

The impact of the interaction between formal and informal institutions on the sustainability of communal initiatives of forest management in Oaxaca (Mexico)

Dissertation proposal

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v Introduction

The term “climate change” actually makes reference to fast changes in modern climate patterns that have been induced by human activities [1]. It is now widely recognized as the defining challenge of our age; as a major, overriding environmental issue; and the greatest problem that environmental regulators currently face [2]. Its impacts are related with the growing crisis in economy, health and safety, food production and security, between others. Some of its immediate consequences are the warming of the atmosphere that accelerate the rates of ice-loss from glaciers and ice sheets; and aids the spread of pests and diseases that were limited to the tropics. The shifting of weather patterns, the increased unpredictability of precipitation, and the rising of sea levels that contaminate coastal freshwater reserves and increase the risk of catastrophic flooding. It is even possible that some ecosystems had already reached or passed their thresholds of temperature, causing irreversible changes in the major ecosystems distribution in the Earth and in the climate system of the planet. Because of that climate feedback and environmental cumulative effects are demonstrating behaviors that we cannot anticipate [2].

As human activity has being identified as the main cause of the rapid increase of these climate abnormalities over the past several decades, the international environmental policy debate has largely shifted onto ways to reduce further human impacts, and to find ways to adapt to the change that has already occurred [1,3]. Most of the concern is focused on the reduction of CO2 levels due to emissions from fossil fuel combustion, aerosols and cement manufacture. But changes in the practices of land use, animal raising, agriculture and deforestation, are also important anthropogenic factors that have been taken in mind for the design of programs to face the problem [4].

International organizations have played a key role in the efforts to address climate change. They have taken the leadership to increase awareness among governments, the scientific and business communities, and the public. This rising of political and public recognition of the climate problem has been addressed mainly by the Intergovernmental Panel on Climate Change (IPCC) - established by UNEP and the World Meteorological Organization in 1988 -. IPCC supported the negotiations for the Kyoto Protocol, and continue to provide the scientific foundation for global decision making on climate change within the United Nations Framework Convention on Climate Change (UNFCCC), that is currently working in the development of The United Nations Collaborative Program on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (UN-REDD Program), a climate agreement which main aim is to “significantly reduce greenhouse gas emissions, providing at the same time finance, technology and support for adaptation and mitigation needs for developing countries” [5].

UN-REDD Program is a multi-donor trust fund that was established in July 2008 with the collaboration between FAO, UNDP and UNEP. It was first introduced at the Conference of the Parties (COP11) in December 2005 by the governments of Papua New Guinea and Costa Rica, supported by eight other Parties. Actually REDD is a functioning international finance mechanism that is included in the Bali Action Plan and the COP13 Decision document 2/CP.13, that guarantee their long term international support as part of the initiatives of the global climate change framework. As part of its operational functioning REDD looks to “provide the appropriate revenue streams to the right people at the right time to change people’s behavior toward the use of their forest”. But its specific mechanisms are general and ambiguous and depend on the criteria of each national government.

Besides of the ambiguity in the definition of the program mechanisms, REDD also presents certain level of ambiguity in its main scope. In one side REDD intends to establish the economic balance in favor of sustainable initiatives of forest management, to allow the economic, environmental and social goods and services of existing forests to benefit countries, communities and forest users; at the same time that forest users contribute to reach important reductions in the greenhouse gas emissions. This approach is opened to the inclusion of the diversity and complexity related to the management of the existing forests [5]. But in other side, the program design is mainly based on the IPCC estimate of the significant contribution of forest degradation to the emission of greenhouse gases. IPCC evaluated that “cutting down of forests is now contributing close to 20 per cent of the overall greenhouse gases entering the atmosphere”, and

based on this knowledge states the immediate necessity of making significant progress in reducing deforestation, forest degradation, and their associated emissions [5].

This second approach is not specific enough in the definition of the meaning of “forest degradation”, is not linked with the definition of sustainable management, over simplify what kind of “forest degradation” should be stopped in relation with “cutting down trees”, and close the door to the support of communal initiatives of forest enterprises that are based on the harvest of timber - although they also include the replacement of harvested trees in the managed forest -. The two approaches to the scope of REDD only make sense together in the case of the support of strategies for the payment of environmental services. It excludes a whole range of diverse initiatives of forest management that had been effective to guarantee the forests sustainability during the last decades.

IPCC had also recommended to REDD to act immediately and aggressively, applying the financial tools available to urgently transform our hydrocarbon based energy systems and initiate rational and adequately financed adaptation programs to avoid forestall disasters and enforce migration initiatives [5].

The urgency and the ambiguity of the definition of the REDD program goal and mechanisms are risky elements that are influencing the current process of re-definition of the Mexican Forest Policy. They are open to the misinterpretation of the Mexican Forest officers who are making the decisions about which programs should be enforced and which should be weakened by the re-distribution of budgets and government support assigned, in a national context that is already showing complex problems and inefficacy related to the administration of the forest resources.

The ambiguity of REDD and its total openness and support based on the criteria of the national governments may be used as perverse incentives to enforce the following key issues related with the lost of management and lack of growing of the Mexican forestry sector identified by Merino et al. in 2008 [6].

- Decrease and fragmentation of the forest areas that were managed before, expansion of the frontier for the production of crops and livestock; increase of land ownership conflicts in the forest areas.

- Increase of the illegal harvest and markets. Inefficient management of the legal permissions from the government officers for harvesting and commercialization.
- Low competitiveness of the Mexican forest products because of the lost of natural productivity, high costs of production, non efficient procedures of production, scarce rates of investments, and low value added.
- Forest products production decrease between 2000 and 2005. Decreasing participation of the forest sector in the GNP.
- Trade balance deficit – in an historical moment of important national and global increase of consumption of timber products -, high consumption of imported and illegal timber products.
- Lack of policy tools guided to solve the structural problems of the sector, according to the diversity of the regional contexts. Hierarchical implementation of the forestry programs, from the top-down perspective.
- Lack of articulation between the government agendas for conservation and development of the forest sector [6].

From the national perspective, these problems of the Mexican forestry sector are geographically located in rural areas of the country, including those were the highest levels of poverty and marginalization occur. These rural areas include one quarter of the country population. 61% of them are extremely poor and 46% of them moderately poor - these percentages are concentrated in the southern states of Chiapas, Guerrero and Oaxaca - [7]. Because of that having a clearly defined scope of sustainability is highly important for the design and implementation of the Mexican forestry policy reform and its link with the REDD program.

In this context, national forestry policy programs like PROCYMAF (Proyecto de Conservación y Manejo Sustentable de Recursos Forestales en México) - a governmental program for the development of the community forestry [8] – had shown important advances in the attention of the structural problems related with the Mexican forests administration. Its success is based on the acknowledgement of the diversity of the initiatives of forest management, and the complexity that each one of them implies; and also in its long term attention to its beneficiaries at the local scale. Even though its results have been stable during the last two decades, the program has been slowly weakened during the last five years [6].

The enforcement of the PROCYMAF program as part of the current Mexican forestry policy reform could help to overcome some of the problems identified for the Mexican forestry

sector; and could help to reach the goal of the reduction of emissions because of forest degradation at the national level, from the scope of the sustainable management expressed as part of one of the perspectives of the main goal of REDD.

The PROCYMAF approach toward the improvement of the poverty reduction and the sustainable management of the communal forests had benefited several communities that had developed a management strategy of communal forest enterprises. These experiences of forest management had been acknowledged nationally and internationally as success experiences of sustainability, but its impacts still need to be measured.

Mexican communal forest enterprises are based on the implementation of a communal system for the management of the community forest. The goal of this collective action is to reach a better level of development for the community and their stakeholders. The communal forest enterprise constitutes the main source of income of the communities that had developed this project; but it is also the space for the enforcement of their local informal institutions, and for the enforcement of the conservation and sustainable management of their natural capital [9].

The communal forest enterprises are strategies for sustainable development, that articulate biological, economic, and social factors to respond in an integrated way to the necessity of the communities to increase their level of development and quality of life. According to Nussbaum and Sen (1993) the level of quality of life of individuals depends on the opportunities that they have for the development of their capacities [10]. And these opportunities are linked to multiple factors that define the livelihood of the different populations. The Index of Human Development has standardized some of these factors (life expectancy, education and income) to make possible the comparison of the different levels of quality of life between countries, states and municipalities. Although, Nussbaum and Sen (1993) also state that a more complete analysis should include also other factors like freedom, levels of social and political participation, and the opportunity of growing in a healthy environment; between other that had not been measured or standardized until now [10].

In this research the sustainability of the communal forest enterprises and its long term impacts in the quality of life of the individuals will be analyzed from the observation of two case studies - in the Oaxaca state of Mexico -, where poverty conditions (from income strategies analysis), social capital (from social network analysis), and natural capital (from GIS analysis)

would be evaluated (Figure 1). These results will be subsequently used to develop an institutional analysis to identify the impact of the interaction between formal and informal institutions on the sustainability results observed. This institutional analysis will be developed using the frameworks of Social Ecological Systems (SES) [11] and Institutional Analysis and Development (IAD) [12], and the methodology of the International Forestry Resources and Institutions (IFRI) [13].

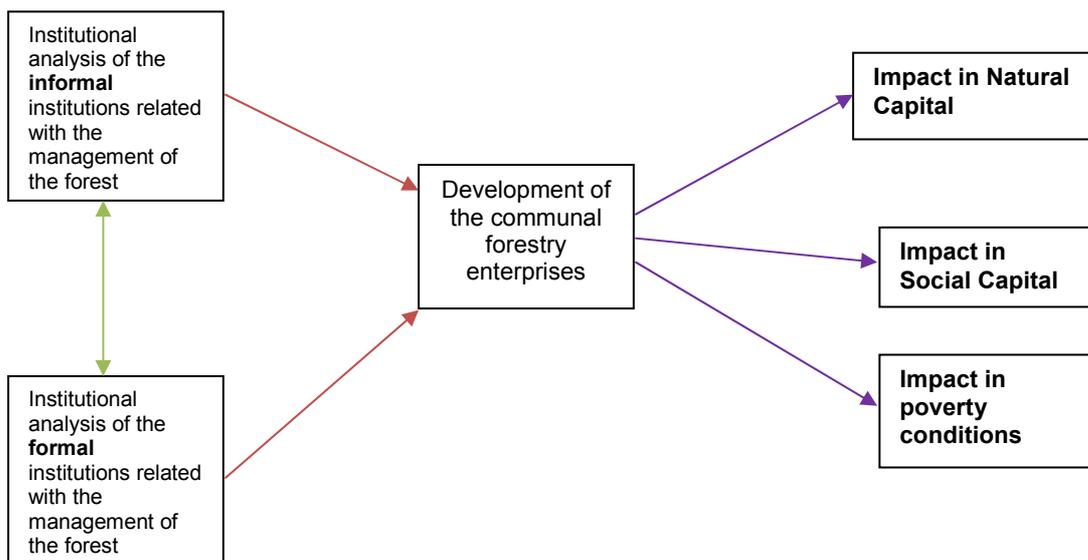


Figure 1. Conceptual map for the evaluation of the impact of the interaction between formal and informal institutions on the sustainability of communal initiatives of forest management in Oaxaca (Mexico)

As conclusion, the research will provide the evidence of the relationship between the formal and informal institutions related with forest management, and the impact of this interaction on the sustainability of the communal initiatives. The results will also let to identify some of the obstacles from the experiences of community forest management and the PROCYMAF program, which must be overcome to strengthen the community forest enterprises and the forestry policy program. This will allow making proposals to position the communal forestry enterprises as valid an important initiatives to be enforced as part of the Mexican forestry policy reform, and as part of the national interventions of REDD in Mexico.

∇ **Problem:**

The Mexican forestry policy that was implemented during 2000 – 2006 was ineffective for the development of the forest sector in Mexico during the last years. Forestry programs that are part of this policy followed strategies that over simplified the complexity and diversity that characterize the forest sector issues. They were mainly focused on the supply of vegetal material for reforestation and the subsidy of payments for technical support; but did not attend the social and economic structural causes that constraint the development of the sector in the country. Also, this policy weakened the programs that were more close to the attendance of these structural causes, like PROCYMAF.

∇ **Objective:**

Identify the impact of the interaction between formal and informal institutions in the sustainability of local experiences of forest management in forestall communities of Oaxaca (Mexico); to propose policy reforms that could enforce the improvement of the PROCYMAF program, and position the communal forest enterprises as valid and important initiatives for the development of the Mexican forestry sector, and for the reduction of emissions from forest degradation at the national level.

∇ **Research questions:**

1. What are the differences between the PROCYMAF program and other forestry programs that were part of the Mexican policy applied in the communities of Oaxaca during 2000 – 2006?
2. What has been the relationship between the local experiences of forest management and the support of the PROCYMAF program for the development of the communal forestry enterprises in Oaxaca?
3. What has been the impact of the communal forestry enterprises in the level of the communities' sustainable development, and its contribution to the development of the forestry sector in Oaxaca?

4. What kind of policy reforms may be made on the PROCYMAF program to enforce it to have better contributions for the development of the forest sector in the country, and position the communal forestry enterprises as valid and important initiatives for the reduction of emissions coming from forest degradation at the national level?

∇ **Hypothesis**

1. The PROCYMAF program has bigger and more stable contributions for the development of the communal forestry enterprises than other forestry policy programs that do not have an integral approach to the attendance of the problems of the Mexican forestry sector.
2. Local communities that have stronger informal institutions tend to better capture the benefits coming from the formal institutions; and capitalize them in a better way.
3. The interaction between formal and informal institutions has an important direct impact in the level of sustainable development of the communal forest enterprises, and the conditions of quality of life of the communities that have developed the initiative.

∇ **Methods**

The selection of the case studies will have in mind the selection of two forestall communities in Oaxaca that already had developed at least one visit of IFRI, that had been included in the analysis of livelihood strategies developed by FAO (2000); and had developed their forest management plan with Smartwood, more than five years ago. With this requirements the communities selected guarantee to have an ex-ante evaluation that will let to compare the results obtained from the research, and identify the changes due to the development of the communal forestry enterprise. As far as possible the selection of the case studies will also have in mind the selection of one community that has been benefited from the PROCYMAF program, and another that has not. Or one where the program has been successful and another where doesn't.

To dimension the level of representativeness of the case studies selected I will develop a typology of the communities of the Sierra Norte region that will include an environmental characterization and an estimation of their self-organization condition. To do this I will develop a GIS analysis based on the official environmental and demographic data available for the region;

and I will apply a survey between the officers that provide professional services for these communities, to evaluate their perception on the aspects of self organization, migration, and development of the experience of forest management, in the communities that they work with.

Once the case studies has been selected I will collect the field data for the evaluation of the impact of the communal forestry enterprise on the changes of their natural capital, social capital, and poverty conditions; following the procedures that will let me compare the results with the previous studies of IFRI, FAO and Smartwood available. The variables of observation still need to be defined, but some possible examples are provided in the Annex 1.

For last, the institutional analysis of the results will be developing following the frameworks of Social Ecological Systems and Institutional Analysis and Development; differentiating the analysis of the formal and informal institutions, and their interactions.

∇ **References**

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Annex 1. Variables to measure for each one of the hypothesis proposed.

Independent Variables (Case studies)		Hypothesis	Variable	Dependent variables
1 Forefall community that is beneficiary of the PROCYMAF program	2 Forefall community that is NOT beneficiary of the PROCYMAF program	1. Local communities that have stronger informal institutions tend to better capture the benefits coming from the formal institutions; and capitalize them in a better way.	1.1 Performance of the governmental programs (PROCYMAF, PROCOREF, PSA, GOB. ESTATAL).	Indicators 1.1.1 Budget distribution 1.1.2 Consistency of the investments 1.1.3 Logic sequence of the benefits 1.1.4 Contribution to the development of productive and institutional, and their use
		2. The PROCYMAF program has bigger and more stable contributions for the development of the communal forestry enterprises than other forestry policy programs that do not have an integral approach to the attendance of the problems of the Mexican forestry sector.	2.1 Evaluation of the PROCYMAF program	2.1.1 Budget distribution 2.1.1 Perception from the beneficiaries 2.1.2 Cost-benefit analysis

Independent Variables (Case studies)		Hypothesis	Dependent variables	
			Variable	Indicators
1 Forefall community that is beneficiary of the PROCYMAF program	2 Forefall community that is NOT beneficiary of the PROCYMAF program		2.2 Development of the communal forestry enterprises	2.2.1 Infrastructure 2.2.2 Volume of production 2.2.3 Volume of production in the market 2.2.4 Use of the Management plan 2.2.5 Number of employments created 2.2.6 Distribution of profits
		3. What has been the impact of the communal forestry enterprises in the level of the communities' sustainable development, and its contribution to the development of the forestry sector in Oaxaca?	3.1 Natural capital conditions	3.1.1 Conservation of the forest frontier 3.1.2 Conservation of the forest structure 3.1.3 Conservation of the biodiversity

Independent Variables (Case studies)		Hypothesis	Dependent variables	
			Variable	Indicators
1 Forefall community that is beneficiary of the PROCYMAF program	2 Forefall community that is NOT beneficiary of the PROCYMAF program			<p>3.1.4 Existence of conservation practices (fires, pests, water, soils)</p> <p>3.1.5 Existence of communitarian reserves</p>
			<p>3.2 Poverty conditions</p>	<p>3.2.1 Relationship between the familiar income and expenses</p> <p>3.2.2 Contribution of the forestry income to the familiar income</p> <p>3.2.3 Contribution of the forestry Enterprise to the employment level in the community</p> <p>3.2.4 Contribution of the forestry income to the consumption of goods</p> <p>3.2.5 Investment of the forestry profits on the communal infrastructure and services</p>

Independent Variables (Case studies)		Hypothesis	Dependent variables	
			Variable	Indicators
1 Forefall community that is beneficiary of the PROCYMAF program	2 Forefall community that is NOT beneficiary of the PROCYMAF program		3.3 Productive capacities	<p>3.3.1 Human resources trained for the provision of communal services and goods (bookkeepers, artisans, etc)</p> <p>3.3.2 Level of vertical and horizontal integration of the chain of production</p> <p>3.3.3 Existence of fix capital (infrastructure, pathways, machines, production facilities, etc)</p> <p>3.3.4 Financial capacity (to support the production)</p> <p>3.3.5 Competitiveness</p> <p>3.3.6 Experience and commercialization networks</p> <p>3.3.7 Value and costs of production</p> <p>3.3.8 Control of the professional forestall services provided</p>

Independent Variables (Case studies)		Hypothesis	Dependent variables	
1 Forefall community that is beneficiary of the PROCYMAF program	2 Forefall community that is NOT beneficiary of the PROCYMAF program		Variable	Indicators
				3.3.9 Communal knowledge of the forest, its functioning and managing
			3.4 Social Capital	3.4.1 Trust and reciprocity relationships 3.4.2 Networks of cooperation and Exchange (at the local, regional and vertical level of production) 3.4.3 Existence of institutions for the Management, planning and monitoring of the territory and its resources (rules, monitoring and sanctioning)