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**MAKING PEOPLE MATTER:
DEVELOPMENT AND THE
ENVIRONMENT IN
BRAZILIAN AMAZONIA**

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MAKING PEOPLE MATTER: DEVELOPMENT AND THE ENVIRONMENT IN BRAZILIAN AMAZONIA

Introduction

The occupation and national integration of Amazonia, home to the world's largest remaining area of tropical rainforest, has been a major policy objective of successive Brazilian governments for at least three decades. Yet although development strategies for this frontier region have included and actively encouraged the in-migration of literally hundreds of thousands of settlers, the socio-economic interests of this population have not been prioritised by the State. Other overarching macro-economic, political and strategic objectives of official policy have taken precedence. This paper argues, firstly, that the systematic neglect of people's¹ interests has been reflected in the adverse socio-economic consequences of a range of ill-considered official projects and programmes; examples briefly considered here include the livestock programme, the Trans-Amazon highway and the Polonoroeste colonisation scheme. Secondly, it will be suggested that the marginalisation of social issues is being further exacerbated by a strong physical bias in current debates over Amazonian deforestation and the need to promote environmental sustainability. Thirdly, adoption of a more balanced notion of 'sustainable livelihoods' as a guide to policy-making for the region would, it is suggested, help to place people's interests higher on the political and policy agenda than has so far been the case and thus facilitate the greater participation of sociologists and related experts in this process. Finally, the more systematic use of sociological knowledge to inform decision-making in the planning process could contribute significantly towards more socially sensitive, sustainable and cost-effective development in Brazil's Amazon region.

Developing the Amazon: social impacts

(a) Cattle ranching

Until the 1960s, the Amazon region of Brazil remained largely untouched by official development interventions. The ill-fated rubber industry, established in the nineteenth century, was briefly encouraged during the 1940s by President Vargas but with little success. The Superintendency for the Valorisation of Amazonia (SPVEA), set up in 1953 to promote agriculture, industry and infrastructure, also achieved relatively little. In 1960 the region, which occupies over half of Brazil, was home to a mere 3.6% of the total population, compared with 8% today. Following the 1964 coup, the first

military government commenced a more aggressive and systematic policy of Amazonian occupation. The Superintendency for the Development of Amazonia (SUDAM) was established in 1966 and an ambitious highway-construction programme was started to encourage settlement, both by small farmers as well as by wealthier individual and corporate interests. A tax incentive scheme (Finor) as well as other very generous financial inducements were offered to encourage businessmen from southern Brazil and overseas to invest in cattle-ranching and other enterprises as the major vehicles for promoting regional development. By 1981, for example, 630 livestock projects covering 8.4 million hectares had received the equivalent of over US\$700 million in official subsidies, with some of these estates reaching several hundred thousand hectares in size (Mahar 1988).

Despite the huge amounts invested however, cattle-ranching has failed to promote regional growth, to generate employment or raise the incomes of the rural masses. An official evaluation revealed that only 92 projects (14%) were ever completed and livestock production averaged under 16% of anticipated levels (Gasques and Yokomizo 1985). Amazonia remains a net beef *importer*, the infamous 'hamburger connection' being supplied not by Brazil – a popular misconception – but by Central America. Most livestock projects were set up not for productive purposes at all, but as a front for obtaining cheap finance to fund real estate speculation and other activities totally unconnected with Amazonian development. Furthermore, the land-grabbing activities of cattle-ranchers together with growing resistance by incoming peasant farmers, has fuelled an intensive process of violent struggle over access to land in the region which has resulted in an escalating death toll and much human suffering as whole communities have been affected (Branford and Glock 1985). In 1986, for example, two-thirds (some 200) of all fatalities due to land conflicts in Brazil took place in Amazonia (MIRAD 1987). In addition to promoting land concentration, landlessness and rural violence in the Amazon region, ranching has also been the major factor responsible for the current 12% level of Amazonian deforestation and associated environmental decay involving the spread of degraded pasture, soil compacting and erosion, thus rendering large areas of little use for farming.

(b) The Trans-Amazon highway

The strong *latifundio*-bias of official policy-making for Amazonia during the 1960s based largely on cattle ranching was tempered in 1970 by the government's decision to build the 5,400-kilometre Trans-Amazon highway. While serving to promote the geographical integration of Amazonia and acting as a symbol of national unity, it had the additional purpose of attracting small farmers from the drought-stricken North-East to a series of planned settlement schemes along its length. INCRA, the colonisation agency created in 1971, hoped to resettle 100,000 landless peasant families in new model communities, thus uniting 'men without land to land without men', in

the words of the then President Médici. It was anticipated that rural communities would prosper through the production and sale of both staple and commercial crops. At the same time, 'social tensions' in the North-East would be ameliorated as the so-called 'excess' population was syphoned off to the frontier zone. Total investment in the *Transamazônica* has been estimated at a huge US\$2.3 billion (Smith 1982).

Unlike cattle-ranching, settlement along the Trans-Amazon highway did have an ostensibly 'social' objective, that of benefiting a significant number of poor farmers. However, by 1978 only 6% of the original target had been met, less than half of which was from the North-East. Many more small cultivators were attracted to the region as a result of the easy access provided by highways, although the majority could do no more than eke out a fairly precarious existence on the fragile Amazonian soils. On the Trans-Amazon itself, agricultural performance was poor, undermined by a lack of agro-economic feasibility studies, the absence of agro-ecological zoning to determine appropriate land uses, as well as INCRA's inability to supply farmers with the necessary farming inputs such as credit, seeds, fertilizers and marketing channels, etc. (Moran 1990). Furthermore, the government's failure to provide adequate social infrastructure to meet people's health, educational and other daily needs, fuelled the high rate of project abandonment.

In addition to these shortcomings, the *Transamazônica* programme was subjected to a vitriolic campaign by the powerful Brazilian agribusiness lobby which attempted to discredit small farmers as legitimate vehicles for developing the region, thus 'blaming the victims' (Wood and Schmink 1978). By 1974, a combination of technical problems and political pressure had led to an overt policy reversal, in which regional development would once again be pursued explicitly through ranching, mining and other large-scale activities. The Trans-Amazon scheme was gradually wound down and many plots along the highway once destined for small farmers were sold off to large landowning interests. Conditions for small farmers along the highway steadily deteriorated and have now become so bad that a 'Movement for Survival Along the *Transamazônica*' has been set up by small farmers along the most densely populated stretch to campaign for greater government support.

(c) Polonoroeste

The North-West Frontier Development Programme (Polonoroeste) was officially launched by the government in 1981 to attract small farmers expelled from southern Brazil by land concentration arising from the spread of mechanised wheat and soybean cultivation. It should be noted, however, that the government had been encouraging migration to North-Western Amazonia since the early 1970s. Attracted to the region by promises of land

and government support, by 1988 some 330,000 migrants had settled in Rondônia and North-Western Mato Grosso. The World Bank provided loans totalling US\$435 million (of a total cost of US\$1.6 billion), US\$92 million of which was eventually cancelled. The aim was to fund the paving of the region's major highway linking it to the rest of the country, the BR-364, as well as to develop agroforestry, health-care and the protection of Amerindian lands. Following the winding down of colonisation along the Trans-Amazon highway in the mid-1970s, the government increasingly pinned its hopes on Polonoroeste as a resettlement solution.

Once again, however, although seemingly designed as a programme for benefiting Brazil's landless rural poor, Polonoroeste has fallen far short of its ambitious objectives (Searle 1987; Mahar 1988; Martine 1990). The bulk of funding under the programme – some 53 %, in fact – was earmarked for major highway and feeder road construction, the only component completed on schedule. Other elements such as agricultural support and community services, as well as Amerindian and environmental protection, were severely delayed (Redwood 1993). INCRA was totally unable to keep up with the speed and scale of migration to Rondônia and was overwhelmed by the sheer volume of applicants. During the initial phase of directed colonisation to the North-West region, from 1970 to 1975, about 26,000 families were settled onto settlement projects, while a further 23,000 families of rural migrants outside of these official schemes were assisted through the legal recognition of their unofficially settled plots. In terms of physical domination, however, the occupation process in Rondônia has in fact been led by cattle ranchers and land speculators rather than by smallholders, thus reproducing Brazil's highly polarised landownership on the frontier. By 1980, before Polonoroeste had commenced, almost 40 % of farmland in Rondônia was already occupied by a mere 1 % of owners, many benefiting from SUDAM subsidies. Violent clashes between ranchers, small farmers and Amerindian groups multiplied rapidly during the 1970s. This pattern also spread to the neighbouring state of Acre as the BR-364 highway was extended (Bakx 1990).

Economic progress on the colonisation projects has been compromised by inadequate technical support from INCRA and other government agencies and by the total failure to develop low-input farm models appropriate to the region's varied and delicate ecology. Insufficient investment credit at a time of economic adjustment in Brazil, coupled with falling product prices and transportation difficulties, obliged many small farmers to abandon agroforestry and resume annual crop production or convert land to pasture (Redwood 1993). Insecurity of tenure and lack of economic viability have contributed to a high rate of farmer turnover, while deforestation in Rondônia has increased dramatically from 3 % of the land area in 1980 to 24 % by 1988. Malaria also spread rapidly in the state, which has one of the highest infection rates in the world, as the population exploded and public health

campaigns funded through Polonoroeste had a limited impact in the propitious environment for the spread of the disease that was created by the opening up of the region. A major international campaign was waged by NGOs against the World Bank and the Brazilian government in protest at the aggravation of social conflicts and environmental destruction associated with Polonoroeste. Pressure on the Bank from the Foreign Operations Committee of the House and Senate Appropriations Committees of the US government culminated in the temporary suspension of loan disbursements in 1985 pending reformulation of the programme (Gross 1990/91).

Other examples could be cited of development schemes which have had negative social consequences, such as the Grande Carajás Programme (PGC) in eastern Amazonia, based on mining and processing activities (Hall 1991). Like the cattle ranching programme, the Trans-Amazon highway and Polonoroeste, Carajás has also exacerbated rural violence associated with land conflicts, land concentration and ecological destruction. Direct social impacts have resulted, such as the eviction of indigenous groups and peasant farmers from their lands. The Tucuruí hydroelectric scheme, for example, the largest in any rainforest and designed to supply subsidised power for the PGC aluminium industry, displaced up to 35,000 people. Only a prolonged protest movement assisted by local NGOs managed to increase the meagre compensation originally offered by the power company, Eletronorte, and provide for at least partial resettlement of the displaced communities (Mougeot 1985). Indirectly also, land concentration, rural violence and urban squalor have been severely exacerbated by the increased pressure on local resources created by waves of migrants seeking job opportunities. While the commercial activities have been heavily subsidised by the government to promote exports or favour politically important entrepreneurial groups, the interests of the rapidly growing urban and rural populations have been seriously neglected.

In all of the cases mentioned here, the observed socio-economic and environmental impacts have been to a large extent conditioned by factors beyond the immediate control of development policy-makers; for example, Brazil's rampant inflation which encourages land speculation, the political and economic power of large landowners, the ineffectiveness of the police and judiciary in combating land-grabbing, and economic recession which has necessitated public spending cuts. Such consequences have also to some extent been seen as the necessary 'price of progress' by successive governments whose overriding development strategies in Amazonia have been guided by modernisationist principles and 'development pole' strategies, with their crude but convenient 'trickle-down' assumptions. Brazil's huge foreign debt of over US\$120 billion makes the earning of foreign exchange a major goal of initiatives such as the Carajás mining and industrial programme. The priority of channelling vast subsidies to business groups and

other political allies was clearly a major driving force behind the inherently uneconomic livestock programme for the region. Military interests also had a clear geopolitical aim in occupying Brazil's national territory and securing its borders against foreign incursions, thus promoting national security and 'national integration'. This goal has been more explicitly exemplified by the recent Calha Norte border programme (Pacheco de Oliveira 1990). Finally, Amazonia has long been viewed by policy-makers as performing a 'safety-valve' function, absorbing so-called 'excess' populations from conflict-ridden areas of Brazil such as the North-East and Centre-South, thus diffusing 'social tensions' and, it is officially hoped, obviating the need for land reforms in these regions.

Such broader contextual constraints will undoubtedly impose severe limitations upon the ability of social scientists to influence the development process. Notwithstanding this fact, however, it is likely that many of the worst effects experienced as a direct result of these programmes, especially those aimed specifically at small farmers rather than corporate groups, could have been ameliorated. Planning for the development of Amazonia has been far too technocratic, with little thought having been given either to (1) the prioritisation of people's interests and needs, or (2) the integration of social dimensions into the planning and execution of development interventions. Experience from Brazil and other parts of the developing world suggests that, in Amazonia also, the application of social science skills to help achieve these objectives is crucial to efficient, cost-effective and sustainable development.

Redefining the 'environment' in Amazonia: 'Greening' versus 'Sustainable Livelihoods'

If the needs of Amazonia's people have so far been marginalised in the process of State-sponsored development, the current debate and round of policy changes relating to environmental issues threatens to obfuscate matters further still. Brazil's new Constitution, ratified in 1988 following the end of military rule three years earlier, defends the right of citizens to a 'balanced environment' and lays responsibility at the door of government agencies to 'protect and preserve it for future generations' (Brazil 1988, p. 51). Due to a combination of domestic pressure from a range of Brazilian NGOs as well as growing international concern over the contribution of Amazonian deforestation to the 'greenhouse effect', President Sarney launched the nationalistic 'Our Nature' (*Nossa Natureza*) programme in 1989. This included the temporary suspension of tax incentives for Amazonian ranching and the creation of a new federal agency (IBAMA) to coordinate environmental affairs nation-wide. More far-reaching policy innovations were introduced under the administration of President Fernando Collor de Mello, who took office in March 1990. A new Secretariat for the

Environment (SEMAM) was created to formulate environmental policy (with IBAMA as its executive arm), under the direction of José Lutzenberger, a world-renowned ecologist and outspoken critic of past government actions in this field. IBAMA launched a highly publicised deforestation control programme known as 'Operation Amazonia', in which satellite photos supplied by the Brazilian Space Institute, airline sightings and other sources were used to identify illicit forest-burning. Lightning helicopter raids by IBAMA officials were then carried out and, within a few months, some 2,200 fines had been imposed.

A jubilant IBAMA claimed that its actions had been responsible for a substantial decrease in the rate of deforestation in 1990 compared with the previous year. However, it is far more likely that unusually heavy rains as well as cuts in tax incentives and subsidised credit due to financial austerity measures were the main factors responsible. Furthermore, small farmer organisations in the region claimed that 'Operation Amazonia' was socially biased, being directed principally at poorer settlers while leaving larger and wealthier landowners relatively unaffected. IBAMA also levied substantial fines on sawmills and others undertaking illegal logging activities in the Carajás region, contributing towards the closure of two of the four operational pig-iron smelters there (Hall 1991).

Going beyond crude command-and-control tactics, SEMAM set up the National Environment Programme (PNMA) in 1990, with the aid of US\$117 million in funding from the World Bank. In addition to strengthening IBAMA's institutional capacity, the PNMA advocates conservation of natural resources, environmental education and the integration of appropriate measures within sectoral development plans in agriculture, mining, energy and public health, including pilot projects at community level in sustainable development (SEMAM 1991). SEMAM and IBAMA have been married under the new Ministry of the Environment set up by President Itamar Franco. However, despite the attempt to unify environmental policy in Brazil, it is unlikely that the new ministry will be able to generate the cross-sectoral cooperation necessary to make such policies viable. As elsewhere, environmental policies, especially with their current conservationist bias, often stand in direct opposition to the development aims of other government departments such as the Regional Development Secretariat and the Ministry of Mines and Energy.

Progress on environmental control has been made in several other areas. In 1986, environmental impact assessments (RIMAs) by independent bodies were decreed compulsory for all major public and private investments. This has had implications for planned hydroenergy expansion in Amazonia, and has helped to curtail severely the planned programme of 22 pig-iron smelters in the Carajás railway corridor, only a small handful of which are currently

operational (Hall 1991). Following prolonged domestic and international campaigning by NGOs, and the murder of rubber tappers' leader Francisco 'Chico' Mendes in December 1988, four protected 'extractive reserves' have been now been established, with several more under consideration by the government. In addition, a decree demarcating the 9.4 million hectare Yanomami reserve was finally signed by President Collor de Mello in November 1991, despite the strong opposition of military and mining interests, which have since then been attempting to reverse these earlier decisions during the period following the impeachment of President Collor and Congressional debates over constitutional revision.

The most recent major environmental initiative on Amazonia concerns the Pilot Programme for the Conservation of the Brazilian Amazon Forest, a scheme proposed by the G-7 industrialised countries at their Houston summit meeting in July 1990. Since then, representatives from the World Bank, the European Commission and the Brazilian government have been negotiating submissions by the Brazilian government, while the scheme received further backing at the G-7 meeting in London in July 1991 and a financial commitment which, in late 1993, stood at US\$280 million. Some US\$60 million of this is committed to the Rain Forest Trust Fund, administered directly by the World Bank, while the remainder is earmarked for specific donor-targeted projects under bilateral arrangements. The Pilot Programme comprises four main components and various sub-components, as follows: (i) Natural Resources Policy – economic and ecological zoning, environmental monitoring, strengthening state-level units and environmental education; (ii) Conservation Units and Natural Resources Management – parks and reserves, national forests, extractive and indigenous reserves, management of natural resources and rehabilitation of degraded areas; (iii) Science and Technology – support for scientific research centres and applied research; and (iv) Demonstration Projects – funding for small-scale, NGO-sponsored initiatives. The G7 plan does contain a number of innovative programmes which, if implemented, will help to address directly the needs of Amazonia's population, supporting the productive use of the forest while helping to conserve natural resources on a more 'sustainable' basis than has hitherto been the case under the kinds of policies pursued by successive Brazilian governments since the late 1960s. In particular, the strengthening of the extractive reserve movement and the development of agroforestry activities in national forests, together with support for NGO-supported community projects, will be a significant step forward for official aid donors and national planners. However, a number of contradictions and potential obstacles remain.

The strong command-and-control and conservationist emphasis of the structural component is useful and necessary but of limited effectiveness on its own (FOE 1991). While it may lead to the creation of 'islands of

conservation', the major stimuli to deforestation will not be tackled; namely, land concentration and social pressures in other areas of Brazil which encourage migration, SUDAM tax incentives for livestock, logging and agricultural schemes (which were partially reinstated in 1991) and other generous subsidies to industrial enterprises in the region. The question of landlessness and of the urgent need for implementation of the largely ineffective 1985 land reform programme (Hall 1990) is also ignored by the Pilot Programme. Furthermore, the sweeping nature of agro-ecological zoning currently underway may fail to take account of the complex social diversity in the region and of the need to provide for a whole range of different socio-economic needs in any given area. The pressing requirements of Amazonia's urban population, currently half of the region's total, are also by-passed, yet this is where some of the worst social and economic problems are witnessed. In addition to continuing political opposition from vested interests such as the regional landed oligarchies, another major problem, which cuts across others to some extent, is the sheer incapacity of the Brazilian State machine to implement these new policies effectively. Coherent execution is frustrated by high staff turnover in the major ministries and development agencies, due to political instability and poor salary levels. Bureaucratic delays within the aid organisations involved have also played their part in slowing down implementation of the G7 plan. None of the planned funding programmes is likely to come on stream before mid-1994 at the earliest, three years after the agreement was signed in Houston.

Although development planning for Amazonia has so far placed a low priority on meeting the needs of the majority population of small-scale producers, there is scope for redressing this imbalance. A convenient entrance point for re-emphasising the centrality of the social dimension is provided, somewhat paradoxically, by the current debate on the environment in Brazil. While recent discussions and policy innovations have tended to emphasise 'green' or physical environmental issues, this is only half of the conceptual equation. As early as 1972, the Stockholm Conference on the Human Environment, as its name implies, stressed the importance of addressing mass poverty as part and parcel of the ecological question (UNEP 1981). Fifteen years later, the Brundtland Report (WCED 1987) underlined the importance of meeting basic human needs and prioritising the interests of small producers as a precondition for preserving the physical environment. Major development agencies such as the World Bank (1990a), the Inter-American Development Bank (LACD 1990) and the UNDP (1991) have all reaffirmed this notion. In a similar vein, the first of 27 Principles contained in the Rio Declaration on the Environment and Development produced at UNCED in June 1992 states that, 'Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature'. The fifth principle adds, 'All States and all

people shall cooperate in the essential task of eradicating poverty as an indispensable requirement for sustainable development...’.

Yet it remains to be seen whether Brazil’s concern for human development is compatible with other declarations made at UNCED. Together with countries such as Malaysia and Indonesia, Brazil’s rejection of the North’s global management of forests approach in favour of national control over forest resources was significant. This stance in the ‘Declaration of Principles on Forests’ could facilitate the channelling of foreign resources for research into sustainable development with a human dimension, as witnessed in several components of the G7 Pilot Programme and the Global Environmental Facility (GEF). On the other hand, it might provide a *carte blanche* for logging interests to deplete forests as they wish, in the face of relatively ineffective controls by IBAMA and state environmental agencies. Another interpretation might, however, be that such agreements are rhetorical and make no difference whatsoever to either the pace of deforestation or development patterns within Amazonia, whose causes are, arguably, largely beyond the direct control of the federal government.

Similarly, the Biodiversity Convention, in whose formulation Brazil played a leading role (Viola 1993), recognises national property rights over natural resources for development purposes. To the extent that this gives effective control over genetic resources to governments with a policy commitment to the expansion of stable production systems for small-scale cultivators, this can have a positive socio-economic impact. Yet if this means that control over forest resources will be increasingly vested in the hands of large corporations, national or foreign, with little benefit being fed back to forest dwellers from whose lands such resources are extracted, a golden opportunity for promoting sustainable development for large sections of the population will have been forfeited.

Mainstream government policy in Brazil does not provide a favourable context for the promotion of sustainable livelihoods on a wide scale. Concern for the social dimensions of development and environment is conspicuous by its absence from official environmental policy statements in Brazil, in spite of UNCED. Brazil has been accused of having no coherent national environment policy as such, merely an increasingly decentralised series of initiatives taken at state and municipal levels (Cleary 1993). What passes for official environmental policy for Amazonia seems to place almost exclusive emphasis on controlling forest loss via IBAMA-administered controls. In reality, however, deforestation driven by commercial timber extraction, (continued) subsidised cattle ranching and property speculation, proceeds at significant if varying rates, ranging from 20,000 square kilometres a year during 1985-89 to 13,000 square kilometres in 1990 and 11,000 the following year (*The Economist* 1991; *Jornal do Brasil* 1992). Far too little stress is laid

upon researching economically viable, non-destructive livelihood options for the millions of small-scale producers who make their living from the land and its forest resources. Potentially sustainable activities in agriculture, agroforestry, extractivism and forest management have received precious little state support in Brazil, and experiments are being undertaken largely as the result of earmarked funding from foreign donors under initiatives such as the G7 Pilot Programme, mentioned above. Other successful ventures have tended to be purely private, such as the Japanese-descended producers of Tomé Açú in Pará who cultivate a range of 40 products from black pepper to passion fruit and oilpalm for sale on national and international markets (Barrow 1990).

The current ecological focus has, furthermore, served in part at least to depoliticise the environmental debate and allow decision-makers to avoid addressing sensitive social and economic issues, deflecting whatever pressures exist to reexamine fundamental matters such as land reform, for example. A high-profile debate on physical environmental problems such as deforestation, which started after the intense burnings of 1987 and continued in the run-up to UNCED, has encouraged a perhaps excessive preoccupation with this phenomenon, important though it is, at the expense of more central concerns. A large part of the responsibility for this bias must be laid at the door of radical Western environmental organisations, whose vociferous lobbying in the wake of Chico Mendes's death in 1988 in favour of biomass preservation rather than sustainable human development has helped to reinforce the emerging conservationist stance of the Brazilian government and the reformulation of environmental policy in the final years of President Sarney's administration.

While attention to overall levels and rates of deforestation is necessary in terms of how forest-loss depletes Brazil's natural capital and contributes to global warming, this is only the most sensationalist part of the equation. Land redistribution as well as investment in sustainable production technologies and supportive structures for small producers are a far more pressing concern. Only when these issues are seriously tackled, irrespective of overall deforestation figures, will Amazonia's population of small-scale producers be able to sustain their livelihoods in the region without being obliged to adopt destructive strategies such as uncontrolled slash-and-burn. At the same time, policies which actively encourage deforestation, such as the continued granting of tax incentives for pasture formation in certain parts of Amazonia, and the cutting down of trees as proof of land occupation for the purposes of land titling, will have to be revised. Other macro-economic phenomena such as Brazil's rampant inflation, which is arguably more important than fiscal incentives as a spur to land speculation, are more difficult to deal with in the short term.

Be that as it may, the current heated debate within Brazil on Amazonian deforestation could provide an opportune context for the redefining of 'environment' to encompass a social as well as a strictly ecological dimension. A more people-centred strategy of Amazonian development could be fostered by adopting a broader, integrated concept of environmental sustainability, which would recognise the importance of simultaneously addressing people's development priorities alongside the simple protection of natural resources. By providing resource-poor farmers with the means to develop 'sustainable rural livelihoods' (Chambers 1988) not only will they be given an incentive to cultivate the land in a non-destructive fashion, but they will have a strong vested interest in securing forest and farmland against the predatory incursions of commercial and speculative forces. Acceptance of the need for urgent action on the Amazon environment across a broad political spectrum, both within Brazil and internationally, could provide a turning point. Not only could the human environment be legitimised as a concept and as an area for prompt action to save the rainforest, but the more systematic application of sociological knowledge in the search for appropriate solutions could also be facilitated.

Applying sociology to Amazonian development

Despite the huge expansion of official development projects and programmes in Amazonia, which have affected the lives and livelihoods of literally millions of people, sociology and related disciplines such as social anthropology have not played a major role in the planning process. Many of these interventions have had massive direct or indirect social impacts, as the examples briefly analysed above made clear. These outcomes are often conditioned by contextual macro-economic, political or institutional factors which are beyond the power of planners to influence. Yet it is evident that project failures are particularly likely to occur where social variables are ignored. Much of the huge wastage of resources and the enormous social cost characteristic of Brazil's official programme for developing Amazonia could undoubtedly have been avoided by the incorporation of sociological knowledge into planning procedures.

Conventionally most project-making, especially where large infrastructural schemes are concerned, deals with impacted groups as something of an afterthought, and Amazonia is no exception. Little consideration is given to prioritising people's basic needs, nor are affected groups invited to participate in project selection or design, even though it is they who are often the best sources of information about local conditions. Consequently, almost no space exists for social analysts and social planners at this point. Generally in the development field, where sociologists have participated at all in the project cycle, they have tended to be called in at the monitoring and

evaluation stage to try and 'pick up the pieces' and somehow find the 'missing factor'. They have not been called in at the more critical appraisal and design stages, when the social analyst, 'can help identify, conceptualise and deal with the social and cultural variables involved in financially induced programs' (Cernea 1991a, p. 12). The ignoring or mishandling of socio-cultural variables in Amazonia, both by Brazilian institutions as well as by multilateral and bilateral aid agencies, has made a prime contribution to the notoriously high rate of project failure in the region. Evidence from a study of completed World Bank-funded projects, for example, found that economic rates of return were twice as high in those which took due account of socio-cultural variables compared with those which were socially insensitive, leading the author to conclude that, 'Sociocultural planning for economic development is not simply socially desirable; it is demonstrably cost-effective' (Kottak 1991, p. 432).

The incorporation of socio-cultural analysis is important throughout the project cycle, from identification, design and appraisal through to implementation, monitoring and *ex-post* evaluation. However, it is particularly crucial that social expertise be applied in the earlier phase leading up to appraisal, since this input will be the most significant in terms of influencing project design. Several major flaws may be identified in current procedures for planning Amazonian development, as illustrated by Amazonian livestock projects, resettlement schemes and other development initiatives: (1) insufficient or inappropriate use of social knowledge in project identification; (2) socially and culturally biased project designs which are incompatible with the local situation; (3) lack of appropriate socio-economic and cultural skills in project execution and monitoring. As already noted, social analysts have tended to be called in more at the evaluation stage, when it is too late for them to have any influence beyond suggesting token compensatory measures to help offset the more dramatic consequences of the project or programme in question. In Brazilian Amazonia, an area of great human and ecological diversity, where technocratic solutions have been readily imposed with no such forethought, there are clearly many ways in which social expertise could be applied across a range of projects and programmes to make them more environmentally, economically and socially sustainable. As examples, three such potential areas will be briefly explored.

(a) Resettlement schemes

The Brazilian government and multilateral development banks have invested vast sums in Amazonian resettlement programmes such as the Trans-Amazon highway and Polonoroeste, directly or indirectly attracting tens of thousands of landless farmers and their families into new and fragile Amazonian environments. It is no coincidence that both of these relatively unsuccessful small-farmer colonisation programmes failed totally to appraise social impacts. Sociologists and social anthropologists must be involved at the

earliest stages of such programmes to ask basic questions about a number of critical issues which would not normally be considered by other technical specialists, but which are central to the success of the strategy.

Sociological expertise can play a valuable role in avoiding or mitigating these frequently disastrous social impacts by informing resettlement planning procedures. These could be substantially improved, for example, by considering:

- (i) Issues relating to the socio-cultural fit of proposed settlement models and their suitability for meeting settlers' needs. These include: security of land tenure in potentially conflictive situations where commercial groups may attempt to usurp people's land and common property rights; the physical structure and location of new communities; formal educational provisions for children to fit in with the agricultural calendar; health-care facilities to treat local problems such as malaria.
- (ii) Compatibility of new settlements with the interests and economic activities of pre-existing indigenous groups in the area. This might include: the extent to which new projects threaten the livelihoods of local Amerindian and peasant groups, generating violent conflicts over access to land and forest resources; programmes of benefits in order adequately to compensate adversely affected local communities.
- (iii) Forms of social and economic organisation and management necessary to maintain longer-term sustainable livelihoods, including: sociological inputs into the design of appropriate, low-input farming systems; advice on formal and informal types of social organisation at the community and regional levels necessary to enhance solidarity and mobilisation against external aggressors.

Although less official emphasis is now placed on organised colonisation in Amazonia, these issues are not simply of academic interest. The government's plan to develop the northern borders region of Brazil (Calha Norte, or the northern headwaters of the River Amazon), covering 1.2 million km² or 25% of Amazonia, will involve considerable directed resettlement. Drafted in 1985 essentially as a military initiative, the Calha Norte scheme will entail guided frontier settlement as part and parcel of this plan to secure the area against possible foreign incursions (Pacheco de Oliveira 1990). In order to avoid the social disasters brought about by Polonoroeste and the Trans-Amazon highway, therefore, planners would be wise to take on board the lessons of experience and the implications of sociological analysis for improved project performance.

(b) Hydropower projects

Amazonia is a large potential source of hydroelectric energy and in recent years several major projects have been undertaken, with some 30 new schemes planned by the year 2010. Together, these may eventually produce almost 60% of Brazil's energy supplies, compared with 5% in 1986 (Cummings 1990). Although the tapping of this renewable energy resource offers an environmentally more desirable alternative to the burning of fossil fuels, its social consequences for urban-based, peasant and Amerindian groups have been dramatic. The Tucuruí scheme, cited above, displaced up to 35,000 people, double the official estimate, in the main without alternative resettlement provisions being made or adequate compensation being included at the planning stage.

The lack of social inputs in project appraisal and design created many avoidable problems. Criteria adopted for indemnifying rural displacees, for example, ignored the region's atypical land tenure structure, based on individual and collective *de facto* rather than *de jure* occupation, thus rendering the majority of small farmers ineligible for compensation and creating much popular resentment towards the authorities (Mougeot 1985). Furthermore, the reservoir flooded a 100-kilometre stretch of the Trans-Amazon highway, partially flooding an INCRA colonisation project and necessitating the expropriation of some 800 farming plots. This took place despite the fact that Tucuruí had been planned before the *Transamazônica*. Massive social consequences are also foreseen as a result of the planned series of hydropower schemes along the Xingú river, which will encroach upon the territories of several indigenous groups, flood part of the town of Altamira and displace a still unknown number of riverine farmers (Santos and Andrade 1988).

The national power authority (Eletrobras) has started to learn from past errors and, in its latest plans, has adopted the notion of 'socio-environmental' impact assessments of its hydroelectric projects, particularly in relation to Amerindian groups. However, it is critical that technical social expertise be more systematically incorporated alongside ecological concerns to deal with the broad range of human issues which arise in this context. Social analysis could play a valuable role at key stages of hydropower schemes: (i) Social impact assessment at the appraisal stage can forecast the project's repercussions on the population both in the immediate vicinity and further afield. This would allow for the full social costs to be estimated, laying the groundwork for a proper compensation and relocation programme to be prepared, better suited to the needs of the populations at risk, as occurred in the case of the Itaparica dam along the São Francisco river in North-East Brazil (Hall 1992). (ii) Social experts also have a crucial role to play during project implementation and monitoring of progress. This could help to ensure that adequate attention is being paid to production systems, to infrastructural

provision in basic health, education and other facilities as well as to forms of community mobilisation and organisation for encouraging the longer-term economic and social sustainability of affected groups.

(c) Farming systems

A third area where social science has a major contribution to make towards more efficient planning for Amazonian development is in the design and implementation of farming systems for small producers. In the past, pressures arising from land concentration and rural conflict in the South and North-East of Brazil have attracted rural migrants to Amazonia's frontier zones. The slash-and-burn techniques, while adequate for low-density areas, have proved increasingly destructive as the population of Amazonia has increased pressure on land beyond its carrying capacity. Independent research has shown that it is possible to develop farming systems both for short-cycle staple food crops and for commercial agricultural and forest products which are suited to the region's highly diverse range of micro-ecosystems, both in the wet lowlands and the higher drylands of poorer soils (Barrow 1990; Gradwohl and Greenberg 1988; Furley 1990; Eden 1990). Investigations into sustainable land-use in the Amazon region have, however, tended to focus on forest management, which has been highlighted by the rubber-tappers' well-publicised struggles for 'extractive reserves', and by the plight of Brazil's indigenous tribes and their continuing demands for legally demarcated and protected reserves (Davis 1977; Gross 1989; Revkin 1990).

Given the substantial rural population of Brazil's Amazon region, which depends wholly or partly on forests for its livelihood, sociologists have a fundamental role to play in the development of an appropriate social forestry strategy. Originating in India in the early 1970s, this concept addresses the long-term forestry needs of the population which depends upon this natural resource by involving farmers and landless peasants in designing and implementing schemes which encourage the sustainable use of trees. Conservation initiatives such as the global Tropical Forestry Action Plan (TFAP), which is coordinated by the FAO, have been heavily criticised for their apparent emphasis on large-scale commercial forest exploitation by corporate groups and their failure adequately to consider the interests of those who live in the forest (Marshall 1991). Social forestry, in contrast, prioritises the sustainable extraction of timber to meet the needs of poorer strata, emphasising income-generation, basic fuelwood and construction materials and afforestation to avoid longer-term resource depletion. As Cernea (1981) has demonstrated in the case of Pakistan, failure to take due account of critical social variables in such projects, such as informal patterns of land tenure, for example, can lead to project failure and only underlines the importance of sociological inputs as well as local participation in the processes of information-gathering and planning.

Yet justified as this emphasis is on forest management, two-thirds of Amazonia's rural population of some seven million depend not upon forest extractivism for their livelihoods but on agricultural activities. Some non-governmental organisations (NGOs) working in Amazonia have tried to address this problem by initiating projects aimed at identifying appropriate agro-forestry systems for small producers.² Yet Brazil's official agricultural research institution (Embrapa) has always been geared to commercial, export-oriented crops for large-scale farmers. Only now is it beginning to recognise, slowly and cautiously, the importance of addressing questions of small-scale, sustainable agriculture for Amazonia (Embrapa 1989). A mere 1 % of Amazonia's rural population lives in planned settlement projects, the remainder being spontaneous migrants. An official programme of farming systems research is urgently needed, therefore, into the varieties of shifting cultivation practised and their relationship with forest extractivism. Clearly, sociologists and anthropologists would have a major role to play in such enquiry. This is evident, given the established importance of such key social variables as household composition, gender relations, community structure, land tenure patterns, local power relationships and perceptions of risk, in establishing viable agricultural production (Norman 1980). It is also crucial from the point of view of identifying mechanisms for encouraging farmer participation as a prerequisite for effective, farmer-oriented research which will respond to people's needs (Farrington and Martin 1988; Chambers et al. 1989). Accumulated experience in the fields of farming systems research and social forestry have demonstrated the validity of this principle quite clearly.

It is thus evident that many entrance points exist for sociologists in the planning of Amazonian rural development, from the assessment of likely social impacts to information-gathering which will assist in the design of projects appropriate to the region's biological, physical and human diversity. Yet in order to participate fully in a more interdisciplinary planning process, sociologists should take part in policy formulation rather than just the execution of predetermined actions. To the extent that social analysts can demonstrate the importance of sociological knowledge in determining project success, even when measured in conventional economic terms, their involvement in policy-making is likely to increase. Sociologists and anthropologists at the World Bank, for example, have been instrumental in bringing about fundamental procedural and policy changes within the institution to provide for an integrated, comprehensive resettlement in such instances to replace the piecemeal approach adopted so far with its heavy social costs (Cernea 1988; World Bank 1990b). Such socially-influenced policy priorities will have an impact on project design in Amazonia in view of the planned expansion in hydro-energy production in the region to be financed by multilateral loans.

A word of caution is also in order, however. While the integration of social analysis into planning for Amazonia is potentially advantageous for human development in the region, sociologists and anthropologists have not always been so sensitive in applying their knowledge. There is clearly a risk that these social scientists, like experts from any other discipline, will merely use their skills for coopting people into existing, possibly disadvantageous strategies. Colonising powers have long employed ethnologists and anthropologists for such manipulative ends, causing disenchantment among many social anthropologists and their withdrawal from 'non-academic', applied activities (Hall 1987 and 1988; Cernea 1991a). While such reluctance to become involved is less pronounced nowadays, it is still present and in extreme cases may be regarded, according to Leach, as 'a kind of neo-colonialism' (quoted by Grillo and Rew 1985, p.14).

At the same time, however, social scientists have also been guilty of failing to develop applied skills commensurate with the development challenge. While economists and natural scientists have been far more successful in this endeavour, it is only in recent years that universities have begun to equip sociologists, anthropologists and other social planners with the skills necessary to unravel development problems, construct suitable policies and follow the process through the planning cycle. As sociologists have started to make their mark in the world of development, however, institutional barriers to their being accepted as an integral part of multidisciplinary teams have been gradually reduced. At the same time, social specialists have come to realise that they too have much to learn from their engineering and other colleagues about the complexities of the development process.

Yet there is still much resistance within bureaucracies to social inputs, which are often seen as irrelevant or leftist or disruptive of 'normal' procedures. Social scientists are, after all, far more likely than engineers or economists to raise uncomfortable issues relating to social impacts, possibly delaying and/or increasing the cost of project implementation. In the case of Polonoroeste, for example, a consultant anthropologist publicly accused the World Bank of ignoring his recommendations concerning policies for indigenous groups affected by the programme (Price 1985). Sociology itself was only recently officially recognised as a profession in Brazil and, throughout the period of military rule, was synonymous with subversion. For all of these reasons, therefore, to do with both institutional and political barriers as well as the shortcomings of social science as an applied discipline, the inclusion of social analysis in planning for Amazonian development is far from being a straightforward proposition.

Conclusion

Several areas have been suggested in which sociologists and related experts could play a key role in making development planning for Amazonia more responsive to people's needs. In some fields this process has already started, most notably for example in the use of social experts to appraise the impacts of involuntary resettlement, as well as the involvement of anthropologists in dealing with Amerindian affairs. However, as this paper has tried to demonstrate, the scope for sociologically-informed development planning in Amazonia is considerably greater. To date, policies, projects and programmes aimed at harnessing the region's resources have all but ignored the interests and priorities of the broader population. It is clear that, in Brazilian Amazonia, the marginalisation of social dimensions in the planning and implementation process has financial, political and technical roots that are interrelated. The huge cost implications of guided frontier colonisation and of comprehensively resettling large displaced populations, for example, have led authoritarian regimes simply to ignore their obligations to adversely affected groups. This concern remains, but can be overcome through more careful costing at the planning stage and more appropriate international funding arrangements. Three decades of political repression in Brazil from 1964 onwards, and planners' associated reluctance to allow any form of popular discontent to be voiced, have made decision-makers reluctant to recognise the legitimacy of needs expressed by the people themselves. Despite setbacks such as the curtailing of Brazil's agrarian reform programme (Hall 1990), however, political liberalisation and the ending of military rule have created new entry points for groups threatened by development projects to organise in defence of their own interests. Witness, for example, the cases of the Itaparica and (to a less extent) Tucuruí hydropower scheme, the rubber-tappers of Amazonia and the Kayapó Indians' protests against the Xingú valley hydroelectric complex.³

There is an urgent need for social analysis to be integrated more systematically and effectively into the planning process. While it is possible to understand the slowness of Brazilian government authorities to face up to this challenge, given the political and financial implications of socially-sensitive planning, such an attitude is less comprehensible on the part of bilateral and, in particular, multilateral aid bodies. Improvements have been made by major organisations such as the World Bank and the Inter-American Development Bank in the provision of adequate technical expertise properly to address Amazonian development issues. However, these have been focused overwhelmingly on physical environmental problems, while broader social dimensions, especially at the level of policy-making, continue to be at best marginalised and at worst ignored. Given their major role in financing infrastructural expansion in Amazonia, therefore, it is incumbent upon both multilaterals as well as European and Japanese bilateral aid bodies to play a

lead role in rectifying this imbalance by comprehensively examining how they themselves deal with social aspects of aid-funded development. They can marshal the funds, the expertise and the political clout to address such matters, setting valuable precedents which could help to modify national planning procedures and priorities.

Non-governmental organisations have played a pioneering role in developing closer working contacts with grassroots groups and in providing channels for the expression and defence of people's interests. Although not faultless by any means, NGOs have been more prepared than official organisations to apply social skills and engage in dialogue with populations marginalised by official planning procedures. Yet social skills must, increasingly, be combined with political shrewdness. Grassroots successes in pressuring the authorities for social dimensions to be incorporated into development planning and execution (see note 3) have probably been due as much to strong political pressure being exerted domestically and internationally, often through strong NGO lobbying networks, as to the application of sociological skills *per se*. At the same time, however, it is vital that sociological expertise is not simply coopted, with the aim of legitimising preconceived and perhaps socially inadequate plans. A much greater emphasis on participatory research and development, on listening to and working with beneficiary groups rather than merely acting on their behalf, will be necessary in order to counteract the still dominant blueprint approach. Only then, perhaps, will people begin to matter rather more in the development of Amazonia.

NOTES

1. The term 'people' is used throughout this paper to refer to Amazonia's majority population of small settler and *caboclo* farmers as well as indigenous groups. Urban issues and problems are not specifically addressed as such.

2. For example, the *Centro Agro-Ambiental do Tocantins* (CAT), or Agro-Environmental Centre of the Tocantins, based in the eastern Amazon town of Marabá. This is a pioneering experiment involving cooperation between Brazilian university social scientists, local rural trades unions and technicians, financed by a combination of Brazilian government money, NGOs and official overseas assistance. In this project, sociologists and agronomists engage in joint applied research and development of agroforestry and agricultural methods in order to slow down the pace of forest destruction due to the adoption of slash-and-burn techniques while providing more sustainable options for the longer term.

3. At *Itaparica*, in the São Francisco valley of Brazil's North-East region, a successful campaign was waged by the rural population throughout the 1980s for the provision of a unique comprehensive resettlement programme for 40,000 people displaced by a hydroelectric project (Hall 1992). The rubber tappers of Acre state waged a long battle during the 1980s against cattle ranchers and land-grabbers encroaching upon the rainforest. Following a well-mounted and socially-informed domestic campaign, as well as international pressure from NGOs (culminating in the murder in December 1988 of their leader Francisco 'Chico' Mendes), several extractive reserves have been demarcated by the Brazilian government. The first four reserves (Alto Jurá, Chico Mendes, Rio Cajari and Rio Ouro Preto) cover 2.1 million hectares and are home to 22,000 people. Five additional proposed reserves will involve a similar area and some 29,000 people (Brazil 1992). Plans to build a series of dams along the Xingú river valley in Amazonia have been systematically opposed by local indigenous groups, led by the Kayapó, assisted once again by strong international NGO pressure on the Brazilian government and the World Bank, which suspended a proposed US\$500 million power sector loan for Brazil (Goodman and Hall 1990; Santos and Andrade 1988).

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