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Policies, institutions and interventions for sustainable land management in Amazonia.
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Annex A

Policies, Institutions and Interventions for Sustainable Land Management in Amazonia

Summary of findings

1. Introduction

Sustainable development remains elusive in Amazonia. Deforestation continues at high rates, probably at levels similar to those of the early 1990s (INPE, 2001), and most of the 17 million people who live in the region earn less than US\$ 100 per month (Nepstad et al., 2002). Government interventions and international support to conservation strategies have apparently failed to stem increasing poverty and environment destruction. A heated debate about land management and the emergence of frontier governance was ignited as the result of an article published by the journal *Science* recently. This article reported a trend that at federal, state, and local levels, in which ‘government and civil society are gradually developing the policies, technology and institutional capacity’ to meet the challenge of governing frontier expansion so that forests remain standing while addressing concerns for economic development (Nepstad et al., 2002:629). The paper was very well received by the national media (Escobar, 2002) as one of the first to present an optimistic outlook for Amazonia. However, this perspective has been contested by eminent Amazonian scholars (Laurence and Fearnside, 2002).

Nepstad et al., highlight the recent progress in the enforcement of the existing legislation and local land-use planning in Mato Grosso and Acre states in Brazil, and argue that there exists political will and institutional capacity for increasing environmental protection. However, Laurence and Fearnside point out the potential disastrous impacts of the *Avança Brasil* programme, which proposes initiatives involving road paving, river channelling, port improvement and expansion of energy production with investments of US\$ 45 billion for the next seven years in order to link Amazonia to global markets (Carvalho et al., 2001:409). Thus this current debate epitomises the conflicts and contradictions between environmental governance and development policy in Brazilian Amazonia witnessed in present and past decades.

Amazonia is a very large region, with immense ecological, economic and social diversity and thus it is not surprising that different regions have dealt with development and conservation in different ways, and that in some regions civil society has been able to articulate their concerns for environmental conservation in policy-making while others have not. This paper analyses current agrarian and environmental policies in Pará state in Brazil and the extent to which local civil society, with a particular focus on colonist farmers, has participated in the policy process. The research was conducted in three regions of Pará: Conceição do Araguaia, Marabá and Altamira. Our findings support to an extent the view of Nesptad el al. that there is an increase in local governance in many places in Amazonia, but they also concur with those concerns expressed by Laurence and Fearnside that central government plays a powerful role and promotes development based on large-scale projects which civil society have been unable to influence or to effectively voice their views about.

To reach our conclusions we analysed in detail how different local, regional and national actors participate in policy making for selected agrarian and environmental policies, the PRONAF and the Environmental Crimes Law. This paper summarises our findings. It explains the research approach and methods, and then outlines the policies analysed and the research sites. The policy processes are examined in terms of the key actors and stakeholders and their strategies. The evolution of policies is distinguished in relation to the involvement of civil society actors. Implementation is then analysed and attempts made to identify the impacts of different policy measures. Opportunities and constraints to greater participation by civil society in policy processes are explored in the concluding section.

2. Research methods

Analyses of policy making often assume a simplistic linear model with a rational and technocratic sequential progression from formulation to implementation to impacts. However we acknowledge that policy rarely follows this sequence and is in reality a far messier, irregular and dynamic process, with a multitude of actors and interests. Policy processes are thus the articulation of relationships between authorities, bureaucrats, various forms of expertise and broader civil society (Keeley and Scoones, 1999).

One of the objectives of this research was to provide information to support greater participation of actors often marginalized in the policy processes related to land use in Amazonia, in special colonist farmers. Therefore, research methods sought to understand why and how policy is shaped, learning from policy actors themselves. As proposed by Mayers and Bass (1999), this understanding requires the consideration of the following elements: context, actors, processes and integrating institutions, policy context and policy impacts.

In order to understand context, the research team carried out a literature review, gathering information at the three research sites, focusing on the evolution of the agrarian systems and reviewing agrarian, environmental and regional development policies for Amazonia since the 1950s.

The analysis of policy actors, that is, the identification of various institutions and groups with interests at stake in the policy process, was achieved through the use of structured and semi-structured interviews. Forty-four interviews were undertaken with rural union and local associations leaders, NGO representatives as well as officers of public agencies such as IBAMA, INCRA, and banks. Different research team members, who used a common interview guide, conducted interviews in the three sites and additionally in Belém and Brasília.

With these interviews it was also possible to learn about the different processes by which agrarian and environmental policies are negotiated and developed by diverse institutions. It was possible to analyse how actors got involved in the policy process and how institutions identified their priorities. Policy impacts were also evaluated by analysing the grey literature available from local research bodies and some of the institutions interviewed, although there are still very few studies evaluating current policies impacts. There are conceptual and theoretical difficulties in making direct links

between policies and impacts. It may be necessary to analyse individual resource managers' responses to different policy measures, but it is clearly not possible to do this in a project which is primarily dependent on secondary data. We could only observe the changes and hypothesise links to specific policy measures and then discuss with key informants how the outcomes might be linked to specific policy initiatives.

Preliminary research findings were discussed with local actors interested in the policy process in workshops conducted in the three research sites and in Belém. Discussions focussed on what can be done in order for the policies to be better adapted to and more appropriate for local contexts, what communication channels and other mechanisms are available for civil society to strengthen their participation in the policy process, and how to better integrate environmental conservation concerns in policy-making. For the regional workshops (organised in Redenção, Marabá and Altamira) the target participants were farmers' leaders, local environmental and development NGOs, local representatives of government agencies concerned with rural development and environment conservation (*prefeituras*, INCRA, IBAMA, EMATER, etc.). The exact mix of participants differed from site to site. The regional workshop held in Belém targeted the same audience, but attempted to bring together regional leaders and officers plus the research and academic communities.

3. The policies analysed

The research focused on two recent important policy developments in the agrarian and environmental sectors; PRONAF, the National Programme to Strengthen Family Farming, and the Environmental Crimes Law. These policies have quite different objectives, utilise different approaches and instruments, and are executed by different government agencies, as summarised in Table 1.

3.1 PRONAF

PRONAF, launched in 1996, is currently the most important government agrarian policy initiative. It represents the first set of measures directed to family agriculture. The policy instruments include mechanisms such as credit for agricultural production, infrastructure and training. PRONAF incorporates pre-existing mechanisms for implementation of agrarian policy, but places them under a unified programme that involves the participation of the federal, state and municipal governments in partnership with civil society. For some analysts, the programme represents a paradigm shift and a new model that identifies the family farm as the engine of development (Silva, 1999). For others it represents the subordination of President Cardoso's government to the IMF and the World Bank, and an attempt to fit Brazilian agrarian policy in to neo-liberal agenda and the principles of the free market (Vilela, 1997; Lopes, 2000). Thus it represents an excellent case study to examine the participation of civil society in the development of public politics, and the articulation of a range of state and non-state actors, including commerce and banking in the policy process.

Created to address all types of family farmers, the programme prioritises family farms less integrated into to the market economy and those with poor access to services and credit. It is organised in four areas: a) Negotiation of public policies with government

bodies and agencies; b) Funding to infrastructure and services to the municipalities; c) Funding production in family agriculture and d) Training and professional education for farmers and their families. The implementation of PRONAF involves partnerships among the various institutions and the participation of civil society by means of national, state, and municipal councils. These councils include representatives from farmers and the state and city governments, and the latter participate as the local programme coordinators. PRONAF relies on resources from the *Fundo de Amparo ao Trabalhador* (Workers Support Fund), constitutional development funds (including the FNO in the Northern region), Federal Union's general budget and a contribution by the municipalities.

3.2 The Environmental Crimes Law

The Environmental Crimes Law and the decree defining it are the major policies analysed in the environmental area. They are the main federal regulations governing natural resource use and define the penalties applicable to violations of environmental regulations. The law brings together and attempts to rationalise a number of other previously existing laws, and seeks to define what characterizes environmental misuse in a single document. It establishes serious penalties for illegal deforestation and transport of forest products (wood, charcoal) without authorization. Furthermore it stipulates that a portion of the fines collected should go towards a national environmental fund. However, the environmental crimes law also created something called *Termo de compromisso* (Commitment agreement), which establishes that the fines can be cancelled if the offender agrees to repair the damage. In this case the fine can be reduced to up 90 percent. It is influenced by the Polluter Pays Principle, recommended by international agencies such as the World Bank and Inter-American Development Bank. Although the law has not been enforced in many cases, as we will see, specialists state that it is modern and advanced law that seeks to promote quality of life and human dignity (Sales, 2001).

Table 1: Comparison of the two policies and their instruments and implementing agencies

Policy	Main objective	Instruments/ Approach	Executor/ responsible government agency
PRONAF	Strengthening Family Farming	<p>Uses combination of regulatory (tenure-related), economic (incentives and subsidies), information (extension-based) and institutional (partnership) mechanisms focused on production and voluntary instruments</p> <ul style="list-style-type: none"> • Four sets of activities and instruments: -Subsidized credit -Funds for infrastructure to municipalities -Training for farmers and supporting agencies -Negotiation of public policies with other government sectors <ul style="list-style-type: none"> • Councils at municipal, state and federal level, with participation of government bodies and representatives of the civil society define priorities and control programme implementation 	Ministry of Agrarian Development/ Secretary of Family Farming
Environmental Crimes Law	Define and control misuse of natural resources	<p>Employs command and control or regulatory and economic instruments based partially on 'Polluter Pays Principle'.</p> <ul style="list-style-type: none"> • Fines • Damage Reparation • Part of the fines fund environmental projects 	Ministry of Environment/IBAMA

4. The research sites

Policy implementation and impacts on colonist agriculture has been distinct in the different areas of occupation in Eastern Amazonia. This is due to the particular agroecological characteristics and patterns of land use in the regions, but is also related to the different forms and dynamics of implementation of the policies, in turn related to a diverse organisation of civil society at the regional level. The research sites are Conceição do Araguaia, Marabá, and Altamira and their location is shown in Figure 1. These sites provide a range of ecological, economic and social conditions and are characterised by different colonisation patterns and farming systems.



● Studied regions 1- Conceição, 2- Marabá, 3- Altamira

Figure 1: The location of the research sites

These three regions present diverse ecological, economic and social conditions and different patterns of colonisation. The evolution of these regional societies and land use patterns differ significantly. Table 2 summarises the key land use characteristics and farming systems of these three sites.

Table 2: Land use characteristics in the three study sites

Period	Conceição do Araguaia			Marabá			Altamira		
	Key factors	Characteristics of family farm	Characteristics of the 'Fazendas'	Key Factors	Characteristics of family farms	Characteristics of large farms	Key factors	Characteristics of family farms	Characteristics of large farms
Before mid 1960s	Free access to land (<i>Terra livres</i>)	Subsistence agriculture	Very extensive cattle ranching	Existence of large areas of forest	Subsistence agriculture and extractivism	Large 'aforamento' estates for Brazil-nut harvesting	Development along Xingu river	Marginal agriculture, plus extraction of Brazil nut and the rubber	
1960s and 1970s	Tax incentives for largescale farming and ranching	Slash and burn agriculture and cattle ranching. Migrants from the centre and northeast of Brazil.	Agribusiness enterprises from the central-south, mainly for ranching, plus some sugar cane production.	Opening of roads, official settlement schemes	Slash and burn agriculture plus livestock. Migrants from the centre and northeast of Brazil.	Cattle farms in 'castanhais' areas	Transamazônica highway and official settlement project, subsidised credit for rice, cattle and perennial crops	Migrants mainly from the South, and Northeast. Farming systems based on crops (rice), plots close to the highway	Ranches far from the highway in the Eastern part of region
1980s	Economic failure of large projects. Continuous migration: 'gold fever'	Slash and burn agriculture, practised in the forested areas of the insolvent projects	Cattle farms	Large government projects and infrastructure development	Migrants mainly from Maranhão. Slash and burn agriculture and cattle.	Disappearance of the 'castanhais'. Medium (land re-concentration) and large ranches	High prices for perennial crops. End of subsidized credit and reduction in State services	Perennial crops including cocoa, pepper and coffee. Cattle ranching. Migrants settling at the end of the 'travessões' (secondary roads)	Medium farms ('glebas') also diversifying production with perennial crops. Large ranches at the end of 'travessões'
Early 1990s	Less migration and less productive land available	Slash and burn agriculture and cattle, pineapple in cerrado by more capitalised farmers.	Intensification of the cattle production	Land concentration	Migrants from Maranhão and other Northeast states. Slash and burn agriculture and cattle. Formation of a dairy basin.	Intensification of cattle ranching in areas close to urban centres	End of subsidized credit and reduction in State services	Increase in cattle as result of collapse of perennial crops (low prices and diseases)	Medium sized farms diversified and extensive ranch far from highway. Increasing farms in the Xingu zone (Altamira, Vitória, Anapó)
Late 1990s	Intensification of occupations and land adjudication	Specialization in dairying. New occupations.	Large and medium size ranches specialising in fattening. Soybean and cotton starts	Intensification of occupations and land adjudication	Increase in internal migration. Intensification of the cattle ranching close to urban centres. Consolidation of a small dairy basin	Ranches of diverse sizes in the entire region. Internal migration.	State subsidies available FNO credit scheme. Emancipation of some municipalities. Logging roads developed	Revival of perennial crops (coffee, pepper) post 1998. Continued investment in cattle	Increasing farms in the Xingu zone (Altamira, Vitória, Anapó)

4.1 Farming systems

The evolution of land use and resource management and livelihoods in each region and is influenced by the characteristics of natural environment and access to the markets and to some specific services. In each locality there is significant economic and social differentiation between farmers. The implementation of policies impacts in different ways on different groups within rural society. The characterization undertaken here is rather generic and considers various types of farmers, from the poorest, in general the agriculturists without land; to family farmers, whose land use patterns and farming systems vary according to the region where they live and their own economic conditions; and the larger farmers or ranchers, who specialise in cattle production.

Agriculture in the three regions has many similarities. Most farmers cultivate annual crops for subsistence and market any surplus production. The normal practice is shifting cultivation, but land use strategies vary from place to place. Farming systems in Altamira are more diversified, including perennial crops and cattle, and farmers cultivating cacao have higher incomes. In Conceição and Marabá cattle are very important. Diversification with other crops occurs, but only in Conceição do Araguaia have new crops brought radical transformations in the farming systems, as in the case of pineapple in the municipality Floresta and soya.

4.2 Forest and agriculture

There are close and dynamic links between agriculture and forest in each of these regions. Agriculture in frontier regions is very dependent on forest for its maintenance; forest provides direct inputs into farmign systems, and also forms part of diversified livelihood systems for rural producers. Agriculturists need forest for land for annual cultivation, and for extractivism, particularly in Marabá, where some forest areas are rich in Brazil nut and *cupuaçu*. As farming systems evolve this dependence on forest resources generally decreases. Thus we find that farmers who specialise in perennial crops (in Altamira) and in cattle for dairy (in the three regions) are less dependent on forest resources. These farmers have usually been settled in these areas for a relative longer period and, due to their higher income, annual crops and extractivism are not so important in supporting their livelihoods. Thus, policies related to the conservation of the forest have different impacts to on the livelihoods and farming systems of these different producers. The role played by forest in a farming system is in turn related to quantity and quality of the forest on the *lote* (plot) and in the locality as whole.

The relationship between agriculture and forest is dynamic and depends on other factors, such as the presence of logging, processing infrastrucutre and markets. For example, in Conceição, part of the transition between dense forest and *cerrado* and a long settled zone, forest cover is low and logging activity has gradually lost its importance. Mahogany and less valuable timber species have been widely exploited and are very scarce. Consequently, in the newly settled farmers have few opportunities to market timber. This generates competition for timber between the few remaining sawmills and fierce competition for access to the limited sources of valuable timber remaining. In Maraba, although Mahogany and Cedar have been almost entirely depleted, a broad range of species is exploited and some sawmills process up to 100

different forest species. The sale of timber by smallholders represents a significant income source, especially in recent settled areas. In Altamira the sawmills are moving from the areas where the resources have been depleted to vacant areas (*terras devolutas*) and Indian reserves. In a study carried out in the municipality of Uruará (LAET, 1998) timber extraction has expanded 46 percent in three years and loggers are still expanding their operations.

Each of these different operations is potentially impacted by the implementation of the policies studied

5. The policy process

5.1 Key actors in the policy process

The interest groups or individual or institutional actors being mobilized in the process of formulating and implementing the environmental and agrarian policies have many common members, but their interests in the environmental and agrarian arenas are often antagonistic or conflicting, as shown in Table 3. As will be further discussed, while civil society, including farmers and their organisations, have generally had a pro-active role in the policy process related to agrarian policies, only the state and environmental organisations have participated actively in the discussions on environmental policies.

Table 3 Actors, interests and strategies in policy processes

Actors	Main interests in agrarian policies	Main interests in environmental policies	Main strategies
Colonist farmers	Land tenure and title, access to credit and services, diversification of production	Technical and economic alternatives to agriculture and forest conservation. Freedom to deforest or burn without legal restrictions	Join farmers' organisations.
Large land holders	Maintenance of large areas and access to credit and subsidies	Freedom to deforest or burn without legal restrictions	Pressure on and contact with local and regional politicians.
Loggers	Expansion of the frontier to continue timber exploitation	Freedom to exploit forest resources without restrictions or legal requirements	Pressure on and contact with local and regional politicians.
Local politicians (mayors, city council representatives)	Increase infrastructure and access to services, increase agricultural production	No major concerns for conservation or zoning	Pressure on and contact with local and regional politicians. Contacts with government bodies (INCRA, Ministries) Support the creation of new associations.
Regional-national politicians (members of the house of representatives, senators)	Increase infrastructure and access to services, increase agricultural production	<i>Bancada ruralista</i> support large holders interests and seek reduction in legal restrictions for use of natural resources. Left wing and environmentalists (smaller group) increase monitoring and control on the use of natural resources, incentives to producers, support creation of protected areas.	Propose and support laws and measures in congress and the executive to support their interests. Collaboration with sectors of the civil society which they have affinity. Mobilisation of the media.
Farmers' organisations e.g FETAGRI, MST	Land tenure and title, access to credit and services, diversification of production	Technical and economic alternatives to agriculture and forest conservation. Control of use of resources, mainly by large land holders	Interaction with local, regional and municipal NGOs. Organisation of occupations. Pressure on government bodies.
Rural/sustainable development NGOs e.g. FASE, CPT	Land tenure and titling, access to credit and services, diversification of production	Technical and economic alternatives to agriculture and forest conservation. Control of use of resources by all users	Implementation of sustainable development projects. Support and links with farmers' organisations. Contacts with government bodies.
Regional and national environmentalist NGOs e.g. WWF Brasil, ISA, Vitoria Amazonia	Land tenure and titling, clearly delimiting areas for agriculture and forest preservation	Increase and more intense application of forestry legislation, support the creation of protected areas, projects supporting flora and fauna conservation, creation of 'green' incentives for the agricultural producers	Pressure on government and national politicians. Links with national and international environmentalists. Campaigns and mobilization of the media around environment issues. Support to conservation projects.
MEAD- INCRA	Land tenure regularization, decrease number of conflicts and occupations, consolidation of settlement areas	Until recently no major concerns. Recent interest in minimizing the impacts of agrarian reform on the environment through the creation of new models of settlement.	Negotiation with social movements, support planned or current policies in governments or regional-national politicians.
MMA- IBAMA	No direct concern	To implement the legislation on use of the natural resources.	
State banks e.g. BASA, Banco do Brasil	To finance agricultural production, able to generate profit so that farmers do not become defaulters	none	Seek guarantees and adoption of banking strategies that minimize losses on loans.
Academics e.g. UNICAMP, USP, UnB	Support social justice aims of NGO movements	Support conservation aims of environmental NGOs	Links with social movements and NGOs. Undertake studies that can influence the state apparatus in the adoption of some policies.

5.2 The agrarian policy process

The importance of the conflicts between different actors or stakeholders in policy formulation is evident with regard to agrarian policies. Interviews reveal that there are different perspectives on who are the key players with greater power with regard to the PRONAF formulation. The interests of rural workers, who have historically demanded specific policies for the small farm (or ‘family agriculture’) sector, are somewhat contradictory with the government neo-liberal policy of reducing the role of the state in the economy. Regardless of these different perspectives and interests, both small farmers and their organizations have strongly interacted with this government programme in the regions studied.

Researchers engaged in rural issues played an important role in developing the policies that guide PRONAF alongside the technicians from the Ministry of Agriculture (MAPA) and the Ministry of Agrarian Development (MDA). They are in close contact with and are lobbied by farmers’ organisations, including CONTAG (National Confederation of Rural Workers) and the MST (Landless Farmers Movement), which has been an outstanding and powerful actor at the national level, primarily because of the high public profile of their campaigns and activities.

It is important to differentiate how these two important farmers’ organisations work. CONTAG brings together all the *sindicatos de trabalhadores rurais* (STRs, rural workers/smallholders unions). The unions are long standing actors, as their activity was regulated in the 1950s (Hébette, 1997). They were controlled by the state till the end of the military regime but since then they work independently. Despite organising various direct action campaigns all around the country, much of their achievements result from a negotiation process with government bodies. The MST was created in the 1980s, consisting of landless farmers (Torrens, 1994). Their main activity is the organisation of landless groups to occupy land. They have a strategy of confrontation with the government. Often their achievements in terms of adequate policies result from long campaigns of direct action, demonstrations and occupation of government offices.

The pressure from the rural workers has been the main impetus for the Federal Government to speed up the Land Reform Programme. An example is the establishment of the Extraordinary Ministry of Land Reform in 1997 after the massacre of landless farmers in Eldorado do Carajás. In 1998, responsibility for further development and implementation of PRONAF was transferred to the MDA, new mechanisms were incorporated and its credit facilities adapted to serve already established family farmers and the beneficiaries of land reform. In Pará, as the demands for Land Reform are so strong, the programme focused its action on agricultural credit and improvement of infrastructure in settlement projects, but it is not yet implemented in all of the state’s municipalities.

The municipal councils targeted by the programme continue to work on a precarious basis in most of the municipalities within the three regions under study, and are generally controlled by the local mayors. In Itupiranga in Marabá, one of the first municipalities to take part in PRONAF, farmers say that the council discusses the programme activities but until recently they were not clear about the role they play in the programme.

Farmers' unions in Altamira, who have a good relationship with the national trade unions and have allies in the Congress, have managed to negotiate, through the Transamazônica Highway Survival Movement (MPST), for a significant portion of the Northern Region Constitutional Fund (*Fundo Constitucional da Região Norte*) to be directed to a credit programme for small producers throughout the Amazonia region. This is known as the Special FNO programme.

FETAGRI (the Rural Workers Federation of Para) has played an important role in the evolution of the Special FNO through the organisation and mobilisation of its members for the *Gritos da Terra* ("land outcries"). Furthermore, although BASA, the Bank of Amazonia, plays a significant role in defining the amount of credit, the criteria for working out the projects and the modules to be financed, FETAGRI has also influenced the design and operation of the credit programme. For example, when the Special FNO was first implemented in the Transamazônica region, in 1992, the decision to invest in the coconut and *cupuaçu* consortium resulted from negotiations between the producer organizations and BASA, with little participation by the government technical assistance organisations.

In spite of having quite different agendas and interests, the MST and FETAGRI have worked together during these negotiations. For example, FETAGRI and MST joined forces to negotiate with INCRA and other institutions and this has brought mutual benefits and considerably strengthened their negotiating position. Their organisations differ and this influences how they engage in public debates and policy negotiations. Whilst FETAGRI has a hierarchical structure of municipal, regional and state level institutions and discussion occurs through wide regional fora involving the associations as much as possible, the discussion at the MST starts with the production groups at a settlement level. After discussion at the base cores (production groups), the agenda is set up for each settlement and, generally, all families from the same settlement meet and agree. Normally only a few families meet and discuss proposals during the FETAGRI negotiation process. The MST is therefore perceived as reflecting grassroots priorities more than the more bureaucratic nature of FETAGRI associations. The criteria within each association for selecting the programme beneficiaries vary, but may include: those who are members of the STR, being active in the community organization, having good access to his/her land, those with "greater needs", and those who enjoy a good reputation. In addition, there are some BASA criteria, so for example they should own a plot (with a statement by the STR) and should not have obtained any other credit before.

It is important to point out that, besides the *Grito da Terra*, there is no organised institutional forum convened on a regular basis to discuss the credit programme. There was an attempt to set up a regional forum in Marabá in order to discuss the policies concerned with land reform, the so-called agrarian forum, in southern and south-eastern Pará. The forum did not work, partly because of the difficulty in negotiating between the diverse actors and partly because of the way the meetings were set up, where the agenda was previously established in order to be ratified at the forum.

In conclusion, it can be observed that PRONAF came about from the confluence of different interests, where government technicians worked in close collaboration with researchers working with rural issues to design the programme. The main instruments of the programme have incorporated, and are frequently adapted to respond to, civil society demands, particularly those of the farmers' organisations. The participation of

grassroots farmers in the regions studied however, has been weak, both at the national and the local level. There are not mechanisms in place for discussion of national policies and farmers' leaders are not sure about their roles in municipal councils. They have little space to make informed decisions on programmes priorities at the municipal level. This contrasts markedly with the experience of the Environmental Crime Law.

5.3 The environmental policy process

The environmental policy process has generally been responsive rather than proactive, and the federal government has often sought to enhance environmental regulation as a response to events regarded as catastrophic or having a great impact. The national and international media report these events, and subsequently environmental organisations (both national and international) and public opinion put pressure on the government through direct and behind-the-scene contacts and campaigns (e.g. via email). Many of these events occurred in the 1990s:

- 1996 record deforestation rate in the Amazon region;
- 1996 denouncement by Greenpeace of illegal exploitation of mahogany in southern Pará;
- 1997 widespread fires in Roraima.

In the last five years the Federal Government has taken the following measures in response to dramatic environmental degradation:

- 1996 the President of the Republic issued a Provisional Measure which reduces the proportion of a rural property in the Amazon region that can be deforested from 50 percent to 20 percent;
- 1996 the President signed a Decree suspending new authorizations to exploit mahogany and *virola*;
- 1997 Congress passed and the President enacted the Environmental Crimes Law;
- 1998 the President signed a Decree regulating the Environmental Crimes Law;
- 1999 the Ministry of the Environment suspended the issuance of deforestation authorization for 120 days;
- 1996 to 2001 various campaigns and annual inspection operations are initiated (*Macauã Operation, Amazônia Operation, Amazônia Fique legal*).

The measures are very often stringent and seek to show decisive action, for example, the reduction of deforestation limits in the Amazon region from 50 percent to 20 percent and the ban on the issuance of deforestation licenses for 120 days. The inspection campaigns were initiated with much media hype, with armed police officers and helicopters.

The development and drafting of these regulations and measures is normally carried out by government technicians, who receive support from academics and environmental organisations. The participation of civil society in the debates is generally weak, apart from some cases where environmentalists are able to focus public attention, as it was the case of discussions on the new Forestry Code. The new Forestry Code has not been approved yet, as members of congress have failed to agree its details and there are disputes particularly around the size of the legal reserve. While environmentalists

defend the current limits, there are many members of parliament, supported by large landowners, who want the limits to be significantly reduced.

The regulations incite strong reactions from regional and local leaders and stakeholders. In general, (federal and state) congressmen, governors, mayors, ranchers and loggers trade unions complain, arguing that the environmental regulations will result in unemployment and prevent regional development. The measures which more directly affect the loggers, such as the ban on the authorization to exploit mahogany and *virola* bring collective protests from ranchers who are closely allied to the logging industry, workers' trade unions, mayors and city council representatives.

Small producers have not reacted so strongly as large landowners to the new regulations. However, as the controls have become more restrictive then leaders of farmers organisations have become more active in debates on environmental policies and regulations. There are two main objectives of this participation by colonist leaders.

First, they aim to obtain exemptions for small producers. FETAGRI, congressmen and other leaders have negotiated in order for the regulations to be less stringent for smallholders. In 1999, for instance, they pressed the Ministry of Environment (MMA) to revoke the ban on the issuing of deforestation authorizations. As a result of these pressures, the MMA issued a regulatory instruction (IN 7-1999) making the issuing of deforestation licenses easier for small properties. The authorization requisition was simplified and a maximum 30-day period was defined after the request for the authorization.

Secondly, they seek to secure support for low-impact cultivation methods. Colonists' leaders have sought support for measures to address the negative environmental impacts of current land use. For example, FETAGRI and other institutions such as the IPAM (Amazon Environmental Research Institute) are developing an agricultural credit proposal which includes the value of environmental services. The federal government would offer this credit, *Proambiente*, through the FNO (Northern Constitutional Fund). Small rural producers would have a discount on the credit payment for adopting measures that would prevent environmental degradation, such as for example avoiding the use of fires. This proposal is currently being negotiated with institutions concerned with agricultural credit such as the Banco da Amazônia and the Ministry of National Integration.

The initiative indicates that the small farmers' leaders have started to recognise that the concern by the government and the society in general for environmental quality is a permanent one, and that the continuing environmental degradation on the small farms may threaten support e.g. reduction in traditional agricultural credit, reduction of the support for the land reform and reduction of the support by environmentalists for the small producers. So they sense that it is in their own self interest to negotiate and try to influence environmental policy. This is a relatively recent phenomenon.

Figure 2 summarises diagrammatically the policy processes in the development of these two policies. It shows how in the case of Environmental Crimes Law, there is little interaction with local actors. Most of the impetus from policy is from national and indeed, international, levels, with environmental NGOs and public opinion influencing the development of policy. Very few mechanisms exist to influence the on-going

evolution of the policies. In contrast, many more actors and institutions at all levels interact in formulating the PRONAF policy and designing the instruments associated with it. Some of these interactions are characterised as conflicts, notably between regional farmers' groups and government at state and federal levels. However even though there are interactions, local farmers and associations exert relatively weak influence on the policy processes (indicated by narrow and dashed arrows). Of course this representation masks differences in the policies processes at different localities.

5.4 Regional differences in participation in the policy processes

There are considerable differences among the three regions under study, especially between the Southern/South-eastern Pará and the Transamazônica Region, with respect to the emphasis on certain policies and on their implementation. We can identify problems associated with both horizontal (among different regional players) and vertical (among players on the national, state, and regional levels) integration. Policy processes occur at different scales or levels. For example, in agrarian policy, decisions about the Special FNO are mainly made at the state level in Belém by in Belém with some participation by state level organisations of FETAGRI. In PRONAF and within INCRA on the other hand, decisions are made at the regional level (e.g. in Marabá) but most importantly outside the state altogether, at a national level in Brasília. State level organisations are therefore less important in PRONAF policy processes than for Special FNO.

These differences between the regions are also manifest in the relationships among the local actors and particularly between farmers' organisations and the government agencies. In Altamira a better dialogue exists between the different sections of the community and FETAGRI finds more agreement with other actors. Conceição do Araguaia displays greater political/ideological divisions within FETAGRI and more problems in interactions between different local actors. In Marabá, the MST, FETAGRI and the Central Associations are active.

However, there are still few fora, particularly in Marabá and Conceição do Araguaia, where the diverse actors can negotiate the development and implementation of policies. Even when they do exist, they are not much well supported or trusted by the different stakeholders. Some actors, particularly government bodies, fear that the creation of more stable negotiation *fora* will lead to a loss of their decision making power, while some of the farmers' leaders think that, due to problems of poor representation of the farmers or poorly defined objectives and targets of these *fora*, the social movement has little to gain from more active participation. There are few where alliances, even temporary, are made between different actors in order to attain common goals. Interests are still quite antagonistic and this militates against concerted action and cooperation. The association between the regional FETAGRI and the MST in Marabá in some negotiations with the INCRA is an exception, but even this was short-lived and had limited effectiveness.

While in Altamira region the *Movimento pela Sobrevivência da Transamazônica* (Movement for the Survival do Transamazônica Road) joined different sectors of the civil society (STRs, civil servants unions, mayors, etc) to ask for greater government support to productive activities and to conserve the roads, in Marabá or Conceição this type of alliance cannot exist. The severity of the struggle for land puts government and landowners in opposition to rural works and they perceive each other as enemies. This is aggravated by divisions within the farmers' organisations themselves. For example, in Conceição do Araguaia, militants of different political parties cannot reach agreement about strategies to deal with public bodies, sometimes paralysing their contact with government agencies.

Thus the culture and tradition of engagement and interaction between many of these actors is based more upon confrontation than negotiation. For example the motivation

and main strategy underpinning the action of the MST is confrontation, mainly in their campaigns for land. These antagonistic practices have often been successful. On the one hand, as witnessed in Altamira sometimes a strategy based on negotiation is possible and feasible. However, a perceived danger is that the routinisation of the negotiation process may lead to the risk of bureaucratisation of the organisations and a distancing from their popular support and constituencies.

Of course engagement within local councils change from municipality to municipality. For example, in Itupiranga, where the city council has a close relationship with the union, the representatives have been able to influence the decisions on where to place infrastructure (from interview with the president of the Itupiranga union), while in Redenção union representatives said that they have tried to follow up decisions around credit projects, but that this has proved too difficult for them, as they could not understand the technical aspects of the projects.

There is often little participation by the municipal authorities in the environmental and agrarian policy processes too. This is counter to the federal government decentralisation strategy. Within PRONAF Sustainable Rural Development Municipal Councils are promoted, but these encounter serious operational problems. The municipal level seems to be the forum where many of the conflicting forces and interests converge and where the discussion forums face serious constraints.

PRONAF acknowledge that one of the problems for greater participation is lack of capacity and information for the council members, not only farmers but municipal authorities as well. From 2002 they have started to offer training courses to provide councils member with tools and information they need to improve their participation, but participation and interaction of different actors will continue to depend very much on power relations established and political will for a transparent decision-making process.

In addition to these problems of horizontal integration, there are difficulties in linking actors on different levels (national, state, regional), manifest differently in the three sites. Our research found that the regional/state interactions around the special FNO in the Transamazônica Region occur in a relatively straightforward way. However, in the South and Southeast of Pará, the main decisions about PRONAF are made in Brasília, with no participation by the different actors in defining issues such as amounts, rules or criteria, rates and technical packages. In spite of the influence of the civil society in campaigning for the development of policies, this does not necessarily translate into any kind of joint or coordinated policy formulation. There are fora which are open to a wider participation, such as the Sustainable Rural Development National Council, which discusses changes in technical assistance and rural extension, but these have problems including regional representation and effective links to the national and state decision making. Similar problems occur within FETAGRI and also in its relationship with CONTAG. The MST is an exception, as its organisation allows for a more effective contact and communications among the different representation levels. The problems of maintaining a “vertical dialogue” are reproduced within the government institutions in terms of the relationships between the headquarters in Brasília and the regional offices, for example in INCRA and in IBAMA. For example the IBAMA officer in Marabá declares that in regional officers are not consulted about changes in the legislations. Even decrees that introduce dramatic changes in the way IBAMA

works do not involve consultation with the IBAMA employees who will have to carry out the new tasks.

Finally, with a few exceptions, there is little participation by the regional political representatives at the National Congress and State Legislature in the discussions about environmental and agrarian policies. The regional actors, particularly in the South and Southeast of Pará, exert little pressure on or have little contact with their legislature representatives.

The horizontal and vertical integration problems lead to a series of difficulties for wider participation in the formulation and implementation of the policies examined. These difficulties have contributed to and are reinforced by great instability in executing policies, which change frequently and without discussion.

The governmental and other policy actors have difficulty in integrating the two sets of policies. Despite the fact that it is widely acknowledged, both in literature and policy communities, that there needs to be greater inclusion of environmental concerns into all areas of public policies, there remain few instances of implementation of more integrated approaches.

This is especially true of environmental policy process. It can be observed that the federal government has sought to protect itself against widespread criticism by creating “modern” and environmental legislation with strong emphasis on conservation, but to a certain extent divorced from the political, economic, and social reality of the regions where it should be applied, and out of step with the financial, material, and human resources the government has available to implement it. Although farmers and their organisations are strongly engaged in the debate over agrarian policy, they abstain from discussion about environmental legislation which is formulated by government departments with little contact with the regions not with departments responsible for the agrarian policy. As stated above, this situation only begins to change as the farmers perceive that environmental regulations constitute threats to them, and jeopardize their lifestyle or livelihood. From the government perspective individual departments may start to develop links between the policies they are responsible for but this doesn’t tend to happen across departments. Integration of environment and agrarian policy in both government and public sectors is therefore very limited.

Participation by farmers in this debate is of particular importance in order to establish an environmental policy which complements agrarian policy, recognizing that its focus can not be solely forest preservation and co-operating so that the agrarian policies (including the rural extension and agriculture and livestock research and development) are able to promote alternatives aimed at sustainable family agriculture at the agrarian frontier area of the eastern Amazon.

6. Implementation of public policies

A key difficulty in tracing policy implementation is that the programme and instruments and the rules for applying them change on a year-to-year basis. As these areas of policy are relatively new, their implementation is patchy.

6.1 Legislation on land use and environmental crimes

The Brazilian Forestry Code and the rules for the environmental licensing of agriculture and cattle raising activities constitute the legal benchmark regulating land use. The State of Pará has no forestry legislation of its own and its environmental agency applies the Brazilian Forestry Code rules. However, the state environmental agency (SECTAM) is usually a slow acting entity in the state's interior with regard to land use. Thereby, the action by the federal agency – the IBAMA – is more important within the State. For this reason, the federal action is highlighted in this analysis.

The creation of most government agencies and the basic legislation directed towards the environment at the national level date from the 1980s. Therefore, they were devised during the period of state crisis, which meant restricted budget and difficulties in the coordination of the different public policies at the federal level (Ferreira, 2001:108). The agencies responsible for the inspection, particularly IBAMA, are poorly structured and have little power to act. Although the rate of inspection has increased, there is evidence that this has been insufficient. The inspectors from IBAMA's office in Altamira estimate that less than one percent of farmers request deforestation authorisations. There are 67 inspectors for the whole of the State of Pará, but only 40 of these are able to impose penalty fines. The minimum number of inspectors to carry out an effective inspection, according to the inspection director, would be 1500 for the whole state; in addition, they would require the support of vehicles, vessels, field equipment. IBAMA's office in Marabá relies on two foresters only. Due to the shortage of personnel, almost no work is done in terms of the inspection of forest fires and deforestation on either small or large farms.

The negative reactions to inspection, sometimes involving serious violence, also cause problems. The murder of an inspector in Marabá in 1999 is an example of this. Large property owners and loggers exert a lot of pressure on the inspectors. Therefore, the agency itself prefers to delegate to outside officers, especially from Brasília, the execution of special operations when forest fires and deforestation are prevalent and widespread. On these occasions, they fly over various regions of the state using helicopters and issue fines based on their inspections. For example, more than R\$ 1,400,000.00 in fines was issued last year in Altamira, and most of these were related to timber transportation and use of chain saws without a license, cutting of primary forest in permanent conservation area or deforestation of large areas. In general, these related to large-scale operations, and small farmers were very little affected by the enforcement of regulations.

However, in some respects it is very difficult for small farmers to actually comply with the law as the documentation required to request fire and deforestation authorizations is still quite complex. So far, few attempts have been made to assist farmers in abiding by the law. For example, in Conceição do Araguaia obtaining the regular license was

impossible due to the lack of documents proving land title, the Conceição STR decided to develop an 'alternative license' in the form of a commitment statement where farmers agreed among themselves on areas and dates for burning and reported this to IBAMA. But the initiative was only short-lived, as IBAMA stopped following up the farmers and they lost interest in the system.

Nevertheless, even if the actual impact is doubtful as many of the fines are being contested through the court, the producers have started to be sensitised to the problem of illegal land use practices. For example farmers' unions seek to approach IBAMA in order to negotiate simplified deforestation licenses for small producers. The gradual association between the approval of a credit project and the performance of environmental criteria by the beneficiary is another element: a 50 percent limit and now 20 percent on deforested land, a maximum annual deforestation of three ha. The *Declaração de Ajuste e Conduta* (Statement of Adjustment and Conduct) where the farmer should undertake to recover portions of forests until the established goals are attained is also being discussed. Even if the impact on farmers is not currently significant, there has been a change in the institutional negotiation environment. For example, in all regions the unions themselves now implement environmental projects or mediate environment discussions (for example, PDA projects, *Roça Sem Queimar* (Fireless Plantation), the *Proteger* project). The State FETAGRI is starting discussions about an alternative credit programme that would integrate conservation and development objectives (*Pró-Ambiente*). Some unions in Altamira are seeking to obtain information from IBAMA on the rights on agricultural deforestation in order to pass them on to the small farmers.

The PDA are the demonstration projects funded by the PPG7. Around 175 projects have been funded between 1995 and 2001 (from which six are in Altamira region, eight in Marabá and none in Conceição). They support small to medium size projects (rarely more than 100 people involved) in agroforestry systems, management of forest resources, fisheries and marketing of all sorts of forestry/agroforestry products (PDA, 2001.5 *Anos de PD-A, uma história pioneira*. Brasília, MMA). *Roça sem queimar* is a very localised experience developed in Altamira region and supported by local union where few farmers have experimented to plant roças without the use of fire. *Proteger* is a new PPG7 component, linking FETAGRI and other farmers' federations in Amazonia and NGOs to train farmers/communities in fire management and control. *Pro-ambiente* is a credit line, proposed by FETAGRI in association with FASE and a couple of other NGOs in Belém, where farmers would receive credit for agroforestry activities plus a grant for environment services provided by the sustainable systems. It will become a new policy in the near future and the PPG7 is paying some people to design this proposal and initiate some articulations around it. PRONAF created a new type of credit this year, very similar to this, but due to shortage of resources, implemented only in the Atlantic Rainforest.

In summary, the regulations do not seem to have had a significant impact on the small producers. We found that the deforestation controls have been focused on the larger properties. For example, IBAMA has located large areas of deforestations (above 1,000 ha.) via satellite images and sends inspectors to the field. The timber exploitation control is minimal and is performed especially where ongoing management plans already exist. Thus, illegal timber exploitation has occurred in other areas (Indian reservations, farms, small farmer areas) and this continues without any great

impediments. The law remains on paper only and, despite limited progress, the users of natural resources – both the large and particularly the small land owners – have insufficient knowledge of the regulations and very often cannot abide by them without jeopardizing their own livelihood. Even if the unions seek to negotiate some integration of environmental objectives with IBAMA, there is no perception so far that all types of credit and agrarian programmes should be reviewed in order to find a greater cohesion between the development of colonist agriculture and the conservation of natural resources.

6.2 Credit: special FNO, PROCERA, and PRONAF in the regions

As previously discussed, PRONAF embraces a series of other policies that have been managed as distinct programmes in the past. In order to simplify the analysis it was decided to bring together all the policies related to credit that had been implemented by different programmes and land reform policies that today are part of the PRONAF.

The credit directly related to land reform, PROCERA, and the credit for housing were applied where there were most land conflicts, particularly in Marabá and Conceição do Araguaia. Credit availability has increased since the second half of the 1990s, despite having existed since the late 1980s. Major investments coincide with greater lobbying by the local organisations for land reform.

The Special FNO programme was first applied in the Transamazônica region in six municipalities through some associations selected by the MPST. 207 projects were approved in 1992. The number of projects in the region kept increasing in the 1990s as the number of associations mediating the credit increased.

The amount of credit received per family varied between R\$ 5,000.00 (PROCERA) and R\$ 12,000.00 (Special FNO). This is quite significant, when considering that the previous assets owned by the farmers were quite often below R\$ 3,000.00. The credit was mostly intended for investment, either for perennial crops (seedlings, land preparation) or for livestock production (buying stock, fences). Only PRONAF has financed production directly, granting resources for annual crops, even though these have not been fully excluded from other credit, when included as alley cropping.

PRONAF as the main credit programme designed for the smallholder agriculture nationwide was faced with limitations in the Transamazônica. Few municipalities were selected for the programme. The evaluation by farmers' organisations in Medicilândia about the *Conselho Municipal de Desenvolvimento Rural - CMDR* (Municipal Council for Rural Development), as a negotiation forum for the interests of the family agriculture, was negative: the proposals submitted to the Council by representatives of farmers organisations and then the municipal administration implemented the PRONAF projects by itself, with no involvement of the Council and therefore, with no assurance to keep the established objectives. PRONAF's credit facility, in addition to having a lower ceiling than that of the Special FNO, enjoys a more direct channelling between the Bank (Banco do Brasil) and the farmer, which in some respects weakens the role of these organisations in the negotiations.

The amount of total resources applied for all regions under study represented the largest amount invested in the agriculture for the last 30 years and has brought major changes to local economies in terms of inputs and equipment, and supporting infrastructure for the production, processing and marketing. In the Transamazônica region, however, only about 8 percent of the families had access to credit, while in Marabá less than 15 percent of the families benefited.

Generally the farmers already in a better financial situation and those who are better organised were the ones who had access to the credit. The existence of an association is vital to access the FNO, as it is the association is required to channel the projects to obtain credit from the bank. Ninety-eight percent of those who received the credit in Marabá were members of some association and 64% were members of the STR (Tura, 2000). The better organised settlements had access to the credits earlier than others. Not all farmers within the same settlement have access to the credit, especially to the FNO, as not all farmers of a given settlement are members of an association.

Tables 4 and 5 show that until 1995, in the Marabá region, farmers with up to 100 ha had the greatest number of projects approved, but the amount received by farmers with more land was proportionally greater. In Pacajá and Medicilândia, within Altamira region, the older farmers and those with a greater area benefited most from the Special FNO (Peixoto and Sablayrolles, 2000).

Table 4: Percentage of beneficiaries of FNO-special in relation to land area for Marabá region 1990-1995

Area	Percentage of funded projects					
	1990	1991	1992	1993	1994	1995
Up to 100 ha	82	79	82	83	87	84
100 to 500ha	11	13	14	11	9	7
500-1000 ha	4	5	3	4	3	6
> 1000 ha	3	3	1	2	2	3

Source: Basa/Marabá (1995)

Table 5: Percentage of resources of FNO-special in relation to land area 1990-1995

Area	Percentage of resources funded					
	1990	1991	1992	1993	1994	1995
Up to 100 ha	25	27	35	42	34	35
100 to 500ha	27	17	29	32	34	17
500-1000 ha	31	23	23	17	12	26
> 1000 ha	17	34	12	9	20	22

Source: Basa/Marabá (1995)

In Pacajá in Altamira, the gradual expansion of the Special FNO programme during the 1990s represented a democratisation of access to credit. For example, farmers living far from the main roads, were able to benefit.

Access to PRONAF depended on the municipalities included in the programme. Such inclusion took place more quickly where good relations existed between the farmers' organisations and the municipal authorities. The first municipality to have access to PRONAF in Marabá was Itupiranga, where good contacts had been established between the union and the municipal administration for the last ten years. The communities with better political representation within the municipality were granted this credit.

A number of difficulties are evident in the implementation of these programmes. They centre on the technical packages which are linked to the credit, the tying of credit to particular suppliers, limited technical support available, and delays in the release of funds.

The financed projects had to adopt packages of agricultural techniques and crops previously established by the bank. When the FNO first began, often no more than three packages were offered per region. The packages preferred by the farmers were those including animals and the infrastructure to support them. The formulation of these packages failed to adequately consider the farmers' situation or the market structure.

The packages are for example:

- 2 ha of cassava, 15 cows, 1 ha of cupucu/banana
- 1 ha of beans, 10 cows, 1 ha coconut/papaya
- 2 ha of cassava, maize, 2 ha of açaí, coconut and cupuçu.

Each of these come with specific recommendations and money for chemical fertilisers. To receive money for cattle, farmers need to prove they have pasture, and then they can also receive money for fencing.

Another aggravating factor is that the credit was tied, that is, the release of part of the resources – approximately 70 percent of the total amount – was not made to the farmer, but to suppliers previously selected by EMATER and BASA. The process of selecting these suppliers was often made in the absence of the farmer organisations and very often the inputs, livestock or seedlings received were of very poor quality. Farmers and some technical advisors say that there were many instances of over-invoicing and credit defalcation involving these suppliers. In addition several problems with implementing credit are causing an increase in defaulting, at least in the Transamazônica region. The concentration of the credit and benefits in the hands of a few suppliers (cattle or seedling sellers) has caused price increases, impairing the credit beneficiaries and making the payment difficult.

The lack of technical assistance in deploying the permanent crop packages, or the selection of producers who were not actually interested in these crops, is the cause of failure for a number of credit projects. In some cases producers were selected without an actual payment capacity (such as for example farmers who did not have pasture to receive cattle) or who accepted certain technical packages because they did not have any other options, but were not interested in all of the package components.

Finally, the release of resources at specific times in the agricultural calendar was another serious problem which made a series of crop-related operations such as the release of resources for seedlings early in the dry season infeasible. The existing information does not allow the intensity of these problems to be assessed on a regional basis, but there are in each of them accounts of mismanagement of these resources.

In summary, there was a significant amount of resources targeted to the regions. In addition to the credit that directly benefited farmers, there was also the release of resources that contributed towards improving regional infrastructure, particularly within the land reform areas. The credit however is not being equally distributed. The better-organised sectors are the first ones to benefit from it. There was a problem with the technical packages adopted, and resources were used without farmers' control.

7. Policy impacts

Often the link between policy implementation and impacts is difficult to ascertain. It is hard to identify direct causal links and relationships between changes in land management and livelihoods and the implementation of policy instruments, particularly when a linear model of policy is rejected (see Mayers and Bass, 1999, Annex 1). This research sought to explore the possible linkages between the specific instruments and observed changes and used the methods outlined earlier, and the interviews and workshops to confirm and discuss these with actors in each of the regions. However other factors also influence land managers' decisions so although the policies may make a significant contribution to change, they are seldom the sole factor driving change. The research uses a similar understanding of the relationship between factors driving land managers behaviour and public policies as outlined by Lele et al. (2000: 27). The research identified changes in farming systems, which in turn had economic and environmental consequences. Social changes were also analysed, mainly concerning migration patterns and changes in the institutional context.

7.1 Farming systems

Credit was the policy instrument which had a greatest impact on farmers livelihoods and the environment. The different lines of credit have modified or caused changes in the production systems relatively quickly in the three regions studied, bringing economic, ecological, social, and institutional consequences.

Cattle production, especially in Altamira, has intensified and the introduction of perennial crops has increased in Marabá. The introduction of perennial crops both in Conceição do Araguaia and Marabá was impeded by problems such as the lack of experience by the farmers, lack of technical assistance and the adoption of technical packages with poor profitability. The result is that the area under production was significantly smaller than the areas financed.

In Medicilândia municipality, where cocoa is cultivated on strips of *terra roxa* (rich red soil), the FNO has allowed those farmers with less capital to introduce perennial crops and acquire cattle. In Pacajá municipality, where the production system dynamics is

closer to that of Marabá, and a trend towards cattle raising already existed, the farmers who were previously dedicated solely to annual crops have diversified their production system by introducing cattle. A comparison made between farmers who have received credit and those who have not shows that the credit strengthened the already existing trends. As seen in Table 6, the increased cattle production took place both among those who received and those who did not receive the credit, but the increase among the former was much larger. Also, there was an increase in pasture area for both groups, however the increase is less significant than the cattle (pasture establishment was not financed).

Table 6: Evolution of the herd at the moment of credit implementation in two municipalities in Altamira region

	Farms with access to FNO credit				Farms without credit			
	Pasture		Livestock		Pasture		Livestock	
	Before	After FNO	Before	After FNO	Before	After	Before	After
Medicilandia.	11	29	7	31	11	18	7	14
Pacajá	16	30	5	26	17	31	10	15

Source: Peixoto and Sablayrolles, 2001

In Conceição do Araguaia both the PROCERA and the FNO helped increase the region's cattle herd. The credit, however, had little influence on the expansion of the pineapple crop. As the financing covered expenses for two ha only, while the economic feasibility for the crop occurs as of five ha, the credit was not very attractive. Some farmers managed to introduce pineapple crops with the help of credit, but faced difficulties due to the lack of technical assistance and access to the market, and those having financed pineapple crops faced greater difficulties in settling their debts with the bank.

7.2 Economic impacts for the farmers and the region

Most of the people interviewed affirmed that the credit has had positive economic impacts. Farmers have more resources to invest in production, the quality of life has improved particularly related to credit for housing and they perceived that the regions' economy was also been stimulated, with a greater amount of sales in the local markets. These impressions are confirmed by the data available. For example, in Medicilândia, Altamira region, the assets of those who received the FNO increased by an average of 58 percent, while in Pacajá, where the assets were lower, there was a 285 percent increase. Such assets are made up particularly of livestock, equipment and infrastructure for production. In Conceição do Araguaia, the comparison between the Pecosá and Joncon settlements, with similar structural conditions and patterns and history of settlement, allows an assessment of how access to credit has contributed to increasing farmers' assets (Table 7).

Table 7: Access to credit and average capital increase for farmers for two settlements in Conceição do Araguaia region

Settlement project	Years of settlement	PROCERA		Other		Initial capital (R\$)	Present capital (R\$)	Annual capitalisation (R\$)
		Average amount (R\$)	% benefiting farmers	Average amount (R\$)	% benefiting farmers			
Pecosa	7	0	0	0	0	8.137,00	19.413,07	1.643,74
Joncon	9	3550	95.5	1200	13.6	10.124,36	31.542,14	2.393,08

Source: Prado, 1995

No reliable information was found with regard to income improvement. However, one of the possible income indicators for the farmers is the capacity they have shown to settle their credit debts. The difficulty in settling the credit varies a great deal according to the region. Analysis indicates that if the payments are to be made solely out of the resources resulting from the income generated by the FNO investment, most of the farmers will not be able to pay their debts, that is, the activity would be deficient (Solyno, 2000). The default rates would be 65 percent of the projects in Marabá and 64 percent in Uruará. Projects with a greater payment capacity are those including cattle and perennial crops, and the lower ones are those with a strong component of annual crops associated with perennial crops, thus revealing a mistake in the technical design of the projects as well as in their execution, where the release of amounts out of the agricultural calendar and the purchase of inputs, seedlings or animals of poor quality made some projects utterly unfeasible. Such problems reinforce the tendency to promote cattle production, as this was less affected by the late release of credit, and shows greatest opportunities for increased income and therefore payment capacity.

The changes in the region's structural conditions have become evident. There is an increased number and quality of roads, more noticeable in some municipalities than in others. The local roads are being improved and, therefore, contribute to better access to markets. This process, however, has changed the quality of the main highways. The Altamira region continues to be greatly affected by the difficulties in the inaccessibility of the Transamazônica at the peak of the rainy season.

The fact that the credit has reinforced certain trends in the production systems has also led the private sector to support the cattle production, for example in Conceição do Araguaia and Marabá. A meat and milk processing company is being established in the Conceição region. Two cold storage plants were installed in the region, with a total slaughtering capacity of 1,100 animals a day. These produce sausages, animal ration and fertilizers, in addition to meat for export to other states. Two tanneries have also been installed recently and approximately 15 average-sized dairy plants exist today, which are being gradually taken over by two large-size industrial dairy plants financed by outside investors.

There have also been initiatives to establish commercialising tropical fruits processes as a result of the support for the cultivation of perennial crops, although these are only small scale at present. The number of small fruit pulping plants, particularly for

cupuaçu, has increased in the Marabá region, but these developments remain quite informal and precarious.

7.3 Environmental impacts

Among the actors interviewed there is a general perception that the deforestation and forest fires have increased in the areas under study due to a greater number of farmers with access to the land, credit availability and the lack of control by the environmental agencies.

In Marabá and Conceição do Araguaia, where cattle production was already significant, there is indirect evidence of the connection between credit and increased deforestation. It is thought that increased cattle production is leading to conversion of forest and fallow to pasture. Unfortunately there is no definitive data on this increased deforestation, but according to the perception of interviewees the reduction in the forest area to 1996 must have further accelerated since then (see Table 8 for Marabá region). In Altamira the environmental impacts are also strongly identified. Deforestation rates can be linked to different agricultural production systems (Sablayrolles, 2000). Unlike in Conceição or Marabá, it is not the areas with the most specialised cattle production that exhibit highest rates of deforestation, but those with a greater specialisation in perennial crops. This is related to availability of capital to these farmers. With higher incomes they are capable of making more investments, thereby leading to a faster conversion of forest cover. We may for example compare the 80S and 75S locations with the Santa Fé and Surubim locations (Table 9). The former, with more fertile lands, produce more cocoa. As the farmers have more capital and better relationships with the market, they were also able to access the credit more easily. As with the other regions under study, deforestation increases as the families' assets increase. Thus, there is a positive correlation between access to credit and deforestation, even if where credit is supporting activities other than cattle production.

Table 8: Evolution of land use 1973-1996

Type	Area occupied in 1996 (ha)	Area occupied in 1996 (%)	Forest			
			1973 (%)	1978 (ha)	1984/87 (%)*	1996 (%)
Colonists	656,331.00	33	32	31	28	20
Non-family farms	1,381,751.00	48	47	44	38	29
Indigenous Lands	177,146.00	6	6	6	6	6
Parks, reserves and non-occupied free land	348,111.00	12	12	12	12	12
Towns, army, and inundated zones	31,358.00	1	0	0	0	0
Total	2,594,697.00	100	97	93	84	67

* 1984 for Eastern part of the region and 1987 for the west, due to availability to Landsat images

Source: LASAT, 1998

Table 9: Access to credit, farming systems and deforestation rate for selected localities in Altamira

Locality	Year of settlement	Roads	Credits	Soils	Percentage of forest cover	Deforestation/ year Ha/Km ²	Farming systems
75S	1973	Built at the time of settlement. Passable throughout the year	Access to all credit lines since the start of the programmes. FNO since 1993	High fertility	80%	3,5	cocoa+ coffee and cattle
80S	1973	Built at the time of settlement. Passable throughout the year	Access to all credit lines since the start of the programmes. FNO since 1993	High fertility	80%	3,5	specialised in cattle and mixed
Sta Fé	77-81	Built at the time of settlement, but without maintenance. Transport made with animals.	Short access for perennial crops. Only 20% of farmers benefited from credit.	Medium to low fertility	33%	2,4	perennial crops (1/3 of the revenue) and cattle
Surubim	1977-80	Built in 1983. Passable throughout the year	Short access for perennial crops. Only 20% of farmers benefited from credit.	Medium to low fertility	40%	2,9	mixed with perennial crops

Source: Sablayrolles, 2000

It is important to point out here that cattle ranching is not necessarily perceived in a negative way. In Marabá and Conceição do Araguaia there are family farmers settled for a relatively long period who make a living from dairying under relatively stable production systems (Muchagata and Brown, forthcoming). The problem posed by increases in production is that the cattle raising has promoted deforestation, particularly in the newly settled regions. In addition, the way in which the pastures are managed increase the occurrence of fire in the landscape. These fires frequently spread to forests and perennial cropping areas. Studies undertaken in Marabá argue that frequent fire on the landscape makes it difficult to diversify the production systems (Muchagata and Brown, 2000).

7.4 Social impacts

Most of the respondents and informants consider that the agricultural credit and infrastructure have contributed to farming families remaining settled in one location. The families tend to stay in one place due to their commitment to repaying the debt. In addition the opportunity of improving agricultural production and increasing their income, and the improvement of quality of life thanks to the better housing conditions (houses, electric power) and transportation (roads) are incentives for them to remain settled. Interviewees' statements are also confirmed by surveys with the farmers at the field. For example, when they are asked about the factors that have contributed to their permanence in the location, credit is cited as playing a very important role.

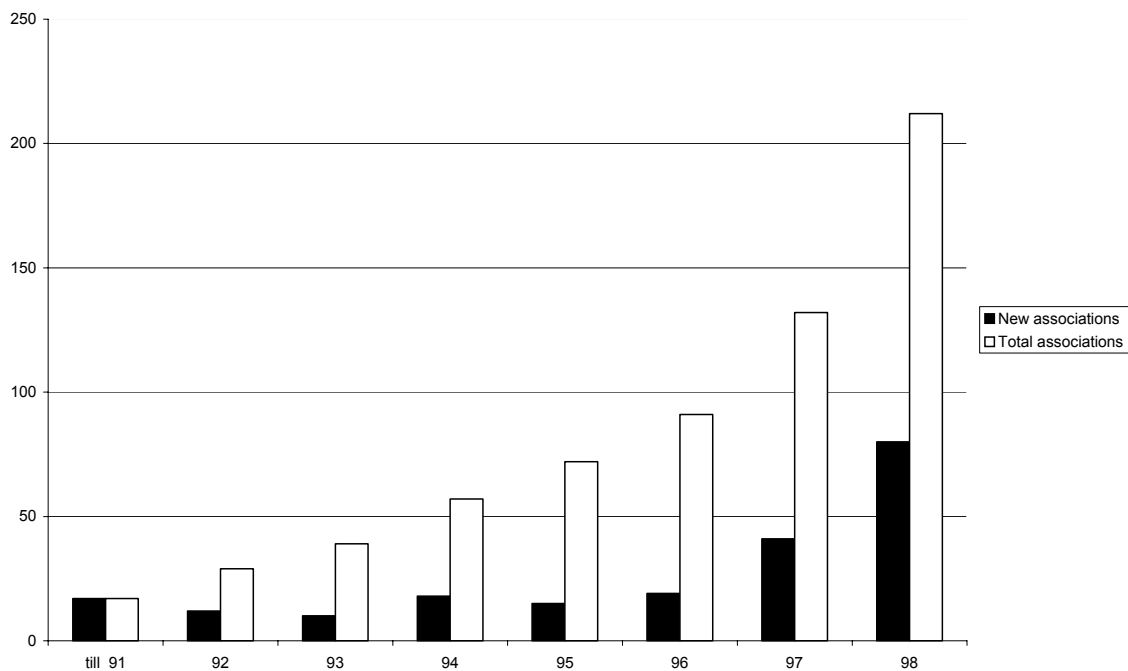
The credit in Altamira seems to have contributed to stabilizing family agriculture as the resources have been distributed such that they have reached an important range of beneficiaries either directly or indirectly. One of the benefits has occurred through increased use of hired labour and this has contributed to increasing the region's income.

However, if there are indications that the access to credit is a stabilising factor for farming families, the fact that the credit is not equally distributed within the same locality has contributed to the acceleration of the social differentiation process. While the better-off farmers are those with access to credit, the poorer farmers tend to be further marginalized compared to those with more capital, are better organised and experienced. This may lead to a land concentration process, especially in Conceição and Marabá, where farming systems are oriented towards cattle ranching. Within the

currently existing technical systems, as the herds increase, there is a greater demand for land and those who can afford it seek to enlarge their area by acquiring *lotes*, invariably from the poorer farmers who still have forested areas. The increased economic inequality among the families is less acute when the associations manage to bring the same benefits to all families within the region, as has been the practice by the associations linked to the MST.

As the credit release process was performed by means of associations, new associations boomed in all regions (Figure 3). Associations in this context mean farmers' associations. In Marabá these associations have replaced the union delegacies, but this does not happen in other regions. Although most associations are informally linked to the unions they are independent and some are aligned with representatives of local oligarchies and develop clientelistic relationships with them. Some of these associations were set up solely to obtain credit and others are within the influence of local politicians. In other instances, associations were established to access credit and gain other benefits for the population. The important role played by the associations, which were nearly non-existent in the 1990s, grew so much that it has influenced the manner by which the unions organise themselves. Thus union representation at the locality level in some places has been replaced by the local associations. In Marabá and Conceição do Araguaia the associations not allied with the unions have established a Central Association. Generally the new organisations that have appeared, regardless of their political affiliation, enable the local population to become better organised, gain access to information and to public services, as well as to credit. The more stable areas where no occupations and new settlements took place, for example Altamira, also experienced increased numbers of associations, but not improved technical assistance.

Figure 3: Number of farmers' associations between 1991 and 1998 in Para southeastern region



Source: FETAGRI, 2001

Another important institutional innovation is that technical assistance services have started to reach the region, even if they do not accurately reflect the farmers' needs. Programmes such as the former *Lumiar*, and more recently INCRA contracts with technical assistance providers, are disseminating technical information and supporting development actions as never before in the region. This will probably be reflected in the agricultural practices in the future. The process of developing Sustainable Development Plans for the settlements, although perhaps implemented very quickly and sometimes superficially, represents an important step. Since 2001 INCRA demands that every settlement has a SDP, a two-year plan for land use, investment and other activities that will be developed by the communities in conjunction with extension agencies hired by INCRA. All INCRA and MDA investments in the settlement are supposed to be guided by this plan.

Finally, the PRONAF structure and the creation of Municipal Sustainable Development Councils also establish new channels for discussing the region's development. In most municipalities however these councils are still quite bureaucratic and are closely connected with the local executive powers, and do not yet show the required effectiveness and independence to perform their duties.

In summary, the initiatives to support family agriculture within PRONAF and the previous credit programmes encompassed by the new programme have led to transformations in production systems. The existing data as well as the perceptions of the various actors interviewed indicate that such transformations have contributed to increasing families' assets, to some improvements in the infrastructure supporting production, and in some items related to the quality of life, such as the housing improvement. In this regard, those actions are an encouragement for the families not to sell their *lotes*. Farmers' organisations were strengthened with the establishment of new institutions that defend their interests and the state's apparatus is somewhat more mobilised than previously to meet some of the farmers' demands such as is the case with technical assistance. On the other hand, the emphasis on the cattle production resulting from the interest by the farmers themselves in view of poorly formulated technical packages has contributed a great deal to environmental degradation. In spite of existing legislation that should curb deforestation and the uncontrolled use of the natural resources, the failure to apply the legislation by the relevant agencies cannot oppose the dynamics set up by the land policy. Another negative outcome is that the non-distribution of credit to all possible beneficiaries on a local level may be contributing to augmenting the socio-economic inequalities and, in this regard, leading to a process that continues to expel mainly the poorer farmers, driving them to the city or further ahead into the frontier.

Figure 4 provides a summary of the impacts of the two policies, modelled after Mayers and Bass (1999: Figure A4.1 p257). The impacts reflect their relative implementation; the Environmental Crimes Law has had few impacts partly because it is so poorly implemented. PRONAF instruments however have a range of direct and indirect impacts leading to positive and negative impacts on welfare and livelihoods and on the environment via a series of complex relationships.

8. Conclusions

Although the policies we have examined have been developed very recently, we can draw some conclusions on their evolution, implementation and impacts. Importantly we find very profound differences between the policy processes for agrarian development and environmental conservation. We have studied two aspects of integration: first the integration of different actors in policy processes, and then the integration between policies. In both instances we find that agrarian policy, through PRONAF credit programmes, exhibits greater degrees of integration both vertically and horizontally than the Environmental Crimes Law. The contradictions between agrarian and environmental policies are evident. The Environmental Crimes Law has been formulated from 'above' with scant inclusion of civil society nor sub-regional governmental actors. It is very poorly implemented in each of our three study regions. The PRONAF credit programmes, on the other hand have been influenced by a range of local and extra-local actors, and have had a series of impacts of different sectors of society. There is evidence of good and bad impacts on livelihoods and environment; importantly, a significant number of the actors interviewed consider that the resources channelled to family agriculture are reinforcing the existing trends of deforestation and the extensive expansion of the cattle ranching. This research has verified that the regional community and its different players are more concerned with and active in agrarian issues than with environmental issues. As seen in Figure 5, which analyses the actors' participation, the more active players in the formulation in the environmental policies are at a national level. The users of natural resources, particularly the family farmers, hardly take part in the decisions on environmental conservation.

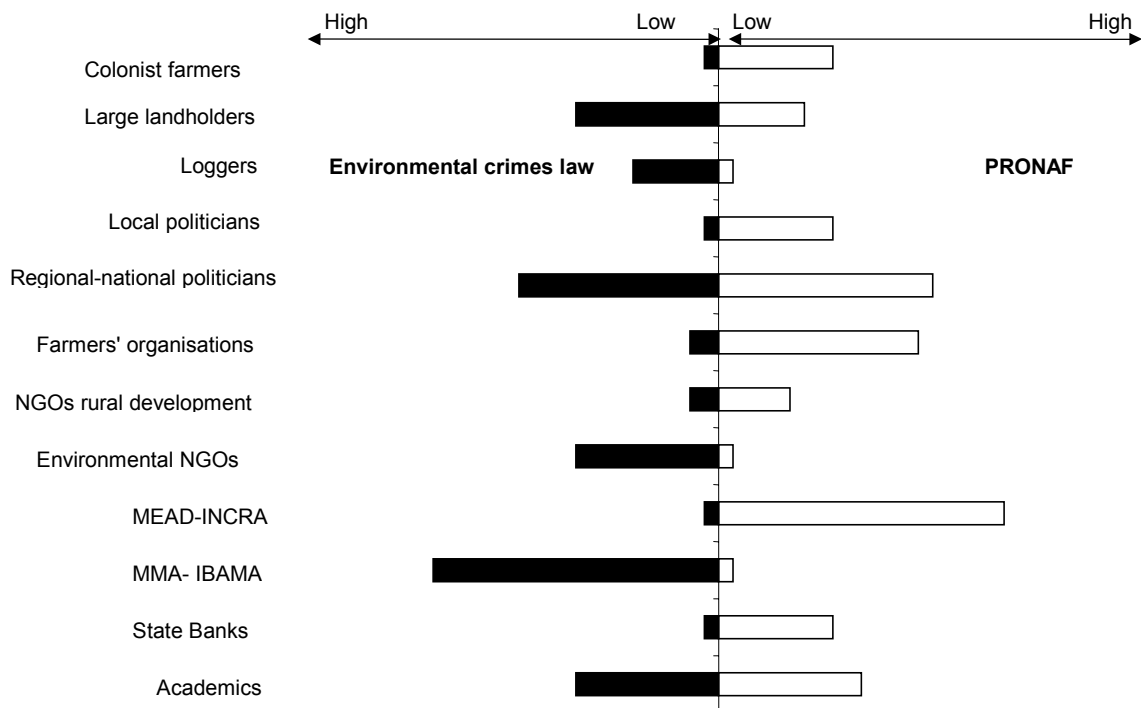


Figure 5: Influence of different actors on policy process

A number of initiatives have recently been developed which aim to remedy these problems with respect to environmental policies and to enhance horizontal and vertical integration, including:

- ***A Positive Agenda for the Legal Amazon.*** Between 1999 and 2001 the MMA's *Secretaria de Coordenação da Amazônia-SCA* (Amazon Coordination Secretariat) coordinated, in partnership with the state environment agencies, the formulation of an agenda to reduce the illegal deforestation and encourage the sustainable use of the forests.
- ***CONAMA (National Environment Council) Technical Chamber for Updating the Forestry Code.*** After the repeated issuance of provisional measures to change the Forestry Code, it was clear that a broader discussion on the subject was necessary. The Ministry of Environment requested CONAMA, in 1999, to establish a Technical Chamber (CT - *Câmara Técnica*) in order to update the forestry code. CONTAG takes part in this CT and has acted towards excluding small properties from the most stringent requirements.
- ***IBAMA's Forestry Technical Chambers (CTF).*** The purpose of these Chambers is to suggest measures to improve the forestry management in each State. The Pará CTF resumed the work in 2001. The CTF is made up of members from the federal and state government of several areas such as credit (BASA), agrarian (Iterpa, INCRA), Indian (FUNAI), research and teaching (EMBRAPA, Göeldi Museum and FCAP); and from the private sector, such as environmentalists and logging entrepreneurs.
- ***Commissions within governmental agencies.*** The MMA and the MDA (Ministry of Agrarian Development) have set up commissions in order to take common measures. The setting up of these commissions have largely resulted from the criticism by environmental groups and the media as to the contradictions of the environmental and land policies by the federal governmental. The greater interaction between the MMA and the MDA may create opportunities for the small producers to demand from both the required conditions for a better environmental management of the settlements.

However, all these fora take place outside the local arenas, and even when farmers' groups do participate in them, as in the case of CONAMA, this is done without discussions or exchange of information between national and regional representations of farmers' organisations.

Finally linking agrarian and environmental policies seems a long way off. It is likely that the most important opportunity to link agrarian and environmental policies is the existence of effective fora at the sub-national level – so at municipality and regional levels. One of the important tasks ahead is to increase the *capacity* of municipal governments and local civil society to work together on environmental and development planning. Discussions of land use planning at the municipal or regional level are the most likely way to make environmental and agrarian legislation work together. For this it is important to develop capacity for local institutions, including training municipal officers, other government agencies, and to design ways and strategies to increase environmental awareness among local stakeholders.

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