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A prescription for slowing deforestation in Amazonia

[HOW BRAZIL COULD SLOW DEFORESTATION IN AMAZONIA]

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Deforestation is rapidly converting Brazil's Amazon forest to low-value and unproductive cattle pasture (Fearnside, 1987a, 1986a). Therefore, any plan to redirect development in Amazonia towards a wiser path must begin with effective measures to slow deforestation, otherwise the option to use the forest in a sustainable way will be irrevocably lost. The most promising means of obtaining sustainable production in Amazonia over large areas requires maintenance of the forest cover intact, for example, to allow use of pharmaceutical and other products in extractive reserves (Allegretti, nd; Myers, 1983, 1986; Schwartzman and Allegretti, 1987). Slowing deforestation is only a means of buying time: much better use must be made of the time bought. Not only must much more research be done on the technologies of sustained production, but also on the economic mechanisms needed to ensure that sustainable systems are adopted rather than the present nonsustainable ones (Fearnside, nd-a).

Slowing destruction of forest requires more than simply outlawing deforestation--the present totally ineffective approach (*i.e.*, Decree Law 7511 of 7 July 1986). Measures must be taken to cut the motives for deforestation. Some of the needed measures are expensive, such as reducing the flow of migrants to Amazonia by offering employment in migrant source areas like the state of Paraná--both through agrarian reform and creation of urban industrial jobs (Fearnside, 1987a,b). Other measures require long time periods, such as changing attitudes through education and extension programs. Many essential measures can have immediate impact, however, at no cost or even at considerable savings to the government. Here are some examples:

1.) DISCOURAGE LAND SPECULATION

Land speculation is one of the principal forces driving deforestation in Brazilian Amazonia today (Bunker, 1980; Fearnside, 1979a, 1987a). Removing the forest and replacing it with cattle pasture (the cheapest land use to install) is the means of gaining legal documentation to a tract of land and, both before and after obtaining title, to keep squatters or ranchers from invading the area. Land speculation has been highly profitable, even though the production of beef is often negligible or zero (Fearnside, 1980; Hecht, 1985). This profitability must be removed by applying heavy taxes on capital gains from land sales. Such heavy taxes are fully justified since the rapid increase in land values is not due to the efforts of the landholders but to the expanding road network that is paid for by taxpayers throughout Brazil. Whenever an Amazonian road is built or improved, the value of land nearby immediately jumps in value by hundreds if not thousands of percent.

2.) DISALLOW PASTURE AS AN IMPROVEMENT

Land tenure in Amazonia is established by deforestation and

planting pasture, which is recognized by the Ministry of Agrarian Reform and Development (MIRAD) as an "improvement" (benfeitoria).

Pasture, in reality, is not an improvement but a form of destruction in Amazonia. The soil becomes compacted and depleted of available phosphorus within about a decade. The pasture is usually then abandoned to second growth with little or no economic value. The production of edible grass declines sharply over the life of the pasture, until the cost of controlling inedible weeds exceeds any economic return from cattle fed by the pasture (Fearnside, 1979b). The classification of pasture as an "improvement" must be abolished if deforestation is to be controlled. Otherwise, people claiming land will always be able to find ways around anti-deforestation legislation so that these people can obtain the benefits of land ownership, especially the immediate jump in land value that accompanies the granting of legal title.

3.) STOP FINANCIAL INCENTIVES

Deforestation is speeded by special programs of government subsidies such as the ranching projects and sawmills approved by the Superintendency for Development of Amazonia (SUDAM) and the Superintendency for the Manaus Free Trade Zone (SUFRAMA) and the agricultural and pig-iron projects approved by the Grande Caraj's Program (PGC) (Browder, 1988; Fearnside, 1986b; Kohlhepp, 1980). Incentives include exemption from income tax, arrangements allowing investment in Amazonian projects of half the value of taxes owed on profits from undertakings elsewhere in the country, and loans granted at interest rates lower than Brazilian inflation. Despite a policy change in SUDAM in 1979 barring "new" incentives in the "dense forest" portion of the Legal Amazon, new incentives are granted in "transition forest" areas and "old" incentives continue throughout the region (Fearnside, 1985). These incentives should be abolished immediately, at considerable savings to the government. Brazil's economic difficulties have reduced the flow of funds to relatively low levels in 1988, but no policy decision has been taken that would prevent the large financial flows to incentives to resume if the economy recovers. Indeed, Brazil's president José Sarney has declared his intention of maintaining the incentives programs indefinitely (Isto É, 15 July 1987). Projects receiving incentives have already devastated wide areas for little economic return. The profits made by the beneficiaries do not represent productive contributions to the economy, but rather speculative gains and the (often illicit) use of the incentive monies themselves (Mahar, 1979). The incentives should be halted summarily, but if the beneficiaries are judged to have "acquired rights" (direitos adequeridos) to the already granted incentives, then any future installments should be required to be used exclusively for restoring tree cover to already deforested areas.

4.) RESTRICT ROAD BUILDING

Highway construction is one of the key elements in the deforestation process, and is one of the most sensitive pressure points where government action can slow forest loss (Fearnside, 1979a). By not building highways the government could also save substantial sums of money. Highways speed clearing by fueling land speculation, provoking colonist turnover, increasing the felling rates of individual roadside residents and facilitating the entry of new migrants.

Roadbuilding and improvement projects must be restricted to areas where the land is good for agriculture. Otherwise a process of occupation of infertile lands occurs inevitably-- virtually completely outside of the control of the government. A zoning system to identify agriculturally usable lands is necessary, and must be based on technical criteria related to soil quality rather than political or geopolitical factors. The best example is the BR-429 Highway in Rondônia, which would open to settlement the highly infertile valley of the Guaporé River. The road already exists as a seasonally-passable track, but pressure from local politicians is strong to pave it. Preliminary zoning maps of Rondônia classified the strip along the road as recommended for agricultural use, even though land quality maps of the area made by the Brazilian Enterprise for Agricultural and Cattle Ranching Research (EMBRAPA) show clearly the complete absence of good soil (Brazil, Governo de Rondônia, SEPLAN, 1987; Brazil, EMBRAPA/SNLCS, 1982; Fearnside, 1986c). Another example is the Calha Norte Project, which calls for roads and settlement areas along Brazil's northern borders. None of the area is indicated as fertile on soil quality maps produced from side-looking airborne radar (SLAR) images of the Radar in Amazonia-Brazil (RADAMBRASIL) Project (Brazil, Projeto RADAMBRASIL, 1974-1977: Vols. 6,8,9,11,14).

In cases where soil is judged adequate for agriculture, road construction must not be allowed before completing the demarcation of Amerindian reserves, extractive reserves, etc. This is not happening in the case of the BR-364 Highway being paved in 1988 to link Rio Branco (Acre) with Porto Velho (Rondônia)--reserve demarcation has been blocked by the National Security Council under the Calha Norte Project, while road paving goes ahead at full speed. When reserve demarcation is delayed, the option to have the areas used as reserves is quickly lost because the areas are soon invaded by gold miners, loggers and squatters. The situation in Acre is a repetition of what occurred in Rondônia under the POLONOROESTE program, where road improvement was completed with many reserves still undemarcated (Fearnside and Ferreira, 1984). Simultaneous roadbuilding and reserve demarcation have been proved not to work by the example of Rondônia--the demarcation must be completed before road work is begun.

5.) STRENGTHEN ENVIRONMENTAL IMPACT EVALUATION PROCEDURES

The Report on Impact on the Environment (RIMA) became a

requirement in Brazil in January 1986 (CONAMA Resolution No. 001 of 23 January 1986). As deficient as the legislation and its implementation may be, it is what we have and it must be improved and made to work. More effective means are needed to ensure that the interested parties do not influence the conclusions of the reports: the present system of reports written by consulting firms that are in the pay of the proponents of the projects already does not work.

The RIMA must be completed, publically debated and duly approved before any steps are taken that render the project in question an irreversible fait accompli. This has not occurred in several major projects initiated after the RIMA became a requirement. Best known is the North-South Railway, for which bids were solicited from contractors within a few days of the initial announcement of the project, and before any environmental evaluation had even begun (Veja, 20 May 1987). The fiscal incentives for pig-iron production in the Grande Carajás area were also approved and the smelters built after the RIMA became a requirement--likewise with no environmental study (Fearnside, 1988).

The RIMA must also be interpreted to include guarantees concerning a wide range of collateral projects that become viable because of the existence of a given major project. For example, the railway and mine installations implanted for the Carajás Iron Project allowed a very valuable mineral resource to be tapped with relatively little direct environmental perturbation. However, the indirect impacts of the project are enormous (Fearnside, 1986d). The Grande Carajás Program that was justified by the existence of the railway includes an agricultural program covering the 900,000 km² program zone, and the highly destructive charcoal scheme for pig-iron production. Environmental considerations must include all related developments--not only the initial public works such as the railway.

The most immediate case on the horizon where linkage must be established in considering environmental impacts is the series of six dams planned for the Xingu River Basin. The first dam (Kararaô) is much less damaging than the other five (Babaquara, Iriri, Ipixuna, Kokraimoro and Jarina). Although the Kararaô Dam will flood some indigenous land, the other dams will be disastrous for a long list of tribes. One of the dams (Jarina) would even flood part of the Xingu Indigenous Park (CIMI et al., 1986). The first dam will produce a large amount of electricity from a relatively small reservoir, but constructing the dam and its associated transmission lines is likely to make the other more harmful dams viable. The water flow regulation from upstream dams, as well as absorption of sediment load, become progressively more attractive arguments for building more dams once the first dam is built. Any RIMA granting approval for the first dam must therefore be conditional on an irrevocable commitment not to build the other dams. ELETRONORTE at present asserts that only the

first dam is under discussion, and that decisions on the other dams will be reached later. This position is very different from agreeing not to build the dam.

An example of this critical difference is provided by the filling of the notorious Balbina reservoir near Manaus. In 1987 ELETRONORTE agreed to fill the reservoir only to the 46 m level, after which the water quality would be allowed to stabilize before taking any decision with respect to filling the reservoir to the full 50 m level. The amount of water in the Uatumã River was insufficient to fill the reservoir even to the 46 m level before the 1988 dry season began. As the water level approached the 46 m level, ELETRONORTE statements changed to say that the filling to the 50 m level would only wait one year (until the 1988/1989 rainy season), effectively meaning that the "postponed" decision had no effect whatsoever and the reservoir is being filled to the 50 m level as fast as available water allows. The reservoir reached the 46 m level on 1 August 1988, and continued to fill toward the 50 m level (thereby violating the License for Beginning Operation that ELETRONORTE had obtained from the Development, Research and Technology Center of the State of Amazonas - CODEAMA). The example of Balbina's "postponed" filling makes clear the need for an effective mechanism to obtain firm commitments on not taking damaging future actions, rather than simply deferring a decision.

The environmental impact assessment procedure as a whole must be greatly strengthened to assure that disastrous projects are avoided throughout the region. At present the precedents that are being set are extremely dangerous because they make real evaluations of future projects more difficult.

CONCLUSIONS

Deforestation must be slowed drastically and quickly if options for sustainable uses are not to be lost. Cheap and effective measures include: 1.) taxing land speculation, 2) disallowing pasture as an "improvement" for establishing land tenure, 3) halting fiscal incentives and other subsidies, 4) reducing and strictly controlling road building, and 5) strengthening the procedures for the Reports on Impact on the Environment (RIMA) for major development projects.

FIGURE 1. Major development projects in Brazilian Amazonia.



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