CLIMATE ENVIRONMENT IN INTERNATIONAL SECURITY : THE CASE OF DEFORESTATION IN THE BRAZILIAN AMAZON

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ABSTRACT. Deforestation in Brazilian Amazonia can affect the security of other countries if it contributes to climatic changes such as those expected in a world warmed by the greenhouse effect. Conversion of Brazil's Legal Amazon to cattle pasture, a transformation now rapidly proceeding, would add significantly to atmospheric CO\textsubscript{2} and trace gas releases. It would also reduce rainfall in the region and in neighboring areas through reduction of evapotranspiration. Foreign countries can help slow deforestation by refraining from activities that speed the clearing, such as financing highways and similar developments, direct investments in enterprises that clear forest, importation of products produced unsustainably, and funding unproductive public works that fuel the inflation that drives land speculation and consequent deforestation. Positive contributions from foreign countries could include research on such subjects as the impacts of deforestation, sustainable uses of standing forest, and economic mechanisms that would encourage sustainable management and discourage competing unsustainable uses. Foreign sources, including multilateral development banks, can play an important role in financing alternative means of support for the population now migrating to Amazonia, including industrial development to create urban employment in the migrant source areas.

1. INTRODUCTION

General agreement exists that climate change affects international security. The countries affected by climatic change are often not the same ones where the processes that provoke the changes are located. Means must be developed to channel international efforts such that the roots of unfavorable climate changes are effectively attacked. This must be done without offending the sovereignty of the countries involved, otherwise the measures will be ineffective and will create additional strains on the international security of all concerned.

A case in point is the link between deforestation in tropical areas, especially Amazonia, and the greenhouse effect provoked by carbon dioxide, methane, nitrous oxide and other products of forest combustion.
and decomposition. Many of the most immediate climatic impacts are in polar and temperate regions. I have calculated that converting Brazil's 5 x 10^7 km^2 "Legal Amazon" region from its original vegetation to cattle pasture would release about 50 gigatons (G tons) of carbon; were this to occur over the next 50 years (a conservative assumption), one G ton would be released per year, or about 20% of the present global total release from fossil fuels and all other sources (Fearnside, 1985a, 1987a). This has been disputed by Lugo and Brown (1986) and defended by me (Fearnside, 1986a). Calculations based on the very low estimates for forest biomass made by Brown and Lugo (1984) result in smaller contributions from tropical deforestation (e.g., Detwiller and Hall, 1988), but examination of available data supports substantially higher values for average biomass in Amazonian forests (see Fearnside, 1987a). While far from the entire problem, the potential contribution of Brazil on the order of 20% is very substantial over the coming decades when forest is being felled. The measures that would be needed to restrain the trend of forest conversion to pasture in Brazil have a high financial and political cost. Many of these measures will have to be taken by the Brazilian government itself, but international sources can contribute significantly to give these changes the speed and effectiveness they merit.

2. INTERNATIONAL RESPONSIBILITY FOR PREVENTING DEFORESTATION

A portion of the deforestation now occurring in Brazil is the direct or indirect result of actions by other countries. These activities constitute an appropriate starting place to focus international efforts aimed at slowing or halting forest loss. An additional set of international activities should be encouraged in order to provide financial and scientific support for measures to reduce forest clearing.

Activities that should not be continued by foreign countries, especially those in the industrialized portion of the Northern Hemisphere, include the financing of destruction through multilateral and private banks. Loans from such sources as the World Bank and the Interamerican Development Bank often fund the key component within the system of forces that drives deforestation: construction of highways into rainforest areas (Fearnside, 1987b). This is precisely the factor to which deforestation appears to be most sensitive, since the presence of roads sets in motion a cycle of immigration, land speculation and population turnover that leads to clearing and is beyond the control of government authorities (Fearnside, 1984, 1986b, 1987c).

A second set of activities from abroad that contributes to deforestation is direct investments by foreign firms. Volkswagen's 139,000 ha Rio Cristalino Ranch in Pará is the best known example (although its sale to Brazilian investors is under negotiation). Others include the 72,000 ha Armour-Swift/Brascan ranch in Pará and the 678,000 ha Suia-Missú Ranch in Mato Grosso of the Italian multinational Liquigas (also under negotiation for sale). While the thousands of Brazilian ranching operations account for most of the clearing by this sector, the presence of international firms is not insignificant (see Fearnside, 1983, 1986c).