

Perspective of Environmental Services and Management in the Amazon Region, Pará-Brazil

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Abstract—At the moment the Brazilian Amazon development, especially in the areas of the Northeast of Pará (NE/PA) and Metropolitan Region of Belém (RMB), demands public policies that provide attractive economic means in environmentally sustainable systems for rural societies. Thus, the objective is to make a descriptive analysis to subsidize the adaptation of a program of public policy for technical assistance and Environmental Services Provision (PSA), called the Socio-environmental Rural Family Production Program (PROAMBIENTE). In order to reach this intervention, it will be necessary to comply with a number of steps, which are mainly related to the elaboration of the Development Plan (PD), the Socio-Environmental Certification Standards (PCSA), Individual Diagnosis (DI) and Utilization Plan (PU) and the construction of Community Agreements (AC). In order to do so, future studies on the implementation of the program and its implications through the variables that will be generated will be essential, verifying those that are most influential in land use and landscape change, identifying the variables of change, in order to generate information capable of qualifying the application of integrative policies in NE / PA and RMB.

Keywords—Amazon, environment, public policy, sustainability.

I. INTRODUCTION

In the Amazon, the environmental issue is related to discussions about the ways in which development programs and policies are implemented for rural societies, especially for quilombolas, indigenous peoples, settlers, extractivists, peri-urban farmers, riparian and others. These discussions take place in a context in which it is agreed

that the policies and programs aimed at family production in the Amazon should develop mechanisms and formulate instruments to promote sustainable practices for socioeconomic reproduction for this public [2, 3]. Thus, the current scenario of rural development in the Amazon requires a federal public policy, state and municipal public policy that provides mechanisms and economic instruments that make attractive investments in the sustainable systems of agricultural, extractive and environmental production [1, 2].

The purpose of this article is to make a descriptive analysis to support an adaptation of the methodology for the reality of the rural societies of NE / PA and RMB, based on a public policy program of technical assistance and provision of environmental services, the Socio environmental Development Program Rural Family Production (PROAMBIENTE) that was implemented in the Amazon biome between 2003 and 2013, which predicted, from its productive actions, the provision of six types of environmental services: (a) avoided deforestation, (b) carbon sequestration, (c) conservation of water, (d) conservation of soils, (e) preservation and conservation of biodiversity, and (f) reduction of fire risk.

II. METHODOLOGY

Surveys have been made in the existing database (final proposal, articles, minutes, various documents, among others.) of PROAMBIENTE as well as a bibliographical survey, by scientific articles, master dissertations and doctoral theses in available databases, as well as a survey of environmental legislation. Then, the qualitative analysis and interpretation of results were made. We analyzed the interviews with the selected groups, combined with the

information from the database to analyze possible changes in the management and delivery of environmental services in the RMB and NE / PA.

III. RESULTS AND DISCUSSIONS

The PROAMBIENTE Program that was the fruit of many discussions of the Federations of Agricultural Workers (FETAGs) of the Legal Amazon; of the Confederation of Agricultural Workers (CONTAG); of the Amazon Working Group (GTA); of the National Council of Rubber Tappers (CNS); of the National Movement of Artisanal Fishermen (MONAPE); the Coordination of Indigenous Organizations of the Brazilian Amazon (COIAB) and the technical cooperation of the Federation of Organs for Social and Educational Assistance (FASE) and the Amazon Environmental Research Institute (IPAM) on the need to overcome the dichotomy between rural production and environmental conservation, main theme of the Amazon Cry of 2000¹[2, 3, 4]. The program focused on environmental services, defined as: "... the quality of life offered to society by qualitative changes in production systems". As for the value of the environmental service, the program itself identified it within the principles of valuation of the ecological economy, which was initially calculated as equivalent to half a minimum wage per month, based on the cost of eliminating the use of fire in production systems, recover the Legal Reserve Area (ARL) and maintain the Permanent Preservation Areas (APP) called the opportunity cost which is: "[...] the additional cost to reduce the risks and environmental impacts of production systems that are not internalized in the final price of the product to the consumer market [...]" Due to the various debates and discussions about the program to be adapted in the NE / PA and RMB with the entities that work in the region, especially in the

¹It was and until today is a mass movement and political manifestation of small farmers, peasants, family farmers, rubber tappers, riparians, coconut breakers and other groups representing the rural sector. Created in 1991 in the State of Pará, it spread to the Amazonian states where it facilitated the beginning of a democratization process of rural credit, through the institution of the FNO-Special. In 1994, the Cry of the Amazon was assumed as a form of struggle by the peoples of the countryside of other states, assuming the current form entitled "Grito da Terra Brasil", which every year, usually in May, promotes mobilizations in all Units of the Federation and a large demonstration in Brasilia to claim the improvement and expansion of public policies aimed at the countryside [2, 3]

municipality of Ananindeua, where these discussions should culminate with the creation of the NE / PA Council and RMB with UFPA-Campus Ananindeua ahead of it, a collegiate body that will be responsible for making decisions within the regions, respecting the resolutions of the local councils of the municipalities involved. The NE / PA and RMB Council will be directly dialoguing with the municipal representatives and will often meet and respect the decisions and actions to be implemented within the regions.

It will be the Council's responsibility to discuss the actions, monitor and monitor the activities of the local technical assistance. It also aims to ensure the social control of the program and ensure the participation of representative organizations of rural societies, local public authorities and governmental and non-governmental entities in the three spheres of the federation (municipal, state and federal) and all entities involved in the implementation of the program [2, 3, 4].

The Council will be of decisive character and will be formed by a collegiate which will present majoritarian powers representative of the rural societies, among them: Trade Unions of the Workers and Rural Workers (STTR); associations and other trends present in the municipalities of Ananindeua, Marituba, Santa Bárbara, Benevides, Santa Isabel and others in NE / PA; as municipal secretaries of Agriculture and Environment; an Eastern Amazon Embrapa; the National Institute of Colonization and Agrarian Reform (INCRA); Federal University of Pará (UFPA) and other entities that work in the region.

3.1. Methodological assay to the Rural Society of the Region

In order to implement this methodological test in NE / PA-RMB, it will be necessary to comply with some steps that refer to the process of construction of this dialogue intervention with rural societies, which mainly include elaboration of the *Development Plan* (PD)², *Socioenvironmental Certification Standards* (PCSA)³, *Individual Diagnosis* (DI)⁴, *Family Unit Utilization Plan*(PU)⁵ and the construction of *Community Agreements* (CA)⁶

² It is the study that will portray the socio-economic and environmental reality of NE / PA-RMB;

³ It is the set of rules and laws that must be respected by families and community groups of rural societies to provide environmental services and after remuneration;

⁴ It aims to raise and study information on socioeconomic and environmental reality and subsidize the construction of PU of each family;

⁵ It is the integrated planning of the family unit, being a reference for the family to determine what are and how will be the changes in land use;

⁶ It is the document agreed in each community group regarding the concepts and values of natural resources, as

The construction of this methodology will have as one of the main purposes, the format of a database through statistical software – Windows Tab(TabWin) and Statistical Package for the Social Sciences (SPSS) to subsidize information for future research and strategic actions for the strengthening of rural societies to be registered by the Council, supported by both the local authorities and future partnerships established during the construction of the program. In addition to subsidizing the elaboration of the PUs in line with the strategic actions put in the PD to improve the management of the RN in the region.

3.2. Construction of the Development Plan (PD) and the Socio-Environmental Certification Standard (PCSA)

The PD will be divided into two parts: firstly a diagnosis itself, will be done using Rapid and/or Participative Rural Diagnostic (DRP) techniques with the objective of portraying the socioeconomic and environmental reality of the regions through the information to be updated about the different groups of rural societies, production systems, infrastructure, environment, commercialization and, also, from the point of view of local organizations and external institutions that operate in the regions [4].

The second part refers to the elaboration of the actions directed at the rural societies of the regions through the techniques of Strategic Planning (PE), which basically determines the actions by objectives and will aim to contemplate the main strategies of rural societies to overcome obstacles to their own development and management of the RN, besides the directives and more urgent actions of the PD.

For the construction of PD and PCSA, the "*landscape reading map*⁷" method will be used with the adoption of geoprocessing technology where it will be able to cover the set of acquisition, storage, retrieval, manipulation, analysis and distribution of spatially referenced data in the areas of municipalities indicated by the RMB and NE / PA Council as priorities for the implementation of the program.

It is noteworthy that in the "*landscape reading*" to be carried out during the construction of the PD and PCSA, where current mapping technologies such as conventional

well as being the basis for certification and remuneration of environmental services.

⁷Technique that consists of traversing the previously defined zones in order to know the particularities of the region, the NB, among others. It also subsidizes the debate of the groups according to the characteristics, tendencies, differences, similarities, etc. It allows to identify structures within the same geographic space, such as schools, roads, health post, etc., and provide a systemic view for the group under discussion during the PU and PCSA workshops.

topography, aerial photographs and satellite imagery will be used, Global Positioning System by Satellite (GPS), Geographic Information Systems (SIGs), as well as other forms of data acquisition and rapid and precise information processing, covering wide aspects, making thematic maps possible and delimiting and quantifying areas such as: APP, ARL, areas of agriculture, pasture, fruit growing, forestry, forestry and other activities, as well as degraded areas, areas subject to floods and potential water resources, eroded or erosion areas, extension of roads and fences, configuration of the land structure, as well as the different forms of use of the RN.

It should be noted that the PCSA is a set of principles, indicators and criteria that, if fulfilled, will give the beneficiaries the right to receive through a social and environmental fund, the Payment for Environmental Services (PSA), whose principles express general concepts to be followed by the families of rural societies. These criteria transform the concepts and principles that constitute guidelines for the work of households and the indicators turn the criteria into practical questions that can be applied during the field audit.

The news, in relation to other processes in progress in the various localities, is the component of the provision environmental services to society. In other words, family groups of rural societies belonging to the RMB will propose to perform environmental functions, in addition to traditional food and fiber production, as an additional source of external resources to support their own endogenous development process.

It is worth mentioning that it is planned to implement a Socio-Environmental Certification System (SCSA), where the certification process will be divided into two stages. In the first, families certify each other (participatory certification), in scope of the ACs signed. In the second step, a certifying (independent) institution will be contracted to conduct field audits to confirm the information provided by the community. For rural societies to be certified, two preconditions are required: that the family has developed the PU and that its community group has constituted a CA.

3.3. Construction of the Usage Plan (PU) and the Community Agreement (CA)

Regarding the PU will be elaborated by the families with the support of the local technical team. PU is the integrated family planning. It is also the basis for technical credit and PSA projects, for the term of conduct adjustment (TAC)⁸ and for the Environmental Licensing (LA) of the *family unit*[2, 3, 4]. According to the methodology to be used in

⁸ The TAC is signed between the farmer and the competent environmental agency, identifying the location of the existing ARL and the projection and recombination plan of the APPs that need to be recomposed.

the elaboration of the PUs, each family will be stimulated to design the current use of the newborns and the desire of the families in relation to the future use of their *family unit*, in sheet of paper, which will already serve as a base for the community to see the planning of the family unit and its possible change of land use.

For Vasconcelos[4] the PU is a general planning of the *family unit*, based on the family members' operational capacity, for a period of 15 years, containing short, medium and long term actions.

It is worth mentioning that the ID will be the basis for the construction of the PU. These two methodologies, even though they are correlated, will be constructed at different moments, but with the same PD method used in DRP, with DI and PU being adapted for each situation. The CAs have the objective of promoting the certification of environmental services to the families that will participate in the program and, specifically, to ensure that the PCSA is respected. In addition to ensuring that families are fulfilling PUs.

Considering that one of the objectives of CAs is to ensure that families are fulfilling the *plans*, it is important that a family knows the PUs of other families. Therefore, a redemption of the *plans* will be made. Thus, each family should present their PU from the maps, current and future, that will be elaborated. This socialization will be facilitated by the local technical team, presenting the main common points of conversion in the PU of each community group. As for the verification methodology, a mixed certification system is foreseen, that is, they will propose a first stage of participatory certification that will culminate in the drafting of group *agreements* and a second stage of conventional certification that will be finalized with certification audits. After one year of implementation, the community subgroup shall review its *agreement* and indicate its compliance and non-compliance. Next, entities registered by the program and accredited by the National Institute of Metrology (INMETRO) will perform certification audits to verify the *agreements*. As it will not be possible to conduct audits in 100% of families, each year, around 10% of the subgroups should be audited, closing 100% of the audit over 10 years. On the other hand, that subgroup that is not audited, will be worth what the agreement says.

Each subgroup of the program should meet and establish its *agreement*, which will indicate the collective commitments for the fulfillment of the PU and the PCSA. The ACs will be established based on the commitments defined in the PCSA itself (reduction of fire use, reduction of poison use, reduction of deforestation, etc.). For example, the subgroup may define collective strategies to prevent the occurrence of accidental fire (through mobilization of many people, firebreak, etc.).

The program now being implemented is characterized by the functioning of integrated flows to the benefit of rural societies in the regions: (a) shared management between organized civil society, federal, state and municipal governments through the functioning of the Council with the UFPA- *Campus Ananindeua* leading, in the regional scope, through the functioning of the Councils, secretariats and entities attending to a historical flag of the social movement of social control of the public policy; (b) territorial management through the formation of family groups of rural societies, to establish a collective process of environmental awareness and significant production of primary products and environmental services; (c) participatory design and implementation of the PD (aspects outside family units, such as processing, marketing and commercialization of production, infrastructure works and other structural demands) and PUs (aspects within family units and communities, such as management objectives, spatial and temporal distribution of production, input and labor input flows, and exit of primary products and environmental services); (d) ACs that provide the information base to designate PSA and non-PSA family groups, and finally; (e) advisory by local institutions elected by the community members themselves.

IV. CONCLUSION

In the search for a new perspective, the program to be adapted for the family units of rural societies of NE / PA-RMB constitutes a technical-pedagogical exercise of a public policy with participative methodologies, socioeconomic changes and proposing the qualification in the management of the RN with a view to the future PSA. Thus, the program must act from the beginning of its implementation through an innovative local advisory that will seek to support the rural NE / PA-RMB societies in the process of providing environmental services, with the objective of reversing socioeconomic conditions and negative impacts on the environment caused by the interventions of past public policies, especially those with disorganized explorations of RN.

The dialogue intervention in NE / PA-RMB will present a great challenge for UFPA-Ananindeua Campus in the teaching-research and extension axis. Because the socioeconomic status of families and the changes in the type of land use and RN management in the family units that will occur due to this intervention, especially those triggered by PU and AC tools, will be a great opportunity to verify their effect.

In this sense, it is accepted that future studies will be essential about the implementation of the program in NE / PA-RMB and its implications through the variables that will be generated through the PUs and ACs in order to point out those that will most influence in the land use, and

at the same time will identify the potential variables of changes in the type of future land use, in order to generate information capable of qualifying the application of integrative policies (for example, local advisory and credit for PSA), modifying the socioeconomic reality and environmental aspects of the NE / PA-RMB rural societies and which will serve as a basis for intervention in other regions of the State of Pará.

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