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What would a Global Forest Convention mean for tropical forests and for timber consumers?

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Abstract

A global forest convention has been advocated for about 15 years, but progress is slow and positions of advocates and opponents appear entrenched. We review several case studies and offer new empirical evidence relating to causes of and remedies for deforestation. We find no evidence to suggest that a forest convention will be effective in halting deforestation. Our data indicate that development assistance may be most effective approach to save forests in developing countries. It appears that "money speaks louder than words". We conclude that a global forest convention will be ineffective unless accompanied by substantial and well-directed development assistance.

Introduction

A global forest convention was first proposed in 1990, in the Sào Paulo Declaration of the Intergovernmental Panel on Climate Change (IPCC), and in a review of the Tropical Forests Action Plan. These proposals were quickly followed by calls by the President G. H.W. Bush (1990) and from the G7 (the Group of Seven, comprising the heads of state of the seven major industrial democracies) for a "global forest convention or agreement ... to curb deforestation, protect biodiversity, stimulate positive forestry actions and address threats to the world's forests". It became a North-South issue, with many industrialized countries favoring a binding agreement while many developing countries and non-government organizations (NGOs) protested the possible infringement of sovereign rights. At the Earth Summit in Rio de Janeiro in 1992, a binding agreement could not be reached, and the compromise was a "Non-binding authoritative statement on forest principles". Negotiations continued fruitlessly under the auspices of the Intergovernmental Panel on Forests (IPF) and its successor the Intergovernmental Forum on Forests (IFF). More recently, the United Nations Forum on Forests (UNFF) was established by the UN Economic and Social Council (2000) with the responsibility to recommend, by the year 2005, "the parameters of a mandate for developing a legal framework on all types of forests". Discussions have continued, but

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progress toward a conclusion has been imperceptible. The global forest convention appears to be a solution looking for a problem.

So what is the problem? It is clear that the world continues to lose forests, with an average of 9 million hectares per year deforested during 1990-2000, and with deforestation rates in excess of 5% per year in Haiti and Burundi (FAO 2001). Why does the world continue to lose forest, and how would a global convention help? Advocates of a convention argue that it would ensure that all of the world's forests are sustainably managed for their many goods and services, provide the basis for a common understanding of sustainable forest management concepts, and establish the legal framework for monitoring and compliance (e.g., Roberts 2003). Critics of a convention argue that the proposed convention addresses the wrong issues, and does not provide an adequate means to regulate the private sector (e.g., Jeanrenaud *et al* 1997). Both proponents and opponents share some common concerns, namely the underlying issues of deforestation, the loss of biodiversity and habitat, and the loss of wilderness. For some, timber harvesting is seen as the primary cause of deforestation, and the central issue of the convention. This is wrong; timber harvesting is not synonymous with forest loss. While it is true that timber harvesting may reduce wilderness values, well-managed timber harvests need not conflict with conservation and recreation.

Forest loss through conversion to other land uses is a major concern, as it does cause habitat and biodiversity loss. However, timber harvesting is not the primary cause of forest loss, and need not cause forest loss at all. The timber industry has been a favorite target of NGOs for many years, but there has recently been some recognition that other forces may be more destructive of forests. Conservation International has promoted a strategy of a single harvest followed by preservation (Rice *et al* 1998), and the World Wildlife Fund have recently warned that land clearing, not production forestry, was the greatest threat to biodiversity in the Australian state of Tasmania (WWF 2004).

Empirical Evidence and Case studies

There are many ways to examine the interaction of deforestation, timber harvesting and socio-economic issues, and empirical analyses, case studies, and logical reasoning can all contribute to our understanding. We will explore all of these, and begin with an empirical analysis of the latest global assessment of forests (FAO 2001).The Forest Resource Assessment 2000 (FRA2000, conducted by FAO, the Food and Agriculture Organization of the United Nations), collated national data on forest area, deforestation and some socio-economic trends, and offers some interesting insights into deforestation patterns in some 200 countries during 1990-2000. A simple correlation study of the FRA2000 data reveals only two significant correlations with deforestation rate: GNP/capita and rural population (%), both of which are highly significant ($P<0.01$). Population density, population growth rate, the growth rate of the economy (GDP), national debt and inflation rate are not significantly correlated with national deforestation (when analyzed at the global scale). Countries with large rural populations or low household incomes (GNP/capita) tend to have high deforestation rates. A line fitted to the GNP data suggests that countries with less than US$4400 GNP/capita tend to deforest; those with more than US$4400 GNP/capita tend to reforest (Brazil, Chile and Malaysia are just above this threshold; Trinidad is below). Similarly, a line fitted to the rural population data suggests that deforestation tends to happen in countries where the rural population is more than 35% of the total population; it is likely that this reflects the greater employment opportunities in urban areas than in subsistence agriculture.

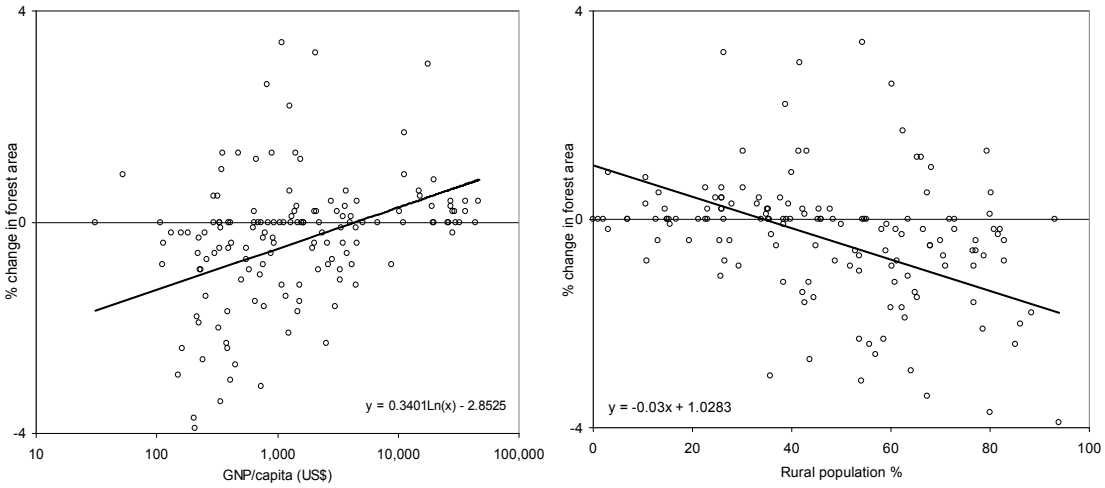

Figure 1. Annual change in forest area (%) versus GNP per capita (US$, left) and rural population (%). Drawn from FRA2000 data (FAO 2001).

This empirical evidence of a link between poverty and deforestation is supported by other studies. For instance, Arnold (2001) offered a comprehensive review of the links between poverty, deforestation and biodiversity loss. It is likely that deforestation will not be arrested unless poverty is also addressed, something not proposed for the convention. Increasing the average GNP per capita of all forested nations to US$4400 will require more than a convention; it will require a bold commitment akin to that proposed by Secretary of State General George Marshall (1947) to help Europe recover after World War II (in which the USA pledged 2-3% of its GDP in economic aid over 5 years).

Sobral Filho (2001) offered a case study to illustrate the influence of alternative employment on deforestation. He drew a comparison between deforestation rates in Mato Grosso and Amazonas, both of which are states of Brazil with substantial areas of tropical forest (44% and 90% respectively). Mato Grosso is losing forest at 660,000 ha per year (despite timber earnings of only US$200 million: at $300/ha, an indication that timber earnings are unlikely to be the driver for this deforestation), whereas Amazonas has relatively little deforestation. The forests in Amazonas remain, in part, because the state capital Manaus was granted tax-free status by Brazil's federal government in 1968, and this initiative stimulated the development of electronics industries. The tax-free industry, which receives incentives and subsidies of US$3 billion annually, is the only development engine in the state. It is the major employer of the local people, who flocked to Manaus, now home to 60% of the state's two million inhabitants. The tax-free status was not granted to conserve forest; it was to establish a presence in northern regions of Brazil for security reasons, but the result has been that the forest has been maintained: people prefer to work for wages in a factory, than to eke out a living through subsistence farming in tropical forests. Sadly, Brazil's 1988 constitution states that the tax-free status of Manaus will end in 2007, and it will be interesting to observe the fate of the Amazonas forest at that time. However, the Manaus case study provides compelling evidence that the provision of alternative employment opportunities can be an effective way to retain forest. Similarly urbanization, rising living standards and out-migration have taken pressure off forests in places like Puerto Rico and Costa Rica. Although high rural populations are correlated with deforestation we do not want to encourage even more movement into the vast slums of the developing world (see Davis 2004 for an eloquent commentary of these urban problems). Rather we advocate policies that stabilize rural populations, promote sustainable land uses, and foster alternative employment opportunities.

There appears to be a third major factor at work in facilitating deforestation, namely corruption. Transparency International compile annual statistics on corruption in 133 countries, and there is a significant correlation between deforestation and their corruption perception index (an index of corruption, with 0=corrupt, 10=honest; Transparency International 2003). These data show that the rate of deforestation tends to increase with corruption (with Brazil again on the threshold between deforestation and afforestation). Many case studies support the contention that deforestation and corruption go hand-in-hand (e.g., Laurance *et al* 2001). For example, three-fourths of Indonesia's timber trade is illegal (Speth 2004), often quite openly so (Jepson *et al* 2001).

Figure 2. Corruption and the change of forest area.

While there are instances where deforestation is a direct result of a deliberate government policy, it is more common for deforestation to occur as an unintended side-effect of other policies (e.g., to stimulate agricultural production), or to occur despite government policy, because of poverty, a lack of alternatives, and because of corruption. A forest instrument will not change these issues, which requires more concerted and practical action. Transparency International (2003) identified political parties, the courts and the police as the three areas most in need of reform in countries beset with corruption. They also called for greater transparency in public contracting (especially in dealings with the oil industry). Peter Eigen, chairman of TI, called on rich countries to provide practical support to developing country governments that demonstrate the political will to curb corruption.

The Annual Review and Assessment of the World Timber Situation (ITTO 2003) offers more insights into the timber industry. These data reveal that four nations play a pivotal role in the tropical timber trade, and reveal that a forest convention dealing with production forests in the tropics will be inconsequential unless it gains the support of Indonesia and Malaysia (major exporters), and of China and Japan (major importer). The data illustrated in Figure 3 relate only to primary wood products (logs, sawnwood, veneer, plywood); there is also a large trade in secondary processed wood products (Table 1).

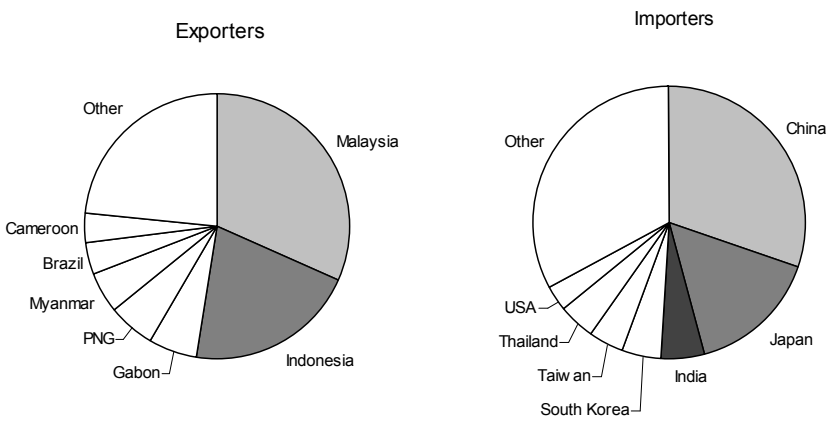

Figure 3. Major exporters (left) and importers (right) of tropical timber. Drawn from data in ITTO (2003)

Table 1. The value of international trade in secondary processed wood products from tropical forests (ITTO 2003).

Importing country	Exporting country (Value in US$million)			
	China	Indonesia	Malaysia	ITTO Producers
USA	3,571	718	504	2,597
European Union	947	982	306	2,052
Japan	937	356	244	980
ITTO Consumers	6,919	2,222	1,207	6,176

Despite the economic importance of tropical forestry (Table 1), timber production is in many cases, less profitable than agricultural alternatives. For instance Sobral Filho (2001) reports that in Brazil, the annual per hectare value of soy bean production exceeds the value timber production ten-fold, so it is no surprise that forests are cleared for agricultural production. Mato Grosso, the second largest state in the Brazilian Amazon, has become the largest producer of soybeans in Brazil, with 3 million hectares under this crop. It is also the second largest producer of rice and cotton (Sobral Filho 2001). The Federal Agriculture Research Agency estimates that 40 million additional hectares of forested land are suitable for these land uses and the state supports the conversion of this forest to agriculture.

Circumstances for Sustainable Forestry

So far, we have examined situations that conspire to deforest. It is instructive to examine the other side of the coin, and to consider the circumstances which foster sustainable forestry, especially continuous cover forestry which may be especially compatible with biodiversity conservation and is favored by many NGOs. In an unregulated environment, continuous cover forestry tends to occur only where land use pressure is modest and land rights are recognized (Table 2).

Table 2. Security, competition and forest use

Competition for land	Security (time horizon & tenure)	
	Weak	Strong
Low	Deforest: abandon	Continuous cover forestry
High	Deforest: mixed cropping	Deforest: monoculture

In Table 2, "security" implies tenure (freehold, leasehold, concession), the formal time horizon (length of lease or concession) and economic time horizon (which may depend on the discount rate and whether returns are periodic or annual). Competition for land relates to the pressure from competing land uses; these may be low in remote areas (e.g., parts of the Amazon and Kalimantan that are far from roads and rivers), but are high where population density is high (e.g., Bangladesh), or where the land is accessible and arable (e.g., Mato Grosso, and the Bolivian State of Santa Cruz; Kaimowitz *et al* 2002). We could also add another axis, namely scale of operation, including both the area involved, and the capital resources available to the venture. As scale increases, the amount and the rate of deforestation tend to increase.

Weak security encourages deforestation because the present value of a harvest is greater than the discounted value of on-going returns from the forest. In addition, security can sometimes be strengthened by clearing (e.g., ability to claim land ownership in parts of the Brazil Amazon). In other situations, security can be increased by non-timber products that improve the flow of benefits from the forest. For example, forests in Germany (and elsewhere in Europe) tend to be managed more conservatively and with longer rotations, because the stream of annual revenues from hunting rights often exceeds the discounted value of the timber harvests. When competition for land is high, landholders (if motivated by profit) tend to strive for the highest-value land use, and monocultures (agricultural, *Eucalyptus, Pinus*, etc.) are usually more profitable than continuous cover forestry.

The way forward

How can we favor continuous cover forestry (CCF)? A focus on the "triple bottom line" (social, ecological and economic performance, rather than the financial cash flow position) would certainly help to favor CCF. The creation of jobs in non-agricultural sectors is a proven way to reduce land use pressure. Boosting agricultural production is a two-edged sword; in subsistence communities it may reduce the demand for land, but in cash-cropping communities, it may make it profitable to farm even more marginal land. Dumping of subsidized agricultural surpluses destabilizes local production systems, destroying employment opportunities and stimulating the agricultural expansion for cash cropping (note that the US Farm Bill provides a subsidy of $180 billion annually to US farmers). Another reliable approach is to make CCF more profitable, so that it competes more favorably with monocultures; this can be achieved by paying landholders for environmental services offered by forests (biodiversity and carbon credits), and charging plantations (agricultural as well as forest plantations) the full costs of externalities. A key part of this solution is to minimize the transaction costs; in Australia there is much bureaucracy involved in forest regulation, but little in agriculture; this incurs a high transaction cost for CCF. Sobral Filho (2001) observed that in Mato Grosso, credit for soybean projects could be secured within 2 months, but that sustainable forestry projects typically took 18 months to secure government loans.

The situation of socio-economic disarray in some developing countries is not so different to that of Europe after World War II. At that time, General George Marshall recognized the gravity of the situation and initiated a bold plan that was pivotal in Europe's development. The peace, prosperity and unity (and stable forest area) today among the nations that benefited from the Marshall Plan are testimony to the wisdom of the plan. Apart from the word "Europe", much of Marshall's (1947) speech remains relevant today in the context of developing countries, so we reproduce a large excerpt. Marshall (1947) noted that "*... people of this country are distant from the troubled areas of the earth and it is hard for them to comprehend the plight … visible destruction was probably less serious than the dislocation of the entire fabric of European economy … So the governments are forced to use their foreign money and credits to procure these necessities abroad. This process exhausts funds which are urgently needed for reconstruction. … Europe's requirements … are so much greater than her present ability to pay that she must have substantial additional help, or face economic, social, and political deterioration of a very grave character. The remedy lies in breaking the vicious circle and restoring the confidence of the European people in the economic future of their own countries and of Europe as a whole. The manufacturer and the farmer throughout wide areas must be able and willing to exchange their products for currencies the continuing value of which is not open to question. Aside from the demoralizing effect on the world at large and the possibilities of disturbances arising as a result of the desperation of the people concerned, the consequences to the economy of the United States should be apparent to all. It is logical that the United States should do whatever it is able to do to assist in the return of normal*

economic health in the world, without which there can be no political stability and no assured peace. Our policy is directed not against any country or doctrine but against hunger, poverty, desperation, and chaos. Its purpose should be the revival of working economy in the world so as to permit the emergence of political and social conditions in which free institutions can exist. … to alleviate the situation and help start the European world on its way to recovery, there must be some agreement among the countries of Europe as to the requirements of the situation and the part those countries themselves will take in order to give proper effect to whatever action might be undertaken by this Government. It would be neither fitting nor efficacious for this Government to undertake to draw up unilaterally a program designed to place Europe on its feet economically. This is the business of the Europeans. The initiative, I think, must come from Europe…". With the benefit of hindsight, most observers would agree that the Marshall plan was remarkably successful (for both Europe and the USA alike), but some key reasons for this success are often overlooked. Marshall quite deliberately created the opportunity, incentive and freedom for neighboring countries to work together and become responsible for their own future. It seems that this lesson was not adopted in the Tropical Forestry Action Plans of the 1980s (Winterbottom 1990), and has not always been evident in development assistance programs.

Our argument, that "money speaks louder than words", has some empirical support. The FRA200 deforestation rates in tropical countries are significantly correlated with the number of key environmental treaties signed (Figure 4; Vanclay 2004). The treaties examined were eight of the ten treaties identified by Ruis (2001) as key forest-related treaties (Convention on Wetlands of International Importance Especially as Waterfowl Habitat, 1971; Convention on the International Trade in Endangered Species of Wild Flora and Fauna, 1973; Montreal Protocol on Substances that Deplete the Ozone Layer, 1987; Convention on Biological Diversity, 1992; United Nations Framework Convention on Climate Change, 1992; International Tropical Timber Agreement, 1994; United Nations Convention to Combat Desertification in those Countries experiencing Serious Drought and/or Desertification, particularly in Africa, 1994; Kyoto Protocol to the United Nations Framework Convention on Climate Change, 1998). One explanation for this correlation is that countries which have become party to these treaties are those with the greatest problems, and that deforestation rates under these treaties are less than what would have prevailed otherwise. However, it seems more likely that many countries are either not taking their environmental commitments seriously, or do not have the resources needed to tackle the problem. There is also some evidence (P=0.10) that deforestation decreases with increasing development assistance (US$/capita, as tabulated in CIA 2004), even though much of this assistance may be outside the forestry and environmental sectors (Table 4). These data suggest that aid does help, and treaties do not help, to combat deforestation. Of course, money alone is not enough; it needs to be targeted appropriately, towards nations that demonstrate the will, towards where it can most help the poor, and in ways that give an incentive for all individuals to improve their own situation (Easterly 2001).

Clearly, the investment required to reverse deforestation would be considerable. One way to amass the funding needed to support such a development effort, could be through a currency transactions tax, long advocated by Nobel-prize winner and Yale University economist James Tobin (1978) for the stabilizing effect such a tax would have on currency markets. In addition to its calming effect on financial markets, a Tobin tax would raise over US$100 billion per year, enough to provide food security, health and education for the world's poor, as well as finance for environmental services.

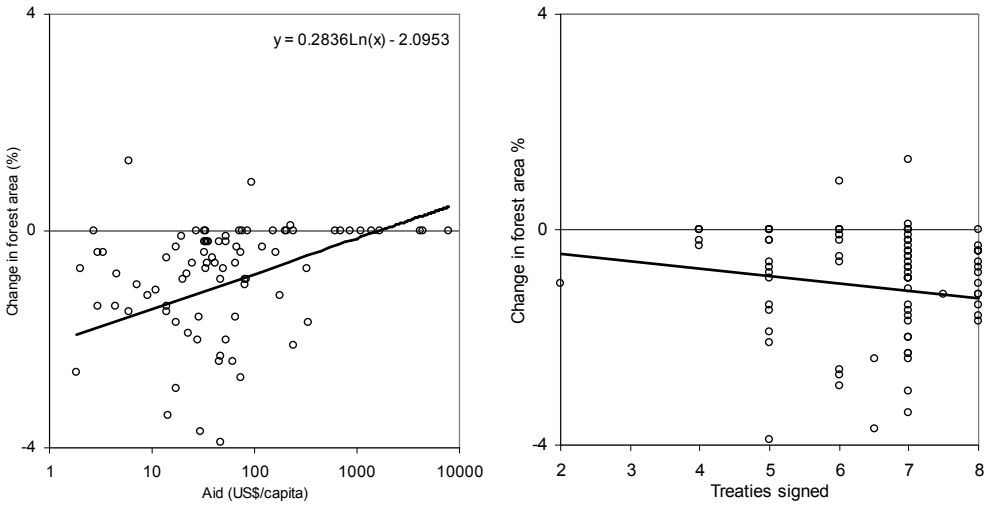

Figure 4. Change in forest area (%/year during 1990-2000) in 106 tropical countries versus development assistance (US$/capita/yr, left) and number of environmental treaties signed (right; score 1.0 for party to, and 0.5 for signing but not ratifying, each of 8 environmental treaties).

Conclusion

What would a global forest convention do for tropical forests, in the light of these underlying problems? It appears that a convention as currently proposed would be ineffective, unless underpinned by a strong commitment, and substantial funding, to foster socio-economic development of developing countries with forest resources. Sadly, this appears unlikely (Speth 2004:p.110).

What would a "Marshall Plan" for forests mean for the USA and other consumers of tropical timbers? A serious commitment to assist economic and social development in forested countries could do much to maintain forest cover. It is possible that such an initiative could increase the cost and constrain the supply of tropical timber, but it would guarantee the continuity of supply, so that our children will also enjoy tropical timber and forests (and orangutans, gorillas and other tropical forest dependent fauna). Experience with the original Marshall Plan suggests that such an initiative may also bring many other benefits, to both donor and recipient communities.

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