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Tropical Forest Policies for the Global Climate

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Abstract
This paper summarizes the approach and findings of the NRP project 'Local Actors and Global Tree Cover Policies' (Kamminga and De Groot, 1995; Toornstra, Persoon and Youmbi, 1995; Kamminga and Van den Top, 1995; Kamminga, 1995). The aim of this project has been to identify the most effective and efficient options for global climate policies focusing on the tropical forest.

Tropical deforestation is a process with very complex and variable causes. In the project's conclusions, therefore, much care has been given to arrive at a coherent image of what really counts most in the myriad of factors, actors, policy levels and policy options.

1. TROPICAL FOREST PROTECTION: THE COST-EFFECTIVE NO-REGRET OPTION FOR THE GLOBAL CLIMATE

Rainforest is the climax vegetation of the humid tropics, representing a substantial part of the world's biomass, - in global climate terms, locked-up carbon dioxide that may contribute to either climate stabilization or deterioration. Due to its three-dimensional structure and stability, the rainforest is the global 'hotspot' of biodiversity and evolutionary processes.

Below this global level, the tropical forest provides livelihoods for millions of local people, added to which are the regulation of soil and water balances on a wider regional scale and contributions to national exports. In somewhat more detail, the global climate function of the tropical forest is that:

- forest conversion (e.g., burning) adds to carbon dioxide emissions
- forest regeneration and planting subtract from carbon dioxide emissions
- forest use for firewood, having a net emission of zero, substitutes for fossil fuels.

Roughly, the prevention of forest conversion decreases current carbon dioxide emissions by 1 to 2 Gt carbon per year for several decades, which is a fair share of the current emission excess of 3 Gt/year. Moreover, the upkeep of the forest as a firewood resource permanently prevents the emission of approximately 1 Gt/year from fossil fuels.

The prevention of carbon dioxide emissions through the forest route tends to be ten times less expensive (per tonne of carbon) than other, more technological means, and the protection of existing forests tends to much more efficient than planting new forest.

On top of that, tropical forest protection contributes to the support of the other (biodiversity, local, regional and national) forest functions.

In short, tropical forest protection is one of the most important options for climate policies, and a no-regret option as well.

2. THE STUDY'S APPROACH

Many types of studies are performed with respect to the tropical forest. Ecological and anthropological research focus on the forest itself and on its peoples. Forest management and land evaluation studies yield physical prescriptions for sustainable use. These studies do not provide the key insight necessary for forest protection policy design, however, which is *why* deforestation actually takes place.

Of the studies aiming to elucidate the social causality of deforestation, the *statistical approaches* are the predominant type; Brown and Pearce (1994) are a characteristic collection. These studies correlate data on forest cover and deforestation rates with data on population, GNP, national debt, roads density and so on. Overviewing these studies, they appear to have run into a dead-end street, due to both (internal) problems of inference and (external) problems of relevance.

- Internally, there are problems of data reliability and statistical method, such as the purely inductive data manipulation. Moreover, the structure of the multiple regression formulas does not reflect causal relationships. This aggravates the well-known causality problem of statistical findings; if, for instance, poverty appears to correlate with deforestation, is poverty then a cause or an effect of forest loss? Many authors of this type of studies recommend to shift towards more 'micro-economic' approaches, focusing on the choices of the relevant actors.
- Externally, the statistical studies suffer from a problem of relevance. If, for instance, a general correlation is established between forest cover and population density, that is, if it appears that it is difficult to have dense forests and dense population at the same time, what does that then mean for policy making? The crux of forest protection policies is to have people, economic growth *and* forest, or (borrowing from the energy field) to *de-link* population and GNP from the forest's fate. In other words, relevance lies not in the rather trivial general 'law', but in the reasons why countries deviate from it. The solution here is the same as for the internal problems: a research focus seeking for actual causal mechanisms rather than statistical correlations.

The approach adopted for the NRP project is of the actor-oriented, causal, 'micro-economic' type. More specifically, it has applied the 'Action-in-Context' framework, a methodology designed especially for the causal explanation of the social actors and factors driving environmental problems. A characteristic element is the so-called 'actors field', connecting actors to actors by way of the influences that one actor has on the options and motivations of an other actor. For instance, migrant farmers may be the 'primary actors' that directly influence the forest by their slash-and-burn agriculture. Large land-owners somewhere else may be important 'secondary actors', however, because they take away one option of the farmers, namely, to settle on these lands that they might well prefer over the forest. In such actors fields, farmers, loggers, regional politicians, government agencies and global actors may be discovered interplaying, willingly or unintended, towards forest destruction.

As usual in actor-oriented approaches, the research has used case studies as the

primary data source. Care has been taken, however to interconnect the case studies thoroughly with the international literature. The case study areas, in the Philippines, Ecuador and Cameroon, cover significantly different situations in the three tropical continents.

3. THE CASE STUDIES

In the preceding decades, the **Sierra Madre region in North Luzon, the Philippines**, has been deforested through an interactive mechanism of corporate loggers and local people. The loggers opened up the forest and migrant farmers settled along the logging roads, enhancing in their turn the cut-and-run behaviour of the loggers, who could not envisage their concessions to ever survive the people's intrusion. At the same time, the farmers were not inclined towards investing in the sustainablity of their land use, because they were settled illegaly and hence were uncertain of the long-term benefits to ever materialize.

In the background, provincial politicians played a key role in this process. Caught as they were in the patronage system of politics, they were obliged to buy votes rather than win them through a political programme, and becoming involved in the forest plunder was the only ready source of cash.

Under international and national pressure, this uni-directional deforestation machine has dissolved into a much more diffuse situation. Logging permits have been cancelled. New roads are put under EIA scrutiny. Nature protection funds have been released to save the last remaining primary forest. Migrant farmers can receive forms of tenure. Local communities may enter into licenced sustainable forestry of secondary forest stands. The future will depend on two major factors: the regulation of small-scale logging for the regional furniture industry and, even more pivotal, the transition of farming from space-consuming and unsustainable slash-and-burn to permanent agriculture. This transition, in turn, depends on subtle cost-benefit balances in which factors such as markets, tenure security, agricultural extension and forest protection play a role and through these, many secondary actors and factors up to the national and higher levels. Roughly, agricultural policies will be more decisive than forestry policies.

The **Southern forest region of Cameroon** is characterized by large-scale logging operations of European firms. The population pressure areas of Cameroon lying far away, the intrusion of migrant farmers is not (yet) prevalent, and the national meat demand being met by wildlife and cattle from elsewhere, no ranching pressure does (as yet) exist.

The timber operations are generally wasteful, e.g., skimming the forest for the few most valuable species but leaving much destruction in their wake. This practice is enhanced by small-scale licences issued to local elite members without sustainability restrictions. Moreover, reflecting the general moral crisis of Cameroonian society, many public officials are quite willing to sell the regulatory power of their public office for private benefit, thus depriving the logging companies of any pressure that could balance their natural inclination toward short-term profit maximisation. Yet, in spite of the forest destruction at the small scale and in spite of the undenyable decline in forest *quality* (including a dramatic poaching of wildlife along the logging roads), the logging has had little effect on the general tree cover.

If left to themselves, the logging companies tend to become locked in conflicts

with the local forest dwellers, over issues such as valuable tree species, wildlife poaching and employment opportunities. Practice shows, however, that both parties are responsive to mediating action of NGOs that try to work out new ways of partnership between forest, forest cultures and sustainable logging.

The World Bank and other global actors have had a hand in the adoption of a new and better national forestry law. The World Bank's style of operation has contributed, however, to the existing association of global forest policies with disrepect for national sovereignty.

The current discussions about a possible certification of 'sustainable timber' have caused an expectation of declining prices for timber logged in the way prevalent in Cameroon. This has triggered logging companies to intensify their operations.

The **North-Eastern Province in Ecuador**, part of the Amazone basin, offers a picture of deforestation in full action. The physical backbone of the process is formed by roads constructed by oil companies operating deep inside the forest. Settlement of migrant farmers along these axes is sponsored by the government, that perceives colonization as a low-cost solution to evade structural reform elsewhere. Settlers receive large plots (up to 50 ha), with tenure offered if it is deforested in sufficient time and degree (an example of a 'perverse incentive'). No attention has been paid until recently to the rights of indigenous forest peoples.

The leading idea of the farmers and their supporting agencies is that the farmer starts out with subsistence crops on the new clearing, then expands the clearing to plant cash crops, and then invests the profits in cattle, finally to graze on the fully deforested 50 hectares. Cattle keeping is instrumental to much forest loss in Latin America, because it is a very extensive type of land use and also because cattle can walk to its own market, thus enabling farmers to venture far from the roads. Yet, cattle is favoured for its profitability (often subsidized) and cultural reasons.

Recently, the rate of colonization has slowed down somewhat, because of environmental pressures on the oil companies, the struggle for the rights of indigenous peoples and other external reasons. No real political will to protect and manage the forest has been developed yet, however, and the future of the forest thus continues to depend on incidental events, external pressures and market shifts.

The case studies have been analyzed looking for similarities and focusing on general topics in the international literature, such as the roles of roads and tenure. Comparisons have also been made with other countries; one difference between Ecuador and Brazil, for instance is that in Brazil, the national elite is actively involved in the forest, thus creating a much larger pressure on farmers to move on, making way for large-scale ranchers.

4. SPECIAL TOPIC: A GLOBAL FOREST FUND

The Action-in-Context methodology enables causal insights, qualitative or quantitative, in the 'vertical' linkages between the local and global levels. Besides these linkages, the global level has its own, 'horizontal' system-level characteristics (e.g., global equity) that require independent attention. This section focuses on these, especially on the modalities of a possible Global Forest Fund.

A Global Forest Fund is a mechanism of international transfer of funds from all

nations to the nations where the forest can be protected most efficiently, which is the nations that still have it. Agencies such as the World Bank usually envisage this transfer to fund forest *projects*, *i.e.*, forest management promises and the degree to which countries comply to these. This idea lacks a clear-cut economic rationality and arouses reluctancies on the part of the receiving nations, who see it as impinging on their sovereignty. These dilemmas are overcome by financing what really counts, that is, not the input but the output, in other words, not the projects but the *forest itself*. Thus, the Global Fund pays out yearly disbursements for hectares of forest, easily monitorable by means of remote sensing, without there being anything to comply with.

Effective and efficient disbursements lie in the order of magnitude of $ 10 per hectare of forest per year on the average, variable for different forest regions. This implies a yearly throughput of the Fund of approximately $ 15 billion per year to cover the whole of the tropical forest. This is a full order of magnitude less than the transfers expected to be necessary for carbon dioxide abatement by non-forest means.

On the financing side of the Fund, several ethical/political logics apply to distribute the financing over the nations. An example mixture of these rules results in a financing obligation of the Netherlands of 0.1% of the country's GNP; it will be lower for most other nations.

5. CONCLUSIONS

The conclusions have yet to be refined in the final report of the project. The overall image of the main conclusions is as follows.

- The heart of the tropical forest matter is to *influence the choice of migrant farmers at the forest fringe to either intensify on the land they have, or to exhaust the land and then move on again*. There is a good scope for policies influencing both sides of the farmers' decision balance. Policy options for discouraging forest intrusion consist of, for instance, the hand-over of tenure to tribal people, the cancellation of state-induced transmigration and roads, physical protection of forest reserves, the protection of sustainable logging concessions and the creation of forest product markets. Policy options encouraging agricultural intensification are agro-ecological research and extension, input subsidies, credit schemes, tenure regulation, market creation and stabilization, and so on.

- The hot policy issue of roads construction can be seen in the same light. *Through-forest roads* encourage forest intrusion, but roads that connect farmers to markets can encourage agricultural intensification, hence work to protect the forest.

- National policies and markets are much more influential than the global system level (e.g., the international timber trade). Consequently, global policies should primarily aim to strengthen *national* capabilities and motivations to move to the types of policies mentioned above.

- One option for the strengthening of national motivations is a *Global Forest Fund*, supporting the tropical forest through global financial transfer. If designed properly, such a fund can be economically consistent, politically acceptable, and effective.

Some more detailed conclusions, partly following from the above and partly of a more additional nature, are as follows.

- *On timber certification*: Since only a small percentage of the trees cut in the tropical forest are traded internationally, the international timber trade is relatively un-important for the future of the forest. Hence, a 'green label' for sustainable timber will be relatively un-important. Its initial effect up till now has been negative.
- *On commercial logging*: A better approach of the logging companies is to help them to find new ways of partnership with the forest and the forest peoples, combined with improved on-the-ground surveillance.
- *On forestry-sector policies*: Sectoral forestry policies tend to be less influential on the forest than policies emanating from other sectors.
- *On population policies*: Working on a very long time scale, population control policies are unrelated to saving the tropical forest.
- *On general land and agricultural policies*: National policies for land reform and general agricultural intensification will decrease the number of people squeezed out of rural areas. These policies therefore have a general effect of alleviating the pressure on the forest. The far majority of the rural migrants moves to the cities, however, not to the forest. This 'modal split' between cities and forest is more directly decisive over the forest's fate.
- *On global forest funding*: A proper design of a Global Forest Fund moves away from the current 'banking paradigm' that rewards compliance with forest protection promises. Instead, the financing should be related to actually existing forest. This avoids sovereignty problems, compliance problems and measurement problems; disbursements simply follow remote-sensing data.

Some of these conclusions contradict a number of well-kown environmental slogans. The relative un-importance of the timber trade compared to the Forest Fund implies that for the tropical forest, fair aid (the Fund) is better than fair trade. For the same reason, the slogan of "A better environment begins with yourself" does not hold true for the forest (as is does in most other cases). Green labels and consumer guilt feelings cut little ice. The funds and energies of consumers are better spent on NGOs involved in on-the-spot forest protection and on governments to take their global responsibilities.

6. REFERENCES

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