, the Consultative Group on International Agricultural Research and various academics have done the same. The World Bank, too, funds JFM, is heavily involved in the global carbon market, and is currently seeking to increase funding of forestry projects in India – not a reassuring sign.

Still, what you've been talking about are problems with JFM, not with carbon offset trading as such.

Whether or not JFM is involved, some Indian activists fear that by creating a market for carbon, CDM projects will engender change in the relationship between Adivasis and their lands and forests. Access and ownership rights are likely to be transformed into benefit-sharing and stakeholder-type relationships. Adivasi communities may lose their capacity to sustain food security, livelihoods, and fundamental social, cultural and spiritual ties.

Long before JFM came along, Indian government agencies, Indian government agencies were referring to much of the livelihood land base of many indigenous and forest-dependent peoples as unowned or unused “wasteland” or “degraded land”. They still do. International financial institutions, northern governments and even international research institutions use similar language in their documents. In Andhra Pradesh, the state government, currently promoting *Pongamia* plantations, proposes establishing up to three million hectares of new plantations on so-called “common land” (or “waste land”) throughout the state.

CDM afforestation projects can be established on lands that have not been forested for 50 years, and reforestation projects on lands that have not been forested for 15 years. Such projects could have serious consequences for Adivasi peoples practicing swidden cultivation on government forest land or in “forest villages”. CDM projects would also have an incentive to seek repression of any Adivasi livelihood activities that they displace that could result in increased releases of carbon elsewhere, since such releases would have to be debited from project carbon accounts. Cattle grazing, fuelwood cutting and clearing of new areas for swidden cultivation could all fall into this category.

Also, while CDM plantations are one cause of concern among indigenous communities, forest conservation projects are also on the horizon. Although conservation schemes are not yet eligible for CDM, conservation financiers and the World Bank and Global Environment Fund are increasingly promoting the idea of protected areas as an additional source of carbon credits.¹ Indigenous peoples will clearly be in for a fight should carbon sequestration and protected area projects come together on their territories.

In order to avoid conflict, in addition, any CDM project proponent will need to clarify who owns the land, the project and the carbon.² This immediately militates against Adivasi peoples, since in India, the government claims formal ownership and control over indigenous lands and resources. In this and other ways, it is unclear how CDM projects could do anything but further entrench discrimination against Adivasi communities by government authorities and rural elites.

But isn't it true that in international law and best practice, indigenous land and resource rights must be respected in all development projects? Isn't free, prior and informed consent starting to be a universal requirement for such schemes?

That's the theory. The reality is different. CDM has so far shown no sign of doing anything but going along with prevailing practice.

No Need to Know? The Secret Economy of Carbon

In 2004, the women's self-help group of Powerguda village in Adilabad district of Andhra Pradesh, India was given cash in exchange for the plantation of *Pongamia* trees. The tree's seeds can be used to make a petrol substitute.

The women were given a certificate and US\$645 as a token of ‘offsetting’ the emissions produced by a World Bank workshop on climate change held in Washington, DC.^v The Bank claims that 30 years of biofuel use by government authorities in Andhra Pradesh will compensate climatically for the carbon emissions associated with the workshop.

The women were unaware of the reason they had received the money. They were also unaware of the various benefits to be accrued by the carbon traders, releasers and agencies involved, and of how their activities related to climate change.

Adivasi villages in Andhra Pradesh visited in 2004 were also unaware that a study had been carried out on their possible participation in a global carbon economy. Adivasi communities tend to be unaware of the climate change debate, of what carbon trading means, and of the significance carbon projects would have for their livelihoods.

The irony is that northern Andhra Pradesh has recently been hit by one of the most devastating droughts ever, very possibly as a result of global warming. In the summer of 2004, the province’s number of suicides of farmers driven to desperation by their crippling debts reached 3,000.

The lack of discussion with affected parties seen in Andhra Pradesh appears to be a common denominator of carbon-saving projects nearly everywhere:

- In Uganda, community members living close to the UWA-FACE carbon plantation project near Mount Elgon (see main text) said in interviews that that they knew nothing about the project’s production of carbon credits to be sold on an international market, only that the UWA has received grants. This ignorance extends to diploma or degree holding members of the Bubita sub-county local council and even top district administration officials. Residents wanted to know more about the financial benefits FACE Foundation receives, particularly because the project encumbers their land for a long time, and planned to take this matter with their local member of parliament. An English-language brochure on the project mentions the carbon sequestering role that plantations will play, but remains silent on the money FACE Foundation and others will make from the sequestered carbon. The project coordinator and the UWA warden responsible for FACE activities both refused to provide this information when asked directly.
- The Ugandan acting deputy commissioner for forestry in the Ministry of Water, Lands and Environment, Ignatius Oluka-Akileng, told an interviewer in 2001 that his forestry directorate knew little or nothing about the carbon trade involving state for-

est lands, nor how much foreign companies were to gain from it, and begged the interviewer, from the Norwegian NGO, NorWatch, to help provide the information.

- In Thailand, most residents of the community adjacent to the site of a proposed biomass-burning power project in Yala province (see main text) were unaware in 2003 that it had been seeking carbon finance for years. As of January of that year, even the local Subdistrict Administrative Authority had yet to receive an environmental impact assessment or other documentation from the firms involved.
- In South Africa, public consultation on the proposal for the Prototype Carbon Fund’s Bisasar Road project to extract and burn methane from a landfill site was conducted through the internet, to which only a small minority of the local community have access.
- The owner of Kalpataru Power Transmission Ltd. in Rajasthan, which plans to sell the Netherlands government a total of 313,743 CDM carbon credits over 7–10 years, refused to allow the Indian magazine *Down To Earth* access to the project site.
- The Project Design Documents of four different Indian biomass power projects each repeated, word for word, alleged favourable comments made by a village head. All of the projects – Rithwick, Perpetual, Indur and Sri Balaji are located in Andhra Pradesh state, but all have different characteristics and are spread over hundreds of kilometres. Even spelling mistakes were repeated in the documents, suggesting that consultation was not genuine. The private consultants who prepared the documents, PricewaterhouseCoopers and Ernst&Young, responded lamely that identical projects in similar geographical locations were likely to have similar Project Design Documents. Ernst & Young National Project Director Sunil Chandiramani told an Indian newspaper, the *Business Standard*, that the answers were in accordance with a fixed set of questions and in a “similar environment, it is unlikely that responses will be drastically different”.^w
- Stakeholder comments section of the Project Design Documents prepared by PriceWaterhouseCoopers for the HFC-23 reduction projects developed by Gujarat Fluorochemicals and SRF (see main text) are summarized in exactly the same wording, although arranged differently on the page. The authors claim to have consulted with different villages, but their summarized responses are identical.^x

(Endnotes)

- a HFC-23 is a greenhouse gas used in refrigeration and industrial processes. It is thousands of times more powerful in its climatic effects than carbon dioxide.
- b UNEP Risoe Centre, Denmark, www.cd4cdm.org/Publications/CDMpipeline.pdf.
- c Ritu Gupta, Shams Kazi and Julian Cheatle, "Carbon Rush", *Down to Earth*, Centre for Science and Environment, 15 November 2005.
- d Ibid.
- e Ibid.
- f Ibid.
- g Ibid.
- h See <http://www.communityforestryinternational.org>.
- i K. Sivaramakrishnan, "Modern Forestry: Trees and Development Spaces in West Bengal", in Laura Rival, (ed.). *The Social Life of Trees: Anthropological Perspectives on Tree Symbolism*. Oxford: Berg, pp. 273-96.
- j Mark Poffenberger, N. H. Ravindranath, D. N. Pandey et al., *Communities and Climate Change: The Clean Development Mechanism and Village-based Forest Restoration in Central India*, Community Forestry International and Indian Institute of Forest Management, Santa Barbara, 2001, p. 71, available at http://www.communityforestryinternational.org/publications/research_reports/harda_report_with_maps.pdf.
- k See M. Sarin et al (2003). *Devolution as a Threat to Democratic Decision-making in Forestry? Findings from Three States in India*. Overseas Development Institute, ODI Working Paper no. 197 (available at <http://www.odi.org.uk>) and G. Brahmane, B. K. Panda, and Adivasi Mukti Sangathan Sendhwa, 2000. *The Adivasis and the World Bank-aided Madhya Pradesh Forestry Project: A Case Study of Indigenous Experience*, discussion document prepared for the Workshop on Indigenous Peoples, Forests and the World Bank: Policies and Practice, May 9-10, Washington DC, available at <http://www.forestpeoples.org>.
- l Op. cit., footnote 20; See also, N. Kumar, "All is Not Green with JFM in India" *Forests, Trees and People No.42*, June 2000, pp. 46-50 and A. Roychaudhury, "The Woods are Lovely . . .", *Down to Earth* 3 (17), 1995, pp. 25-30.
- m *Report of the Joint Mission on Madhya Pradesh Forestry Project*, May 1999; Samata, *Impact of JFM in North Coastal Andhra Pradesh – A People's Perspective* Samata and CRY-Net, Hyderabad, 2000; and M. Sarin, N. M. Singh, N. Sundar and R. K. Bhogal, *Devolution as a Threat to Democratic Decision-making in Forestry? Findings from Three States in India (Orissa, Madhya Pradesh, Uttarakhand)*, Overseas Development Institute Working Paper No. 197, ODI, London, 2003, pp. 33, 35, 49-50, 56, 57, 61.
- n G. Brahmane, B. K. Panda and Adivasi Mukti Sangathan Sendhwa, *The Adivasis and the World Bank-aided Madhya Pradesh Forestry Project: a case study of indigenous experience*, discussion document prepared for the Workshop on Indigenous Peoples, Forests and the World Bank: Policies and Practice, Washington DC, May 9-10, 2000, available at <http://www.forestpeoples.org>.
- o Inhabitants of so-called forest villages lack land title deeds (*pattas*) and are classified as 'encroaching' on state forest land.
- p For further information on the current situation regarding JFM in Madhya Pradesh, see FPP and Shramik Adivasi Sangathan (2004) *Village Forest Protection Committees in Madhya Pradesh: An Update and Critical Evaluation*, available from <http://www.forestpeoples.org>.
- q K. Sivaramakrishnan, op. cit.
- r Stephen Bass et al., *Rural livelihoods and carbon management*. Natural Resources Issues Paper 1, IIED, London, 2000, available at <http://www.iied.org>, p. 4-5.
- s See for example C.K. Janu, "The South Indian Adivasi Experience in the Nagar Hole National Park and Muthanga Wildlife Sanctuary", speech at the World Parks Congress, Durban, South Africa, 8-18 September 2003, available at http://www.forestpeoples.org/Briefings/Indigenous%20Rights/wpc_india_nagarahole_eng.htm.
- t For example, Global Environment Fund, "Conservation of Transboundary Biodiversity in the Minkébé-Odzala-Dja Inter-zone in Gabon, Congo, and Cameroon: Project Brief", World Bank, Washington, 2004, available at <http://www.gefonline.org/projectDetails.cfm?projID=1095>.
- u See Bass et al., op. cit.
- v This is an example of a non-CDM carbon trading project. The project bypassed government and the CDM Executive Board and was implemented between two private entities, thus eschewing all legal requirements for registration, monitoring and verification.
- w Point Carbon, "Consulting Firms Deny Wrongdoing in Drafting Indian PDDs", 11 November 2005, available at <http://www.pointcarbon.com>.
- x Ibid.

7 Sri Lanka: A “Clean Energy” Project that Was not So Clean

Today’s smart business money is going into buying carbon credits from projects that seem particularly meaningless when it comes to addressing climate change: projects to destroy industrial gases or landfill methane and the like (see chapter 6). These are the cheapest credits and they can be obtained with the least trouble.

But there do exist, after all, carbon projects that promote energy efficiency or renewable energy technologies. The Kyoto Protocol’s Clean Development Mechanism has dozens of such schemes in its pipeline, although they generate only a minuscule proportion of total credits. Some of these projects are even small and community-based.

So far, however, such projects are merely a bit of expensive window-dressing for the big industrial projects generating cheaper credits. In a competitive market, they appear to have little future.

But are such projects always desirable even on their own terms? For example, are all renewable energy projects good just because they can be described with the word “renewable”?

I don’t understand. What could possibly be wrong with promoting renewable energy?

It’s not that renewable energy technologies are inherently good or bad. It all depends on how they are used.

Let’s take, for example, one of the world’s very first attempts to “compensate for” or “offset” industrial carbon-dioxide emissions — a rural solar electrification programme in Sri Lanka.

The story begins in 1997, when the legislature of the US state of Oregon created a task force that later legally required all new power plants in the state to offset all of their carbon dioxide emissions. When companies put in bids for the contract to build a new 500-megawatt, natural-gas fired power station in Klamath Falls, they therefore also had to present plans for “compensating” for its CO₂ emissions. The winner of the contract, PacificCorp Power Marketing, proposed a diversified US\$4.3 million dollar carbon-offset portfolio allocating \$3.1 million to finance off-site carbon mitigation projects. In particular, the firm put US\$500,000 into a revolving fund to buy photovoltaic (solar-home) systems and install them in “remote households without electricity in India,

China and Sri Lanka”.^a In 1999, PacificCorp Power and the City of Klamath Falls signed the necessary finance agreement with a US solar-energy company called the Solar Electric Light Company, or SELCO.^b

In all, SELCO agreed to install 182,000 solar-home systems in these three Asian countries, 120,000 in Sri Lanka alone.^c The idea was that the solar systems would reduce the carbon dioxide emissions given off by the kerosene lamps commonly used in households that are “off-grid”, or without grid-connected electricity. On average, SELCO calculated, each such household generates 0.3 tons of carbon dioxide per year.^d SELCO argued that the installation of a 20 or 35-watt solar-home system would displace three smoky kerosene lamps and a 50-watt system would displace four. Over the next thirty years, it claimed that these systems would prevent the release of 1.34 million tons of carbon into the atmosphere, entitling the Klamath Falls power plant to emit the same amount.

So what’s the problem? It sounds like a win-win situation. The Klamath Falls plant makes itself “carbon-neutral”, while deprived Asian households get a new, clean, green, small-scale source of energy for lighting!

Not quite. Aside from the fact that such projects can’t, in fact, verify that they make fossil fuel burning “carbon-neutral” (see above), the benefits to the South that carbon offsetting promises don’t necessarily materialize, either.

Why not?

The first thing to remember is that just as industries in the North have historically relied on the environmental subsidy that cheap mineral extraction in the South has provided, in this project a Northern industry used decentralized solar technology to reorder off-grid spaces in the South into spaces of economic opportunity that subsidize their costs of production through carbon dioxide offsetting.^e Essentially, once again, the South is subsidizing production in the North — but this time not through a process of extraction, but through a process of sequestration.

You’ll have to explain that to me.

Traditionally, fossil fuel extraction has resulted in the overuse of a good which cannot be seen — the global carbon sink. And the inequality in the use of that sink

between North and South has been invisible. Now, however, that inequality is becoming more visible within certain landscapes in the form of physical and social changes like those associated with the PacificCorp/SELCO project.

The solar component of the Klamath Falls plant, in essence, proposed to “mine” carbon credits from off-grid areas in Sri Lanka. However, the existence of these off-grid areas is partially due to social inequalities within Sri Lanka. In this case, the project was taking advantage of one particularly marginalized community of Sri Lankan workers in order to support its own disproportionate use of fossil fuels.

Well, maybe. But so what? PacificCorp didn't create the inequalities in resource use that it was going to benefit from. Why should it be up to PacificCorp to solve social problems in Sri Lanka? Besides, aren't we in danger of making the best the enemy of the good here? PacificCorp may have wanted to use this project to go on using a lot of fossil fuels, but at least the Sri Lankan workers got a little something out of the deal to improve their lifestyles.

Well, as a matter of fact, that really wasn't the case, either. In practice, the PacificCorp/SELCO arrangement in Sri Lanka wound up supporting what one Sri Lankan scholar-activist, Paul Casperz, calls a feudal system of “semi-slavery” on plantations.

Semi-slavery? Come on! Aren't you being a bit inflammatory? How could decentralized, sustainable solar power possibly have anything to do with that?

Solar power didn't create the problem, of course. But interventions like like this one in the estate sector often have a way of helping perpetuate them, just as in Los Angeles, trading entrenched existing environmental injustices. The trick, as so often in the world of development and environment, is to understand that a bit of technology is never “just” a neutral lump of metal or a piece of machinery benignly guided into place by the intentions of its providers, but winds up becoming different things in different places.

In Sri Lanka, the kerosene-lamp users that PacificCorp/SELCO ended up targeting earned their living in what is known as the “estate” or tea plantation sector. This is a sector in which nearly 90 per cent of the people are without grid-connected electricity, compared to 60 per cent of the non-estate rural sector and only five per cent of urban dwellers being off-grid. (In all, at the time of the project 48 percent of Sri Lanka's population of 18.5 million was off-grid.)

A large proportion of this off-grid population was – and is – from the minority Estate Tamil community,^f which lives and works in conditions of debt depen-

dence on tea and rubber plantations established by the British during the colonial period. Unfair labor practices in the sector have continued to keep estate society separate from and unequal to the rest of Sri Lankan society. Daily wages average US\$1.58 and the literacy rate is approximately 66 per cent, compared to 92 per cent for the country as a whole.^g The estate population is underserved when it comes to infrastructure. A sample survey of fifty estates found that 62 per cent of estate residents lacked individual latrines and 46 per cent did not have a water source within 100 meters of their residence.^h

Due partly to its cost, electrification, unlike health care, water supply, and sanitation, has never been one of the core social issues that social-service organizations working among the estate population get involved in.

That would seem to make the estate sector the perfect choice for a solar technology project. I still don't see the problem.

There's no question that electrification could do a lot of good for workers and their families. By displacing smoky kerosene lamps, it would provide a smoke-free environment that reduces respiratory ailments, as well as quality lighting that reduces eyestrain and creates a better study environment for the school-going generationⁱ who are eager to secure employment outside the plantation economy. Researchers have found clear connections between off-grid technology and educational achievement.

As tea estates are regulated and highly structured enclave economies, SELCO could not approach workers without the cooperation and approval of estate management. The CEO of one plantation corporation, Neeyamakola Plantations, was willing to allow SELCO access to “the market” that his off-grid workers represented. He himself liked the idea of solar electrification, but for an entirely different set of reasons.

How's that?

Sri Lanka's 474 plantation estates recently were privatized. Facing fierce competition from other tea-producing countries, they need to lower production costs and increase worker productivity in order to compensate for low tea prices on the global market and wage increases mandated by the Sri Lankan Government. Neeyamakola had already introduced some productivity-related incentives and thought that solar-home systems could provide another. After all, with a regular electricity supply, workers could watch more television.^j Seeing how other people in the country lived, they'd want to raise their standards of living too. For that, they'd need money. To earn more money, they'd work harder or longer, or both.^k

So, in 2000, Neeyamakola was only too happy to sign an agreement with SELCO for a pilot project on its Vijaya rubber and tea estate in Sri Lanka's Sabaragamuwa Province, where over 200 families lived.

Well, it sounds to me like the perfect match. If Neeyamakola focused on the bottom line, what's so bad about that? It's a matter of unleashing the profit motive for the incremental improvement of society and the environment.

No one expected Neeyamakola, SELCO or PacificCorp to operate as charities. The point is to understand whether such a business partnership was ever capable of doing the things it was advertised to do, what effects the partnership had on the affected societies, and who might be held responsible for the results.

So what happened?

At first, the pilot project was to be limited to workers living in one of the four administrative divisions into which the Vijaya estate was divided, Lower Division, and in nearby villages. Some four-fifths of these workers were Estate Tamils living in estate-provided "line housing". The other fifth were Sinhalese who lived within walking distance.

In the first three months, only 29 families decided to participate in the solar electrification project: 22 of Lower Division's 63 families and seven Sinhala workers who lived in adjacent villages. In the end, the project installed only 35 systems before it was cancelled in 2001.

What went wrong?

Two things. The first thing that happened was that, in the historical and corporate context of the estate sector, the SELCO project wound up being structured in a way that strengthened the already oppressive hold of the plantation company over its workers.

But how could that happen? Solar energy is supposed to make people more independent, not less so.

This gets back to the nature of Neeyamakola as a private firm. From the perspective of plantation management, the electrification project had nothing to do with carbon mitigation and everything to do with profitability and labor regulation.

Neeyamakola's concern was to increase productivity. Its idea was to use access to loans for solar-home systems to entice estate laborers into working additional days. The Neeyamakola accounting department would deduct a Rs.500 loan repayment every month and send it to SELCO.¹

In order to qualify for a loan, workers had to be registered employees who worked at least five days a month on the estate.¹⁰ The loan added another layer of worker indebtedness to management. In this case, the indebtedness would last the five years that it would take the worker to repay the loan taken from the corporation.¹¹

From workers' point of view, the system only added to the company's control over their lives. Historically, after all, the only way that estate workers have been able to get financing to improve their living conditions has been through loans that keep them tied to the unfair labor practices and dismal living conditions of estate life. To upgrade their housing, for instance, workers have to take out loans from the Plantation Housing and Social Welfare Trust (PHSWT). One condition of these loans is that "at least one family member of each family will be required to work on the plantation during the 15-year lease period",¹² during which estate management takes monthly deductions from wages. Hampered by low pay and perpetual indebtedness, workers find it difficult move on and out of the estate economy.

I see. And what's the second problem?

Inequality and social conflict of many different kinds. First, as Neeyamakola offered solar primarily to estate workers, most of whom are members of the Tamil ethnic minority, the nearby off-grid villagers of the Sinhalese majority felt discriminated against and marginalized. Disgruntled youth from adjacent villages as well as from estate families who weren't buying solar systems threw rocks at the solar panels and otherwise tried to vandalize them.

Second, local politicians and union leaders saw solar electricity as a threat to their power, since both groups use the promise of getting the local area connected to the conventional electricity grid as a way of securing votes. So they started issuing threats to discourage prospective buyers.

Third, the village communities living around the Vijaya Estate feared that if too many people on the estate purchased solar, the Ceylon Electricity Board would have a reason for not extending the grid into their area. And without the grid, they felt, that small-scale industry and other entrepreneurial activities, that would generate economic development and increased family income, would remain out of reach, making their social and economic disadvantages permanent.¹³ (Any delay in the extension of the grid to the area occasioned by the PacificCorp/SELCO Neeyamakola project, of course, would have its own effects on the use of carbon, and would have to be factored into PacificCorp/SELCO's carbon accounts. There is no indication that this was done.)



This section is based on the research of Dr Cynthia Caron. After completing her Ph. D. at Cornell University, USA, on electricity sector restructuring in Sri Lanka, Dr Caron moved to Sri Lanka. She has been awarded a grant from the Macarthur Foundation and has been researching forced migration, resettlement and Muslim nationalism and its relation with Sri Lanka's ethnic conflict, as well as working on development and health projects.

Added to all of this was inequality within the community of estate workers themselves. One consequence of Neeyamakola's focus on getting more out of its workers was that many estate residents whose work is productive for society in a wider sense were ineligible for the systems. One example is what happened to the primary school teacher in the Tamil-medium government school that served the estate population. The daughter of retired estate workers, the teacher received a reliable monthly salary, could have met a monthly payment schedule, and was willing to pay, but was ineligible for a system because her labor was not seen as contributing directly to the estate's economic productivity and profit margin. Retired estate workers and their families were excluded for the same reason. SELCO, a firm new to Sri Lanka, was unable to ensure community-wide benefits or equity within the community as a prerequisite in the design of the pilot project.

On the Vijaya Estate, in short, the decentralized nature of solar power – in other contexts a selling point for the technology – had quite another impact and meaning in the context of Sri Lanka's estate sector. It provided the company that was controlling the “technology transfer” with a new technique to exert control over its labor force and ensure competitive advantage, while exacerbating underlying conflicts over equity.

It's interesting to note, incidentally, that solar projects in Sri Lanka often fall short even at the household level, where many families end up reducing their

consumption of kerosene by only 50 per cent.⁹ There are many reasons for this. Kerosene use is necessary to make up for faulty management while household members become acquainted with the energy-storage patterns of the battery and system operation. Households also face problems managing stored energy, with children often using it all up watching afternoon television. And local weather patterns and topography likewise take their toll. In some hilly areas with multiple monsoons, solar can supplement kerosene systems at best for a six- to nine-month period depending on the timing and duration of the monsoon.

Did PacificCorp's electricity customers – or the Oregon legislature – know about all this?

Given the geographical and cultural distances involved, it would have been difficult for them to find out. On the other hand, it seems unlikely that Northern consumers of electricity – if they are informed of such details – will accept carbon-offset projects that involve not only dubious carbon accounting, but also blatantly exploitative conditions and the reversal of poverty alleviation efforts.

This is another reason why, while undertakings like PacificCorp/SELCO's have from the beginning been more about “preserving the economic status quo” and promoting cost efficiency in developed countries than about bringing equity to developing countries,¹⁰ it is unclear how long they will be able to work even in maintaining that status quo.

OK, I can see there were some problems. But surely social and environmental impact assessments could have identified some of these problems in advance. With proper regulation, they could then have been prevented.

Some of them might have been. For example, the solar technology could have been reconfigured so that an entire line of families could have pooled resources and benefited, rather than just individual houses.

But setting up an apparatus to assess, modify, monitor and oversee such a project isn't by itself the answer. Such an apparatus, after all, would have brought with it a fresh set of questions. Who would have carried out the social impact assessment and would they have been sensitive to local social realities? Would its recommendations have been politically acceptable to Neeyamakola? Would its cost have been acceptable to PacificCorp? What kind of further oversight would have been necessary to prevent it from merely adding legitimacy to a project whose underlying problems were left untouched?

Just as a technology is never “just” a neutral piece of machinery which can be smoothly slotted into place

to solve the same problem in any social circumstance, so the success of a social or environmental impact assessment is dependent on how it will be used and carried out in a local context.

But if success is so dependent on political context, how will it ever be possible for new renewable technologies to make headway anywhere? If it isn't possible, then we might as well give in and keep using fossil fuel technologies! We might as well go along with ExxonMobil when they claim that we have to go on drilling oil since anything else would be to betray the poor!

The alternative is not to accept the dominance of fossil fuel technologies. Their continued dominance also does nothing to improve the position of disadvantaged groups such as Sri Lanka's Estate Tamils. Nor is the alternative simply to accept the system of global and local inequality exemplified in Sri Lanka's estate plantation sector.

The alternative, rather, is to act using our understanding that what keeps marginal communities like that of Sri Lanka's Estate Tamils in the dark, so to speak, is not just bad machines, or just a lack of good ones, but also a deeper pattern of local and global politics. Cutting fossil fuel use means understanding this deeper pattern.

Up to now, climate activists and policymakers have often told each other that "the essential question is not so much what will happen on the ground, but what will happen in the atmosphere".⁵ The example of the PacificCorp/SELCO/Neeyamakola rural solar electrification project helps show why this is a false dichotomy. What happens on the ground in communities affected by carbon projects is important not only because of the displacement of the social burdens of climate change mitigation from the North onto already marginalized groups in the South, but also because what happens on the ground influences what happens in the atmosphere.

(Endnotes)

- a US Environmental Protection Agency, *Inside the Greenhouse* (Washington, EPA: 1997), www.epa.gov/global-warming/greenhouse/greenhouse2/oregon.html. Solar-home systems are purchased on credit. SELCO was to use money from Klamath Falls to purchase stock. It would then be reimbursed by estate management using deductions from project participants' monthly salaries.
- b SELCO, a Maryland-based firm with offices in Bangalore, Colombo and Ho Chi Minh City, was established in 1997. Its Sri Lankan branch folded in 2005.
- c Solar-industry analysts believe that the Sri Lankan market for solar-home systems is at least one million, not including the war-torn provinces of the north and east. (Personal communication, Mr. Pradeep Jayawardene, Shell Renewables Lanka Ltd. At the time of the interview, this number did not include the war-torn provinces in the north and east where ethnic conflict has created economic instability and uncertainty for Sri Lanka's business community. With the 2002 cease-fire agreement between the Government of Sri Lanka and the Liberation Tigers of Tamil Eelam (LTTE), the solar market might open up in the LTTE-dominated provinces in the island's north and east). As of August 2002, about 30,000 systems had been installed island-wide, 20,000 with support from the World Bank's Energy Services Delivery Project. (Lalith Gunaratne, email correspondence 12 August 2002.) For more on the difficulties of financing solar-home systems for rural electrification, see Cynthia Caron, "Examining Alternatives: The Energy Services Delivery Project in Sri Lanka." *Energy for Sustainable Development* 6(1) (2002), pp. 37-45.
- d SELCO, "Developing Countries Receive Solar Funding from Oregon's Klamath Cogeneration Project Carbon Offset Portfolio." SELCO Press Release 4, 13, September 1999. Each lamp emits about 0.10355 tons of carbon dioxide per year.
- e Roberts, J. T. and P. E. Grimes, "World System Theory and the Environment: Toward a New Synthesis", in R. E. Dunlap, F. Buttel, P. Dickens and A. Gijswijt, eds., *Sociological Theory and the Environment: Classical Foundations, Contemporary Insights* (Lanham: Rowman and Littlefield, 2002), p. 184.
- f Due to the country's ethnic conflict, areas of the north and east also have large off-grid populations (80-100 per cent). Either the grid has been destroyed or the affected areas are under rebel control. In 1999-2000, the government and the private sector were unable to undertake infrastructure development activities in this region.
- g At the same time (1999), the country's overall literacy rate was close to 92 per cent. Estate education is understaffed. In 1999, the national teacher-student ratio was 1:22; in the plantation sector it was 1:45.
- h From a study conducted by the Plantation Housing and Social Welfare Trust.
- i Little, A. W., *Labouring to Learn: Towards a Political Economy of Plantations, People, and Education in Sri Lanka*. New York, St. Martin's Press. 1999.
- j Some families already used a car battery to power television sets.
- k Personal interview, 18 August 2000.
- l Five days at Rs. 122.15 (US\$ 1.58) - \$7.90.

- m There were three cadres of employment on the estate: resident-permanent (from the estate lines), non-resident permanent (from nearby villages), and temporary-casual.
- n Many workers already had loans to upgrade their existing housing. Estate management took monthly deductions from the wages of workers who had housing loans administered by The Plantation Housing and Social Welfare Trust (PHSWT). Under the PHSWT housing-loan scheme, “at least one family member of each family will be required to work on the plantation during the 15-year lease period”, according to the trust itself. The only source of funding available to workers to improve their living conditions has been through loans that keep them tied to the unfair labor practices and dismal living conditions of estate life.
- o Figures are due to the Plantation Housing and Social Welfare Trust.
- p While there are no studies that show a direct correlation between concentrations of off-grid technologies such as solar power and decisions not to extend the grid into those areas (email communication, Mr. Lalith Gunaratne, 12 August 2002), the fear that off-grid electrification could keep an entire area permanently off-grid was very real for adjacent residents. Solar-home systems generate between 35 – 50 watts of power, enough power to meet requirements for domestic lighting and electronic entertainment such as TV and radio. The relative low generation capacity of solar home systems does not appear to enable equitable opportunities for economic development in off-grid areas.
- q Caron, op. cit.
- r Boehmer-Christiansen, S., “Science, Equity and the War Against Carbon.” *Science, Technology and Human Values* 28(1), 2003, p. 82.
- s Faeth, P., C. Cort, et al., *Evaluating the Carbon Sequestration Benefits of Forestry Projects in Developing Countries*, World Resources Institute/EPA, 1994.

8 Thailand: Biomass in the Service of the Coal and Gas Economy

The experience of Sri Lanka shows that not all projects that go under the name of “renewable energy schemes” promote local betterment, foster local autonomy, or help in the transition away from fossil fuels (see chapter 7).

But other types of “renewable energy” projects may turn out to be of equally questionable climatic or social value when integrated into the carbon market as supports for a system dominated by fossil fuel technologies and corporate expansion. A good example is a “biomass energy” project seeking CDM support in Yala province in Thailand’s troubled far south.

There, an approximately 23-megawatt power plant fuelled by rubberwood waste and sawdust is being developed by a diverse group of companies linked by their interest in the carbon trade. They include:

- Gulf Electric, an independent power producer 50 per cent owned by Thailand’s Electricity Generating Public Company (EGCO) and 49 per cent by Japan’s Electric Power Development Company (EPDC).
- Asia Plywood (AP), a Yala rubberwood processor next to one of whose factories the plant would be located.
- Det Norske Veritas (DNV), a Norwegian ‘risk management’ consultancy in the process of parlaying its experience in certifying the credibility of pioneer carbon schemes such as Yala into a major share in CDM’s consultancy market.

EPDC is a largely fossil-fuel-oriented company and the largest single user of coal in Japan.^a It operates 66 coal-fired and hydropower stations and burned US\$652 million in fossil fuels in 2001 alone.^b It also has interest in six gas-fired power generating plants in operation or under construction in Thailand, totalling 2,733 megawatts.^c Nor, with a large new coal-fired power station under construction in Yokohama, does EPDC contemplate any change of direction in the future. “Coal offers stable supply and outstanding economical efficiency,” says a company presentation:

“hence we predict it will support world energy consumption throughout this century. Our great mission is to ensure that coal is burned cleanly thus reducing the burden on the environment.”^d

Accordingly, EPDC’s main response to global warming is coal gasification, which of course does nothing to halt the flow of fossil carbon to the surface, and the development of a nuclear power plant. For EPDC,

the point of investment in Yala would be to gain so-called Certified Emissions Reductions to help it, and Japan generally, maintain current levels of fossil-fuel combustion in the face of Kyoto pressures.

EGCO is also largely structured around fossil-fuel technologies. One of EGCO’s gas-fired power stations, in fact, is operated in partnership with UNOCAL, a US multinational fossil-fuel firm that is a member of anti-Kyoto Protocol and climate-skeptic business groups.

Gulf Electric, meanwhile, with a mainly gas-fuelled generating capacity, has become well-known in recent years partly due to the overwhelming March 2003 defeat of its proposed 734-megawatt Bo Nok coal-fired power plant on the Gulf of Thailand. Local people in Prachuab Khiri Khan province had long been concerned about pollution and other potentially destructive effects of the project and had mounted a successful regional and national campaign against it. Following their victory against Gulf, the company moved quickly to propose a gas-fired substitute plant further up the coast.

If any further evidence were required that the sponsoring firms are not treating the Yala project as a step away from fossil fuels, there is the fact that they had originally planned to build the power plant without any carbon finance at all. It is only since the depths of the Thai financial crisis, in 1998, that they have contemplated securing supplementary funding through carbon trading.^e Encouraging them to develop the idea have been subsidies from Thailand’s Energy Policy and Planning Office’s Energy Conservation Promotion Fund^f as well as portions of both a US\$30 million OECF loan under a 1999 five-year Global Environmental Facility (GEF) project and a GEF outlay of \$3 million toward commercial risk premiums.^g

But if the point of the Yala project is to help keep corporations using fossil fuels, how can the credits it generates possibly be tokens of measurable climate benefits?

The project’s proponents claim that it would save a measurable amount of carbon by “replacing” some of the electricity in the Thai grid that’s now generated by burning fossil fuels.

How do they know that the plant would do that?

The validator, DNV, realized that it had no way of

determining that the new project's power would be replacing either combined-cycle natural gas or oil-fuel electricity in the national grid.^h It was also told by Thailand's electricity authority that it was "often a mistake to see a direct link of displacement between an increase in one component of the grid and a reduction in another." So DNV looked at the "average" carbon intensity of electricity from the Thai grid. It then subtracted the figure corresponding to the projected carbon intensity of electricity from the project and multiplied that by the project's output. DNV argued that the resulting figure is conservative, since expansion plans by the Thai electricity authority featured a "higher carbon intensity than the grid average used by the project", although the authority's figures were a subject of hot dispute in Thailand and carbon intensity per year varies by about 20 per cent.ⁱ

It all sounds a bit too much like guesswork, given that the object is the calculation of a precise number of tonnes of CO2 saved. How can they possibly be sure that if the project didn't exist, exactly that amount of electricity would have been generated through nothing better than the current "average" fuel mix?

They can't. But it's a procedure that's acceptable in principle to the UN.

I assume the consultancy also factors in how much additional use of fossil-generated EPDC electricity the project might encourage in Japan?

No.

Why not? If the project helps reassure electricity consumers or investors in Japan that it's OK to keep using coal-generated electricity there, doesn't that add to the carbon debit of the project?

Yes, it does. But Kyoto carbon accounting tends to ignore such realities, not that they could be measured anyway (see above). So DNV was under little obligation to present an answer to your question in any of the hundreds of pages of highly-technical documents on the Yala project. Assessing the many indirect carbon or climatic effects of the project, according to DNV, "is not necessary in our opinion".^j

Let me ask another question, then. If the project was going to be built anyway, then what exactly does it "save" that deserves a climate subsidy? It's just business as usual.

That's right, and the CDM rulebook demands that CDM projects prove that they are not business as usual. As a result, the Yala project proponents have had to produce some evidence that it isn't business as usual.

How have they done that?

With difficulty. At first, project proponents claimed that, without carbon credit sales, the project's return on equity would be lower than "desirable" or "normal" but that the good publicity associated with a climate-friendly project would make up for this. When NGOs pressed DNV to provide evidence for these claims, DNV said that it did not have permission to make public the "confidential" financial analysis the project proponents had given it. Project proponents also asserted that the planning needed for the project was a "barrier" that required carbon finance to overcome, and that the project was technologically novel in the Thai context.^k Later on, the project developer also noted that the project was sufficiently financially shaky that it had to be put on hold in 2002.

But even if that's true, that wouldn't prove that the project could be undertaken only with carbon finance.

No. And there's a lot of evidence that, in fact, the prospective carbon income of the project has no weight at all with the investors. For example, uncertainty about whether the project would ultimately be allowed to be registered with the CDM, or about whether the Thai government would overcome its initially sceptical stance toward CDM projects does not seem to have had any effect on the project's original construction schedule. What's more, Sarath Ratanavadi, managing director of Gulf Electric, was quoted in the Bangkok Post on 13 June 2003 as saying that Gulf Electric and EPDC "will go ahead with the 800 million baht project [Yala biomass] even without CDM".

What was DNV's response to that?

It protested that the project's "non-additionality is not as obvious as asserted"^l and said that it had consulted with EPDC about Sarath's statement.

From a scientific point of view, that's not terrifically convincing.

No. For this project to be registered with the CDM would, in fact, probably be a net loss for climatic stability, since it would enable the Japanese government to write down its Kyoto commitment by half a million tonnes of carbon dioxide without providing anything verifiable in return. Nevertheless, the controversy over Yala is representative of the level of debate that still prevails in front of the UN committees and panels responsible for overseeing the CDM.

That's bound to be good news for project developers who don't have any qualms about pushing projects that have no climate benefits.

Yes.

Well, if the project's benefits for the climate can't be verified or quantified, perhaps we should forget about looking at it as a carbon project and just view it as a standard development project with an unusual prospective source of funding. Does it at least provide some benefits for local people?

Many local residents in fact quietly oppose the new development on AP's Yala site as being likely to reinforce local imbalances of power over air and water quality. They've long felt animosity toward Asia Plywood for causing pulmonary health and other problems through smoke and ash pollution of local air, water and land, and profess "no trust" in the firm. Subdistrict officials have even alleged that the firm has not paid its full share of taxes.

But why should any of that make any difference to their view of the new project?

Because for them, the important thing about the project is not the theory behind it, but who is going to carry it out. Local people might well agree with DNV that the disposal of rubber wood residues at Asia Plywood and other installations is "one of the most serious environmental problems in the Yala community." But they view corporate reliability as a more important prerequisite for solving such problems than technical proposals. Refusing to abstract from the local political context, they see narrowly technical factors such as new equipment or CDM certification as irrelevant as long as underlying conflicts between company and community are not tackled. "If current problems are not solved," one local health official interviewed asked, "how are new problems going to be addressed?"

Shouldn't DNV have taken account of such views?

DNV was well aware of locals' view that AP should solve its existing problems with "noise, wastewater and solid waste" before attempting anything else, and should communicate the details of construction to the community as well as involve it in monitoring. Yet it had few incentives to take villagers' political and social analysis seriously as relevant to project assessment.

For example, DNV wrote in an anodyne, theoretical way about a "comprehensive public participation program" to "accurately inform local residents, government officials and other concerned members of the public about the Project and expected impacts" and "obtain feedback, mainly from the local communities and concerned government agencies, with regard to their opinions and concerns about the Project", including the subdistrict administrative

authority's committee and residents in "surrounding villages". Deadpan, it recorded a meeting of less than one hour with the Lam Mai subdistrict authority. The picture was of a project and its participant firms as "black box" or neutral machine into which formulas for environmental improvement, participation and good community relations could be fed with near-automatic results. Local environmental problems were seen as stemming from a mere technical lacuna – one that the CDM project would help fill.



Biomass is not always benign. Noo Nui, a comic figure from the shadow puppet folklore of Southern Thailand, registers his opposition to a proposed power plant using waste biomass on the ground it will "destroy the environment". The project in question didn't try to gain access to carbon finance, but is similar to one in the same region that did.

Similarly, when at an August 1999 public consultation few respondents agreed with the project, DNV put it down to "previous dissatisfaction with the dust caused by AP's operation" and claimed that, following the installation of a new boiler which uses sawdust, "Lam Mai [subdistrict] residents no longer disagree with the Project" (EPDC, 2002).

Are you saying that that's not true?

It's certainly not the impression given by a number of local residents interviewed more recently. To them, the workings of the firms involved in the project, far from being enclosed in a "black box", are both open to view and of powerful interest.

Several people interviewed pointed out that DNV's "public participation program", instead of involving dissemination of useful information, has featured expenses-paid tours for local people to biomass power plants in Thailand's central region. Such tours, they reported, have included hotel accommodation, food and free visits for some male participants to local prostitutes, but not any close inspection of the plants in question nor chances to meet local people.

Local residents also pointed to AP's name on a sala that the company gave to a Buddhist temple adjacent to its factory after temple monks complained about pollution – an act incurring powerful reciprocal obligations. They noted that other modes of persuasion have also been used: one elderly resident interviewed reported receiving no less than three death threats as a result of voicing criticisms of the AP project.

So some of the locals aren't too keen on carbon trading?

Who knows? They understand very well what biomass is, but they've never had a chance to discuss the carbon market. Most people are completely unaware of the AP project's projected role in this new global trade.

(Endnotes)

- a J-Power Group, "FY 2005 Group Management Plan", FY2005-2007, Presentation Materials, J-Power, Tokyo, 5 April 2005.
- b Electric Power Company Development, "Project Design Document for a Rubber Wood Residue Power Plant in Yala, Thailand", Tokyo, EPCD, August 2002.
- c J-Power, op. cit., p.26
- d J-Power, op. cit., p. 15.
- e Food and Agriculture Organization, Regional Wood Energy Development Programme *Options for Dendropower in Asia: Report on the Expert Consultation*, Manila, 1-3 April 1998, FAO, Bangkok, 2000.
- f Global Environment Facility, *Project Brief* for project THA/99/G31, World Bank, Washington, DC, 1999.
- g United Nations Industrial Development Organization, *Thailand: Case Study, Capacity Mobilization to Enable Industrial Projects Under the Clean Development Mechanism*, Vienna, 2002; Electric Power Company Development, op. cit.
- h Op. cit., p. 29.
- i Mitsubishi Securities, *AT Biopower Rice Husk Power Project*, 2003, available at <http://cdm.unfccc.int/EB/Panels/meth>.
- j Einar Tølnes, DNV, personal correspondence, 30 May 2002.
- k Jane Ellis, "Evaluating Experience with Electricity-Generating GHG Mitigation Projects", OECD Environmental Directorate, IEA, COM/ ENV/ EPOC/IEA/SLT(2003) 8, Paris, 2003.
- l Einar Tølnes, DNV, Personal communication, 27 November 2002.

9 South Africa: Saving Carbon or Destroying Health?

Durban Solid Waste (DSW), part of Durban's city council bureaucracy, manages a landfill site called the Bisasar Road dump. The dump is located in an area that was designated for people of Indian descent under apartheid's Group Areas Act. It's also a primary source of livelihood for the mainly African, and poorer, Kennedy Road settlement, many of whose residents recycle materials from the dump while struggling with officials and business to gain more secure rights to the land their houses occupy.



Views of the Bisasar Road landfill.

Although the site is licensed only to receive domestic waste, medical waste, sewage sludge, private corporate waste and large shipments of rotten eggs have also wound up there. Cadmium and lead emissions are over legal limits, and limits for suspended particulate matter also often exceeded. Concentrations of methane, hydrogen chloride, and other organic and inorganic compounds including benzene and toluene, trichloroethylene and formaldehyde are high.

That sounds dangerous.

Local residents report many health problems, with six

out of ten of the houses in one downwind block on the nearby Clare Estate reporting cancer cases. The causes of each such individual case of disease are notoriously difficult to pin down. They could include emissions from incineration practices which stopped in 1997, other emissions from the dump either before or after, or other factors.

But with some houses only 20 meters away from the landfill site boundary, it's hardly surprising that many in the community want the dump shut down. In fact, the city council itself pledged in 1987 to close the site and turn it into sports fields, picnic areas and play areas for children. When, in 1996, the council reneged a second time on the promise, some 6,000 local residents signed a petition of protest, with many blocking the dump site entrance and staging demonstrations and marches.

I'm not surprised. But what does all this have to do with mitigating climate change?

In 2002, the World Bank's Prototype Carbon Fund (PCF) began promoting a prospective CDM project to extract methane from the Bisasar landfill and burn it to generate up to 45 megawatts of electricity for supply to the national grid.

I'm not sure I understand. How can a project that emits carbon dioxide using fuel from a smelly landfill site be climate-friendly?

The idea is that the electricity generated by the project would "replace" electricity that otherwise would have been generated by burning coal. It's claimed that the project would generate enough power to light up 20,000 informal houses or 10,000 formal-sector houses. Because burning methane is less climatically damaging than simply releasing it, and better than burning coal (the dirtier fuel usually used) the project is better than the alternative.

The alternative? There's only one? Surely there must be many alternatives. What about using the money to close the dump down and treat some of the waste? What about just pumping the landfill gas into the nearby Petronet gas pipeline network so that it would not need to be burned on site? Or finding ways of using electricity more efficiently? Or more non-fossil community-level power sources?

No, the carbon credit market demands that there be only *one* alternative. That's the only way of doing the

carbon accounting for a project like this. If there is more than one alternative, then you will have more than one number corresponding to the carbon “saved”, and you won’t be able to assign a single number to the number of carbon credits your project is producing. So you won’t have anything definite to sell.

But that’s just crazy. There are always many alternatives.

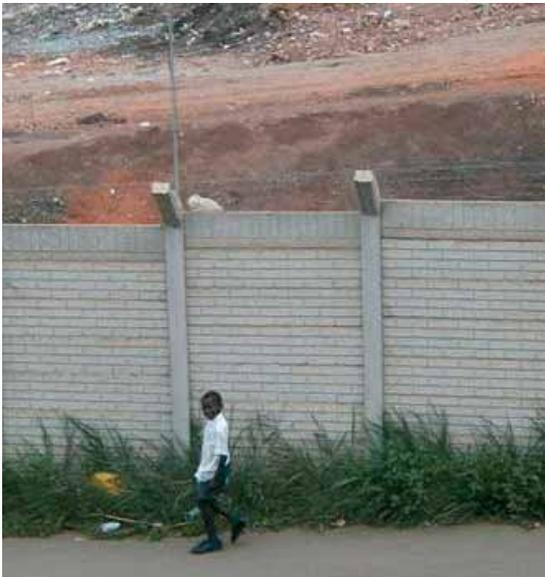
Yes, but the accounting system that carbon projects need dictates otherwise. It leaves no space for multiple alternatives or more than one political choice.

But how can such a view be enforced when everybody knows that there are many alternatives to the Bisasar Road carbon project, not just one?

In the early phase of the project, authority for deciding what the future would be without the Bisasar Road scheme was quietly given to two individuals at the PCF in Washington – Sandra Greiner and Robert Chronowski. Griener and Chronowski were the ones who determined what would and would not be possible in South Africa in the absence of the project.^a Their decision was clothed in many pages of impressive numbers and reinforced through meetings and professional review. If the project goes forward and sells carbon credits to Northern corporations, allowing them to burn fossil fuels in their countries, it will have to be on the basis of numbers like the ones Greiner and Chronowski suggested.

But didn’t anybody protest? Didn’t anybody question whether two people in Washington had the right to decide what the alternative energy future of Durban might be?

Protest was difficult. Information dissemination and public consultation on the project proposal were carried out over the internet, to which only a small



The fence separating the dumpsite from the community.

minority of the local community have access. Time allocated for objections in late 2004 was a mere 10 days. And few outside the immediate area were either interested in or aware of what was going on.

I still don’t get it. How can anybody prove that the project is an improvement on business as usual? Which business as usual? How much of an improvement? Maybe DSW would have put in a methane-burning plant anyway.

Durban officials claim that without the US\$15 million provided by the deal, they would not bother trying to recover the methane as fuel, since the electricity generated in the process costs so much more per kilowatt hour than the local power utility charges for its coal-fired power.^b

All right, fair enough. But assuming that’s true, all it proves is that continued raw methane release and coal-fired power is a choice that would have a reasonable economic rationale, not that it is the only choice that could be made.

That’s all that’s required, under the rules, for the project to create carbon credits.

All right. But who would buy carbon credits from the dump?

All PCF investors are to get *pro rata* shares of rights to ignore an increment of their obligations under the Kyoto Protocol to reduce their own mining and burning of fossil fuels. These investors include British Petroleum, Mitsubishi, Deutsche Bank, Tokyo Electric Power and Gaz de France, as well as the governments of The Netherlands, Norway, Finland, Canada, Sweden and Japan.

And is this a good thing for local people who live around the dump?

That depends a lot on who you ask.

Well, what does the PCF say?

The PCF says that improving the “financial position of DSW” would also benefit local people and send a “clear signal” to them that “the environment is a number-one concern in South Africa and is being dealt with in the best way possible.”

And what does the local community say?

Again, that depends on who you ask. But let’s start with members of the Indian community on the border of the dump. One, Sajida Khan, who was diagnosed in 1996 with cancer, and whose nephew died of leukaemia, had this to say in 2002:

“To gain the emissions reductions credits they will keep this site open as long as possible. Which means the abuse will continue as long as possible so they can continue getting those emissions reductions credits. To them how much money they can get out of this is more important than what effect it has on our lives.”^c

Khan and other community members see PCF support for the methane project as having thrown a lifeline to the dump. They note that the PCF’s crediting period for the project is seven years, twice renewable, making a total of 21 years. According to the PCF, “because of the growing waste generation per capita in the municipality . . . there is no plan to close . . . the Bisasar Road site . . . during the PCF project life.” To Khan and colleagues, this new lease on life for the dump, together with the PCF claim that Bisasar Road is an “environmentally progressive . . . world-class site” leave a very bitter taste in the mouth.

Understandably so. But are there other views?

One of the municipality’s top officials responsible for the project, Lindsay Strachan, Project Manager of eThekweni Engineering and Projects, has little patience with opinions like Khan’s. Because protesters “can’t think globally any more,” he complains, “the project is literally slipping through our fingers.”^d

The Bisasar Road Project: Conflicting Views

“What are we going to do about carbon trading? Our president [Thabo Mbeki] is saying, ‘Where is this project? Where is any project? Where’s anything?’ [There is] a big rush to get South Africa on the map. [Yet now, due to appeals,] the first project in Africa is . . . stopped in its tracks and . . . literally slipping through our fingers. . . . Japan is calling me. But I say we have no project. . . . [The two per cent of people who object] are saying that this is in my backyard, I can’t think globally anymore. . . . South Africa probably won’t be able to say that we spearheaded the CDM market or better still we spearheaded the emissions reductions market. . . . There is disappointment, but such projects will go on elsewhere, in Brazil or Chile or India or Iran or Kampala.”

*Lindsay Strachan, Manager of Engineering and Projects,
Durban Solid Waste*

“The poor countries are so poor they will accept crumbs. The World Bank know this and they are taking advantage of it.”

Sajida Khan, Bisasar Road community resident

But there are more than just two sides to this story. Most of the African residents of the nearby Kennedy Road settlement also support extending the life of the dump. For one thing, the dump provides most of their current livelihood. For another, the new World Bank carbon project has shrewdly promised to provide jobs and a few local scholarships. The Bank also pushed DSW to conduct “consultative exercises” in Kennedy Road that constituted one of the few occasions that the community had been officially recognized. Kennedy Road residents could not help but contrast that recognition with what they perceive as the Bisasar Road community’s lack of sympathy for their ongoing struggles to secure rights to the land they live on so precariously.



Sajida Khan

But presumably the World Bank and DSW are merely trying to divide the local Indian and African communities from each other?

Kennedy Road activists are under no more illusions about the agendas of outside agencies than they are in the front lines of international debate over climate change. But, as Raj Patel of the local Centre for Civil Society at the University of KwaZulu-Natal observes, “when communities have been systematically denied dignity,” “consultations” such as those staged by DSW under World Bank pressure may be the only “substitute for marginalization” available.^e

There’s also the argument that by extracting methane, the project not only prevents quantities of a powerful greenhouse gas from being dispersed in the atmosphere, but also benefits local air quality.

It might, to some degree – although a lot of associated pollutants would still be released, including carbon monoxide and various hydrocarbons.

Clean air, however, is a right South Africans are constitutionally guaranteed even in the absence of carbon trading schemes. In a sense, therefore, Kyoto commodity production is being staked here to the

non-enforcement of environmental law. DSW, PCF and their consultants are helping to enclose not only local communities' air, but also their future. In the process the World Bank is also undermining its own stated concern with "good governance" and the rule of law, because it's providing an incentive not to enforce the constitution.



Latrine near Kennedy Road community houses.

What's the future of the project?

Uncertain. Project opponents, backed by sympathizers in a range of countries, are definitely having an impact. Sajida Khan and others have filed formal complaints, citing technical environmental, health and social problems. Several newspaper articles were published on Khan and her struggles, and in November 2004, World Bank staff were forced to visit Durban to have a look for themselves. But project proponents, including Bank staff, are unlikely to give up easily.



Some of the research for this section was done by Trusha Reddy while she was an intern at the Centre for Civil Society at the University of KwaZulu-Natal.

(Endnotes)

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10 Brazil: Handouts for Repression as Usual

In a carbon project in Minas Gerais, eastern Brazil, carbon trading institutions have also used and exacerbated coercive power relations in still another attempt to produce an imaginary carbon commodity. As in Ecuador, the Forest Stewardship Council (FSC) has played a big role and, as in South Africa, the World Bank as well.

I take it this is another tree plantation project?

Partly, but it's a good deal more complicated. The company claiming to be saving carbon and helping the climate is a pig iron-producing and plantation management company called Plantar S.A..

How is Plantar helping the climate? Is the pig iron it makes produced by solar energy? Or is it perhaps used to make solar cells?

Alas, no, the iron is produced by burning charcoal and releasing carbon dioxide to the atmosphere, and is actually used to make things like cars, which of course release yet more carbon dioxide.

In that case, how can Plantar claim that it deserves carbon credits? It sounds like it's an active part of the industrial system that is accelerating climate change.

Good question. Plantar and its World Bank associates have tried many lines of argument. At first, they said that without carbon finance, there would be an "accelerated reduction in the plantation forestry base in the state of Minas Gerais, within the next decade, caused by harvesting of existing forests (now in the last cycle of their rotations) and lack of investment into replanting".^a In the absence of carbon finance, Plantar and the Bank insisted, "the company would not invest in the replanting of its forests for the [sic] pig iron production, abandoning them after the final harvest of the existing plantations".^b When reminded that CDM rules do not allow credit to be provided for "avoided deforestation", the Bank rewrote its design documents to emphasize other justifications.

Which were – ?

First, that Plantar was not avoiding deforestation but rather preventing an otherwise necessary switch in the fuels for its pig iron operations from eucalyptus charcoal to more carbon-intensive coal or coke.

Let me get this straight. This company said it deserved carbon credits for not doing something?

That's right. Plantar claims that without carbon

money, the company would switch over from using charcoal to using fossil fuel. It's called an "avoided fuel switch". Because the carbon dioxide released by the charcoal is supposedly mostly absorbed by the new trees grown for new charcoal, less carbon enters the atmosphere than would enter it from the burning of coal.

But why would Plantar switch over to using coal? Isn't there enough charcoal to go around?

Plantar claims that without extra carbon finance for a 23,100-hectare plantation scheme, the charcoal fired pig iron industry faces a "supply bottleneck". It says current plantations are being depleted and the lack of forest incentives will render new plantations financially unfeasible without World Bank carbon financing.^c Plantation land will be "converted to pasture or agricultural land".^d

Is that true?

Well, it does somewhat strain credulity. Plantar is saying that carbon credits for its 23,100 hectare project are the only thing that can ensure charcoal supplies, even though Minas Gerais alone boasts two million hectares of eucalyptus plantations. Plantar itself owns rural properties covering more than 180,000 hectares, mainly devoted to eucalyptus for charcoal and almost all located in Minas Gerais,^e and provides management services for more than 590,000 hectares of plantations for itself and other companies in Brazil spread across 11 large units. The firm also has large investments in the development and production of high-yielding clonal eucalyptus varieties and is reported to be producing over 40 million clonal seedlings per year,^f with yields of 35–42 cubic metres per year, contributing to its reputation as a committed, low-cost and highly competitive producer of charcoal and many other plantation timber products.^g Plantar has recently also gone to the trouble of getting plantations it uses to produce barbeque charcoal certified by the FSC. Why should the failure to get carbon credits for only four per cent of the total area under the firm's management and 13 per cent of its own direct holdings result in a failure to invest in replanting?^h If the financial prospects for new plantation development are so poor, why did Plantar purchase the lands in question only four years ago, before it was considering carbon finance?

Some 143 local groups and individuals put it more strongly in a letter to the CDM Executive Board of June 2004:

[T]he claim that without carbon credits Plantar ...would have switched to coal as an energy source is absurd... Yet now [Plantar] is using this threat to claim carbon credits for continuing to do what they have been doing for decades – plant unsustainable eucalyptus plantations for charcoal... It is comparable to loggers demanding money, otherwise they will cut down trees... [the CDM] should not be allowed to be used by the tree plantation industry to help finance its unsustainable practices.ⁱ

Even the project's validator, DNV, admitted to being sceptical of Plantar's claim that Plantar would not invest in replanting in the absence of the CDM project, "given Plantar SA's relatively strong investment capabilities as one of the major Eucalypt seedling producers in Brazil".

How did DNV check Plantar's claim?

They simply went to Plantar and asked them if it was really true or not. Unsurprisingly, Plantar executives assured them that the "internal rate of return for planting new trees is today is not attractive in absence of the sale of CDM credits".

Meanwhile, the World Bank and its consultants admit that there are several possible "land management scenarios for the Curvelo ranch in the absence of the carbon project".^j

That means that there are several possible baselines with different carbon profiles.

Yes.

That means that there are several different figures for how much carbon the project might save.

Yes.

That means that there can be no single number of carbon credits generated by the project.

No, there can't.

Doesn't that bother the project accountants?

No. They simply choose the baseline scenario they claim is "most plausible" and discard the others.

So there's actually no scientific basis for assigning any particular number of carbon credits to the project?

No. It's essentially arbitrary. What's more, even if Plantar could prove that it was avoiding the use of a quantifiable amount of coal in Minas Gerais, it would still have to prove that the coal would not be used somewhere else for 10, 50, 100 or 300 years.

Or it would have to quantify the extent to which its local avoidance of fossil fuels was helping indirectly to build an alternative, non-fossil energy economy worldwide. In the end, it's anybody's guess how Plantar's carbon credits are related to climate.

Revealingly, even those technocrats who are committed to the idea of carbon-saving projects are beginning to be uneasy about companies' demands to be given carbon money for what they are doing already. In May 2003, the CDM Methodologies Panel rejected the claim of another "avoided fuel switch" carbon project located adjacent to Plantar's that it was an improvement on "business as usual".^k In November 2003, faced with a resubmitted accounting methodology, the Panel went on to express concern that to assertions that carbon-saving projects that merely continue current practice are 'additional' throws up technical problems of "moral hazard".^l

"Moral hazard"? What does that mean?

It's a term often used in the insurance business. By insuring houses, for example, an insurance company, if it's not careful, can create an incentive for its customers not to take proper precautions against fire. Similarly, offering businesses a way of getting subsidies for what they're doing already, without any way of verifying their claims about what would happen otherwise, creates incentives for them not to make any improvements.

Are there other justifications Plantar cites for getting carbon credits?

Three, in fact. Plantar has also looked to get carbon credits for afforestation, improvements in charcoal production that minimize methane releases, and rehabilitating *cerrado*, the biome it itself has had such a hand in depleting.

What do local people make of all this?

They find it hard to believe that Plantar could secure extra finance for anything that falls under the rubric of "environment" or "development". "We were surprised and bewildered by the news," a group of over 50 trade unions, churches, local deputies, academics, human and land rights organizations and others protested in a letter of 26 March 2003.^m They see the company as having illegally dispossessed many people of their land, destroyed jobs and livelihoods, dried up and polluted local water supplies, depleted soils and the biodiversity of the native *cerrado* (savannah) biome, threatened the health of local people, and exploited labour under appalling conditions (see Plantar vs. Local People: Two Versions of History, below).ⁿ

Plantar: Local People Speak

“Plantar has planted all over, even up to the Seu Zé do Buritim river spring. Thirty-five thousand hectares of land . . . they sprayed pesticides with a plane. There used to be deer and other animals in the area. The native fauna lived together with the cattle. But since they applied the pesticide, every one of them got killed. . . . The eucalyptus planted over here is meant for charcoal. It is a disaster for us. They say it provides jobs, but the maximum is six hundred work places in a plantation of 35,000 hectares. And, whenever everything has been planted, one has to wait for six years. So, what work does it generate? . . . We used to produce coffee – the Vera coffee – and pasta and cotton. Several different little factories in their suitable regions. Nowadays, there is only the eucalyptus. It has destroyed everything else. . . . Why do they come to plant in the land suited for agriculture instead of more suitable areas? Because there it takes ten to twenty years and over here only seven. All the best pieces of land went to the eucalyptus plantations, pushing the small producers away and destroying the municipalities. . . . These companies don’t want unions. They immediately co-opt the union leaders and they begin to make part of their inner circle of managers and directors. . . . The eucalyptus gives the water back to the earth after some years. But when it is time to give it back, they plant a new one that will absorb the water returned by the old one. This new plantation will develop really quickly, because, besides the rainwater, it will receive the water from the old eucalyptus. . . . they are using the carbon credits to plant these eucalyptus that will grow very quickly.”

*Local man who asked for anonymity
out of fears for his safety*

“Eucalyptus has been grown with blood.”

Antonio, local farmer

*So they see the carbon scheme as shoring up an unjust
and destructive social arrangement.*

Yes. But local residents oppose not only the way Plantar is trying to get paid for using former *cerrado* and farmland for a carbon dump. They also oppose the way the carbon project appropriates alternative futures that they are pressing for:

“The argument that producing pig iron from charcoal is less bad than producing it from coal is a sinister strategy. . . . What about the emissions that still happen in the pig iron industry, burning charcoal? What we really need are investments in clean energies that at the same time contribute to the cultural, social and economic well-being of local populations. . . . We can never accept the argument that one activ-

ity is less worse [sic] than another one to justify the serious negative impacts that Plantar and its activities have caused. . . . [W]e want to prevent these impacts and construct a society with an economic policy that includes every man and woman, preserving and recovering our environment.”^o

In the face of all this opposition, how does the project go forward?

The scheme probably couldn’t have got off the ground without the help and sponsorship of the Prototype Carbon Fund (PCF) of the World Bank, which would feed any credits it generates to its roster of Northern corporate and government clients. Plantar was the Bank’s first carbon sink project and the Bank expects it to “prepare the ground for similar projects in the future”. 2002 Project Appraisal Document. Plantar’s carbon scheme also gets legitimacy from the involvement of the FSC.

Why is the World Bank involved in such projects?

In brief, to shore up and license the continuation of the fossil fuel economy, to please Northern governments, to build a new field of operations for itself as an institution, and to make money (see above). That’s why it helps firms like Plantar do the initial work on a project and promises to provide buyers for the credits.

And what if Plantar can’t deliver the credits? Suppose the plantation burns down or the project verifiers find problems with the carbon accounting?

If less than 70 per cent of the CERs are delivered on time to one of the project’s buyers, The Netherlands, then it’s the Brazilian “supplier” who has to pay a penalty, not the Bank.

But doesn’t the involvement of the World Bank, as an internationally reputable development institution, at least guarantee certain environmental standards and provide safeguards against abuse of local people?

On the contrary. Many local people feel that the Bank’s involvement merely legitimises environmental damage and the intimidation that Plantar uses to control local people – intimidation which, as in Thailand, is nowhere acknowledged in carbon project documents. Many local residents are afraid to let interviewers cite their names. Some receive death threats. When a representative of the Rural Union of Workers of Curvelo went to the climate negotiations in Milan in December 2003 to raise awareness about the negative environmental and social effects of Plantar’s operations (which won a special ironic NGO award there for “worst CDM sinks project”), the company’s directors bullied other union mem-

bers into signing a letter of support for the company, threatening massive layoffs if carbon credits were not forthcoming – although one longtime union opponent of the expansion of eucalyptus plantations in Minas Gerais managed to insert an “under pressure” beside her signature.

Unbowed, the local movement has subsequently appealed directly to European investors not to put money into the Plantar carbon project. Peasant and trade union representatives travelled to Cologne to intervene in the Carbon Expo trade fair held there in June 2004, in which the Bank participated.⁹

Throughout the disputes over the carbon project, the World Bank has taken the side of Plantar. For example, in 2003 it posted on its website a letter from Plantar to PCF investors replying to dozens of local groups, without posting the original letter to which it was a reply.⁹

What about FSC? How are they involved?

FSC has certified only 32,232 hectares of Plantar’s operations – less than 18 per cent of its landholdings.¹ These hectares are used to produce barbecue charcoal. However, Plantar has not hesitated to announce on its website that certification “ensures that our forest is managed in an environmentally responsible, socially beneficial and economically viable way”, giving the impression that FSC’s certificate is valid for all of the company’s plantations. It also claims in a letter to PCF investors that “100 per cent of the Project Area is being and will be certified”.⁵ As in Ecuador, FSC thus has a hand, if only an indirect one, in producing a fictitious commodity claiming to be “carbon”.

Conducting research into the story of Plantar have been Marcelo Calazans and Winnie Overbeek of the Brazilian NGO FASE-ES in Espirito Santo, assisted by an international team working on carbon trading more generally including, from left, Adam Ma’anit and Heidi Bachram of Carbon Trade Watch, Jutta Kill of Sinks Watch, and Ben Pearson of Clean Development Mechanism Watch (and now with Greenpeace Australia).



PHOTO ESSAY

Plantar vs. Local People: Two Versions of History



Demonstration in early 2005 against the “green desert” created by commercial eucalyptus plantations established by Plantar and other companies.

LOCALS: Before the advent of giant eucalyptus plantations, the *geraizeiros* of northern Minas Gerais used the *cerrado* (savannah) for crops, cattle, wild foods, medicines and crafts. Small and medium-sized companies relied on *cerrado* products to manufacture pasta, leather, saddles, shoes, cotton oil, textiles, castor oil, textiles, sweets, and liquor and other products of the native *pequi* fruit. Rice, beans and maize were planted and traditional dairy farming and livestock raising was practiced. Under the dictatorship, however, lands that the *geraizeiros* had traditionally used and claimed ownership over, but which were not formally titled and were under the jurisdiction of the state (*devolutas* lands), were leased fraudulently for 20 years to eucalyptus-planting firms, who also received financial incentives. Many rural dwellers were expelled from the land, while others were persuaded to abandon it by promises of jobs and better living conditions; still others sold up after becoming isolated and seeing their water supply dry up or become contaminated with pesticides. The *cerrado* was cut down, fields were

fenced and consolidated, and agriculture, stockraising and livelihoods and food products factories that depended on the biodiversity of the *cerrado* collapsed, leaving many unemployed. Through dispossession and impoverishment, residents have been forced to accept low wages and dangerous working conditions, often as illegal out-sourced labor, or flee to *favelas* on the outskirts of cities, where they are also trapped in a cycle of poverty. Exactly how much of today’s Minas Gerais monoculture eucalyptus plantations are on *devolutas* lands is disputed. We believe that most land used by corporations such as Plantar is *devolutas*. An investigative commission of the Minas Gerais parliament found that iron and steel companies as were granted “a large part of the *devolutas* lands in northern Minas Gerais”. Whatever the exact figure, however, the question must be investigated, since according to Brazilian law, corporations cannot acquire this type of land, only peasants. By right, such lands should be given back to rural dwellers and used for land reform, food production, and restoration of the *cerrado*. Many *geraizeiros* have brought a case against the state over their expulsion from their lands when they were expropriated and leased to the companies. They want to convert plantations back into native *cerrado*.



Some of Plantar’s plantations from the air.

PLANTAR: Plantar has never owned nor used any so-called *devolutas* lands. It has never contributed to the eviction of indigenous peoples. Plantar has never placed any constraints on the commercialization of *cerrado* fruits, on which a few families may rely to earn their living, or on those who collect fruits for subsistence purposes. It is very hard to imagine how a company that does not occupy more than 4.5 per cent of the Curvelo Township area could cause a crisis in the fruit-collecting economy. Besides preserving both legal reserves and permanent conservation

areas, Plantar also contributes to the conservation of traditional species of the *cerrado*. Anyway, the areas where Plantar works are not economically dependent on *cerrado* products but on cattle-raising. This has heavy environmental impacts, adds little value, and creates fewer employment opportunities than are created by the forestry industry. For example, in Felixlândia, Plantar acquired a former cattle-raising farm which did not provide more than 20 jobs. In the same area, we currently have almost 300 permanent employees. In Curvelo, Plantar provides more than 1000 direct jobs, not to mention indirect figures. Plantar has not caused massive job layoffs and has significantly expanded due to forestry management services provided to third parties.

LOCALS: The 4.5 per cent figure doesn't include other companies' eucalyptus plantations in Curvelo, including those of V&M Florestal and Cossisa. In any case knowing that Plantar has covered 4.5 per cent of the municipality with eucalyptus does not change the plantations' impacts on the lives of people nearby. Plantar's comparison between the 20 workers on a former cattle ranch and the 300 workers working there now is misleading. No local people were in fact hired, increasing unemployment in Felixlândia. In addition, while eucalyptus plantations may provide employment during the first two years in preparation of the land, planting, pesticide application, or irrigation, they provide very little work during the subsequent five years before cutting.

It's true that local people do not use *cerrado* areas under Plantar's control for fruit collection. These areas are very small and offer little. But local communities have suffered from the Plantar's restrictions on their tradition of letting their cows graze freely. Plantar has put cattle in fenced areas or taken them away to another area without informing the owner. This has led to cases of lost cattle. Land reform and small-scale agriculture are the only ways of creating a future for the Brazilian rural population. Yet tree plantations only worsen the unequal distribution of land in the country. In Espírito Santo, eucalyptus plantations expelled thousands and thousands of people into the poor neighbourhoods of urban centres and an uncertain future. Converting the 23,100 hectares of the Plantar project to small-scale diversified and ecological agriculture would create at least 23,100 more human-friendly jobs, with salaries at least four times higher than those of the majority of Plantar workers, according to the concrete experience of the local Movimento dos Pequenos Agricultores (Movement of Small Peasants). The Movimento is also developing an alternative reforestation project, using not eucalyptus but tree species with multiple uses and local environmental value.



Harvest time on Plantar's plantations.

LOCALS: What with the eucalyptus industry's transformation of local rural economies, people often have no economic options other than small scale charcoal production, and build clay ovens in the *cerrado* for the purpose. Collecting commercial eucalyptus is against the law, however, so independent producers often burn what's left of native trees, and the resulting charcoal is often eventually purchased by the corporations. Companies still use around 15-20 per cent native *cerrado* charcoal. They deny this in spite of the existence of receipts showing their purchase of charcoal made from native wood.

PLANTAR: The use of charcoal made out of native vegetation is a reality that bothers pig iron manufacturers, environmentalists and authorities. That's why it's a goal of the Plantar project: to establish sustainable plantations, capable of supplying 100 per cent well-managed eucalyptus plantation charcoal for pig iron manufacturing, thus curbing negative impacts brought by the use of native vegetation.



Forest clearance for Plantar plantation.

LOCALS: Plantar also continues to destroy *cerrado* directly in order to use the land for plantations. For instance, Plantar bought *cerrado* lands in the Campo Alegre and Paiol communities and planted eucalyptus on it. As late as 2000, Plantar was felling *cerrado* in Lagoa do Capim.¹⁵⁶ In December 2002, Plantar land was also cleared at the river spring of Pindaíba. Native tree trunks can still be seen there. Dozens of

municipalities have declared a state of emergency over water. Near Paiol de Cima, one stream has completely dried up after having previously flowed 11 months of the year. In Felixlândia, a spring called Cabeciera do Buriti is degraded. Flows in the Buriti river are down and herbicides have been applied without consultation with local people, killing fish and birds. Plantar has planted eucalyptus at river springs, drying them up and also contaminating them with pesticides that kill animal life in the streams. Plantar's contamination of local drinking water sources with pesticides has also caused the death of many emas, large land birds related to ostriches. The communities of Cobú, Paiol de Cima, Canabrava and Boa Morte have been forced to dig artesian wells. Cattle ranching does not cause such negative impacts on water, and produces a greater diversity of goods, including meat, milk, leather and manure.

underground water. Nevertheless, scientific studies have shown that, as long as proper management is carried out, as Plantar does, eucalyptus plantations do not reduce water supply to specific regions. Many traditional cultures, as well as careless grazing practices, are more harmful to hydrological systems than eucalyptus plantations.



Plantar eucalyptus plantation with dead native buriti tree in foreground. The buriti is a symbol of the cerrado region whose wide river basins it thrives in. The tree needs a lot of water to survive, and its demise shows that water levels have dropped.



Dried-out swamp forest near abandoned farm, October 2003.

LOCALS: A Minas Gerais Parliamentary Investigation Commission found in 2002 that Plantar was practicing illegal outsourcing of labour that negatively affected the safety and livelihoods of charcoal workers. It cited “precarious labor relations, abominable working conditions, slave and child labour and deforestation of the *cerrado*” as well as “infamous” wage levels. It also found problems with housing, hygiene, drinking water, food, transport and noted that Plantar was in breach of International Labour Office provisions regarding freedom of trade union organizing. The Federal Public Ministry of Labour has sued Plantar for illegal subcontracting and forced it to sign an agreement to change its behaviour, which was subsequently found to be not in compliance. During the 1990s, the Montes Claros Pastoral Land Commission, a church-related organization, also verified the existence of slave labour on Plantar property. In March 2002, the Curvelo Regional Labour Office (DRT) issued Plantar with a summons for using slave and child labour in timber extraction and charcoal production and fined the company after finding 194 workers without any registration on its plantations in Curvelo.¹

PLANTAR: We have been accused of drying up rivers, but in fact some streams dry up naturally for a few months, due to the seasonality of rainfall normal to the *cerrado*. They recover later. Of course, as with any fast-growing species, eucalyptus needs



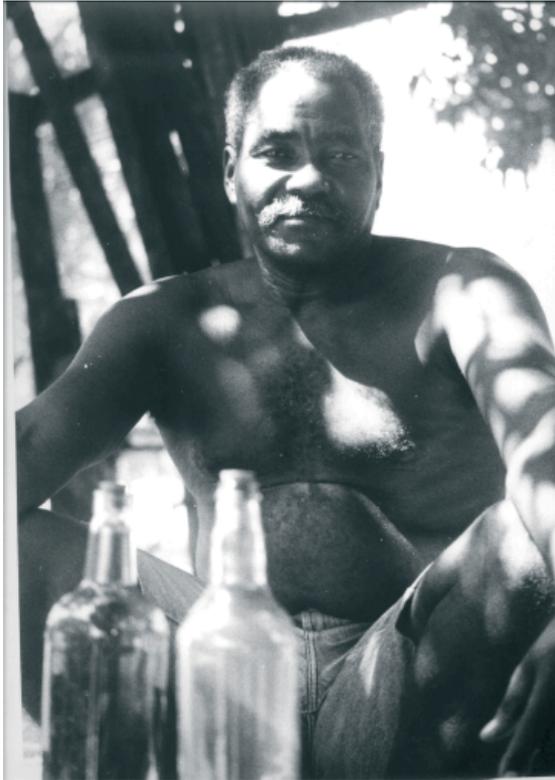
Quilombola charcoal workers.

PLANTAR: Plantar has never used child nor slave labor. Our working conditions are in complete accordance with labor laws. Besides complying with Forestry Stewardship Council standards, the company is frequently audited under its ISO certified quality management system and is certified by ABRINQ Foundation as a “company friend of children”. Representatives from the Intergovernmental Panel on Climate Change have visited Plantar’s facilities. Plantar may have been cited over working conditions by a Parliamentary Investigation Commission (along with every other company in the sector), but no irregularities were found. The company is a benchmark for providing benefits for its employees including occupational health care, half scholarships for all employees from basic education to graduate degrees, free meals and food supply kits to lower-income employees, etc. Instead of undertaking a legal dispute with the Curvelo Regional Labour Office (DRT) after being cited over outsourcing, Plantar has already agreed to manufacture charcoal with its own workforce.



Plantar charcoal ovens.

LOCALS: Plantar’s agreement to manufacture charcoal with its own workforce needs to be evaluated to see whether it is really improving conditions for workers, who in general earn a maximum of only US\$100/month. As unemployment is rife, most workers are frightened of mentioning any problem that occurs, including the creation of new contracting companies nominally part of Plantar with names like Plantar Energética. Plantar charcoal workers are continuously exposed to smoke containing toxic gases as well as pesticides and are at a high risk for accidents. In Espírito Santo, the Attorney General for Workers Conditions opened a confidential investigation in 2001 after the death of several former Plantar workers. One, Aurino dos Santos Filho, died with a pump filled with pesticides on his back while working on a eucalyptus plantation in Espírito Santo in 2001; he was only 34 years old. Aurino’s family has not received any compensation from the company. Plantar does nothing for workers who become disabled as a result of their work for the company; many have already died. Plantar makes labour organizing difficult by rotating workers among far flung sites. Worker leaders are registered as “urban labourers” to prevent them from becoming rural union members.



Jorge, a former Plantar worker: "When I started working at Plantar I was OK. One day I fainted after lunch. I was already applying the insecticides, fungicides. I had headaches, I felt weak. My superior told me, 'I am firing you because you don't know if you are sick or not.' Six or seven people died. Plantar said it was heart failure. Now I'm unable to work. I don't dare eat the fish from the streams here."

LOCALS: When it built a new tree nursery, Plantar, without consulting local inhabitants, diverted a road that has always been used by the communities of Paiol de Cima, Meleiros, Cachoeira do Choro, Paiol de Baixo, Canabrava, Gomos and others, extending travel distances for local inhabitants, including 900 students from the Serfio Eugenio School, by more than five kilometers. Plantar also dammed up the local Boa Morte river to supply the nursery with water, as well as polluting water with fertilizers and other agrochemicals, causing complaints from downstream water users.



A local leader of an environmental NGO received anonymous death threats over the telephone after criticizing Plantar.

PLANTAR: The detour has not caused any damage to local people. The original route is still there and can be used by pedestrians, cyclists and horse riders. Vehicle traffic has been diverted to prevent seedlings from being affected by dust, and drivers prefer to take the detour anyway because the road is of better quality. Public and school buses no longer get stuck in the mud during rainy periods.

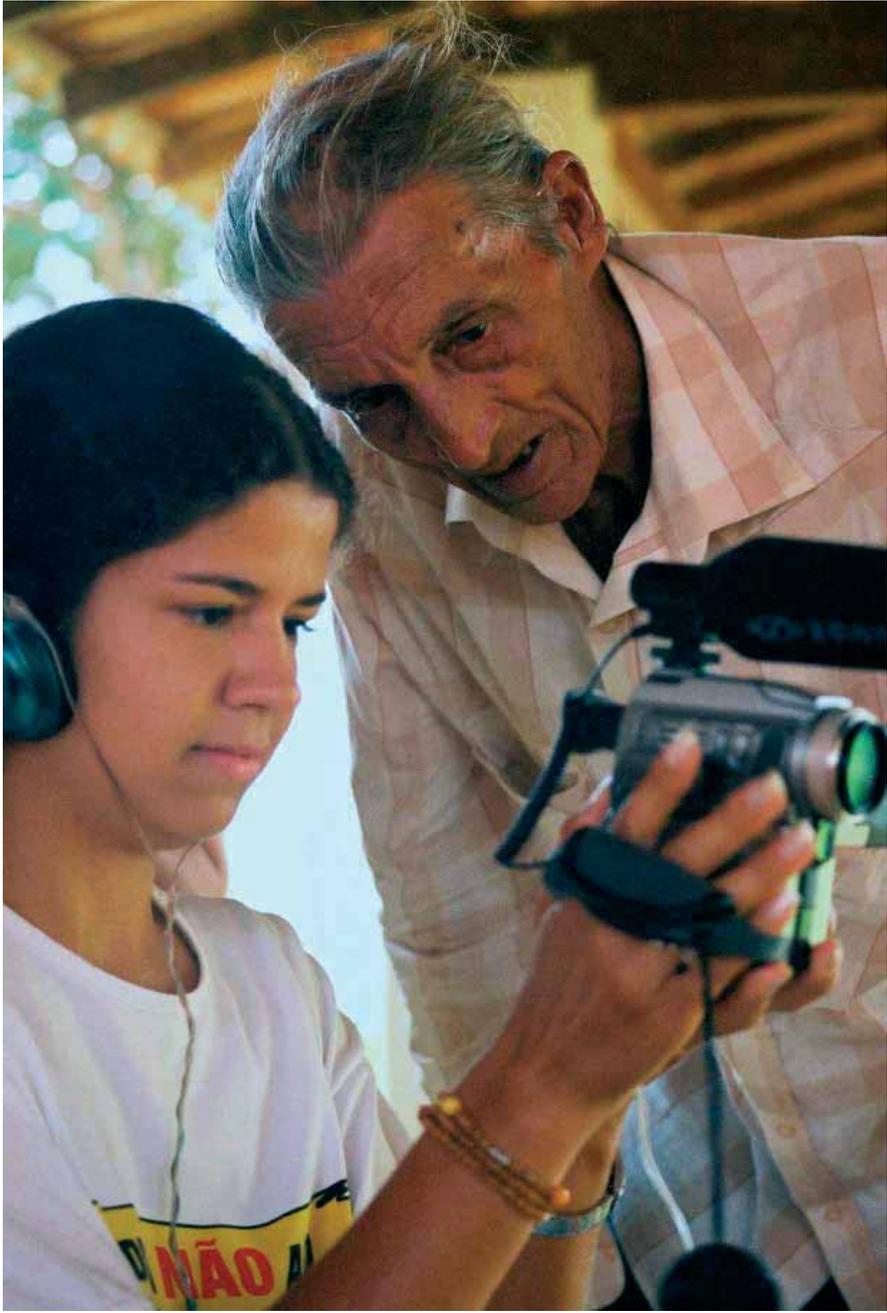


Quilombola charcoal worker.

LOCALS: In 2003, the old road was fenced off, making it impossible even for pedestrians to use. Even for anyone daring to jump the fence, the road is unusable, since it is blocked by the company's nursery. School buses never had problems with the old road.



With the help of Carbon Trade Watch, different generations (above and next page) learn how to film their struggle to share with outsiders, including communities near a BP refinery in Scotland. The carbon credits BP obtained from Plantar and other carbon projects would allow it to maintain high levels of fossil fuel pollution in Europe.





Most of the photographs and information in this section are courtesy of Tamra Gilbertson of Carbon Trade Watch and form part of an international exhibition developed by her on the Plantar case.

(Endnotes)

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- g Scientific Certifying Systems, op. cit.
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