Diagnostic, Use Consciousness and Availability of Timber in three Micro Regions of Southeast Mexico

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1. Introduction

Timber use problem has been poorly studied in México. Current works (Arias, 1993 y 1995; Arias et al., 1997; y Masera et al, 1997) do not satisfy information needs about access, transportation and household organization for its use. Then, this study answers these and other questions. The main objective was to motivate community reflection about timber use as a primary source of energy, its availability and the importance of wood and daily life activities. The general purpose was to improve the use of timber in more efficient ways. The whole process took five years and it is an example of applying a holistic and participative methodology. The project was carried out through the NGO Programa de Acción Forestal Tropical (PROAFT) and involved many people and 9 communities of South Mexico (PROAFT 2001). The main quality of this action-research project is to contribute into the integration of different ways to look at a problem considering social and ecological issues. According to national statistics, timber extraction is not directly related to the productive activities in the country, because its impacts repercussions over forest are not considered. However, its certain that wood is an energy resource for rural households and directly impacts their economy and working activities. Therefore, the main research questions were: does timber extraction deteriorate natural resources basis? And, is there enough timber for future generations in the study populations?

Timber extraction implies ecological, socioeconomic and cultural issues, including gender concerns. Then, this topic is ideal, because it allow us to understand a problem under different points of view angles. Also, this particular topic serves as an example of how we can work in the community setting, taking into account the process behind a problem, which includes technical solutions, communication among participants, and given time periods. In summary resume, the stages of the project an actions were the following:

1) A preliminary diagnostic carried out though collective exercises with community groups. We identified each local population general timber supply, different timber uses and issues about wood.
2) Identification of three representative ecosystems regions with variable consumption of wood in the states of Campeche, Chiapas and Veracruz.
3) Sensibility workshops with communities to know about household daily consumption of timber. We also built the first models of rustic stoves. We collected biological, anthropological and social information, such as species preferred and women's activities around timber,
4) Quantitative studies about consumption and availability of timber in the three states of the study. We characterize the domestic, commercial and industrial use of timber in the eight communities, through 388 surveys and a forest inventory with more that 10,000 data of trees.
5) Data return to communities. We went back to towns and informed participants about the results. There were five workshops with 151 participants.
6) Collective agreements facilitated the successful reduction in timber consumption and its social acceptance. As result, communities built 151 rustic stoves according to previously designed models that were culturally accepted.

We and the communities learned many lessons. The most important one was the need of having active participation of local populations and the process of making the problem its own issue. Communities, researches and NGO's have to search for new ways of using natural resources. Also, we learned about the importance of informing communities about a problem and put over the table the future threats, as well as, the necessity of looking into solutions. One of the most important contributions of the study was the systematization of the results. We created a database called SICOREL where all the inventory forest information and consumption patterns can be easily consulted. Finally, the description and analysis of a real problem in the field of natural resource use, calls for promoting changes at short, and medium terms in order to achieve social sustainability.

2. Diagnostic

The first preliminary diagnostic was carried out during two of PROAFT's evaluations. There was a workshop with 42 participants, from 18 communities of South Mexico. Through collective exercises with community groups, we identified general timber supply for each population, different timber uses and issues about wood. We reflected on Mexico's timber consumption (37 millions m3) which is four times larger than timber logs production in the country (FAO, 1997). Important information that we presented was that 25 million of people use timber to satisfy energetic needs (FAO, 1997). We also talked about the heath issues regarding the use of wood. During this meeting participants concluded that most of them (60%) use a bonfire to cook and heat water. Also, the physical effort to extract timber was very heavy and it took at least 3.5 hours per day to achieve this chore. After talking and reflection on the issue, participants gave their opinions and we created and information matrix. The main issues were directed to: 1) a more rational use of the forest, using higher quantities of death trees, 2) the creation of reserves for timber production, 3) the need of reducing work labor by using rustic stoves that allowed saving timber.

3. Identification of representative ecosystems and regions for the study

The timber study was carried out in three different ecosystems that include the states of Chiapas, Veracruz and Campeche. The first two states represent the rain forest and the third one represents the dry forest. The main criteria to chose these states and the communities for the study were the previous work that PROAFT has done in the area. A second criterion was the reported high timber consumption rates in these communities (SEMIP, 1988; Masera, 1993; Masera y Ordóñez, 1997, PROAFT, A.C., 2000a,b,c). Also, we considered the closeness to protected areas or to deteriorated landscape. Another criteria, was community size and timber availability because these elements affect consumption and extraction timber patterns (Arias, 1995; Arias et al., 1997; Masera et al., 1997; Arias, 1999). Finally, we took into consideration areas with fragile ecosystems and timber non-domestic use. The communities, by state, that participated in the study were:

Campeche. We selected four communities from the Calakmul municipality: X'pujil (2000 inhabitants), GeneraManuel Castilla Brito (280 inhabitants), Unión 20 de Junio "La Mancolona" (324 inhabitants) and Nuevo Campanario (300 inhabitants). The first three towns participated in all the studies. The last one, only participated in the construction of improved rustic stoves. For this state, we also included the communities that used timber for drying hot chilly pepper.

Chiapas: For this state we included the following communities: Jerusalén (700 inhabitants) and La Fortuna del Gallo Giro (302 inhabitants) from the municipality of Las Margaritas and Las Nubes from the Municipality of Maravilla Tenejapa (400 inhabitants). In Chiapas we considered timber consumption as the main source of energy for the household.

Veracruz: For this state we included: Pajapan (7,053 inhabitants), Jicacal (870 inhabitants) and San Juan Volador (2,400 inhabitants) from the municipality of Pajapan. Pajapan and Jicacal participated in all the studies; San Juan Volador was included in the construction of improved rustic stoves. In these communities Proaft, A.C. has worked for 10 years, mainly in restoration and reforestation projects.

3. Sensibility workshops

Sensibility and diagnostic workshops were developed in 1988 and 1999. There were three workshops with 65 participants from the above mentioned communities (Purata 1999a, b). The majority of the participants were women. Men participated in the process of building the stoves. Workshops have a qualitative approach about the uses of timber. We collected biological, anthropological and social information, such as preferred species and women's activities around timber. The workshops allowed to characterized participants' perceptions about timber scarcity, ways of extracting timber and the possible solutions for solving this problem. Workshops consisted in three days sessions. During the first day, we presented the workshop objectives and a general description of the timber uses. We also carried out a first survey to estimate number of residents per household unit, amounts of timber used and general timber availability. During the second session, we identified timber characteristics, uses

and timber species' efficiency. We had special site visits and collected timber samples in 35 households, 9 in Veracruz, 16 in Chiapas and 10 in Campeche. We determined total amounts of timber used per household unit (Table 1). In Veracruz, we observed that average wood consumption per household in a day, is 9.69 kg and per capita consumption is 1.71 kg. In Chiapas, average wood consumption per household in a day is 17.11 kg and per capita consumption is 2.66 kg. Finally, in Campeche, average wood consumption per household in a day is 11.65 kg and consumption per capita is 2.06 kg. According to Masera and Ordóñez (1997) data, average wood consumption in the humid tropics is 3.0 kg per day, while in the dry tropics is an average of 2.0 kg. Then, our measurements are in the range reported by other authors (Vergara, 2002).

Participants also elaborated "campesino" maps, where they localized timber extraction areas. Finally, we talked about how improved rustic stoves help to save energy and improve women's health conditions because they utilize less wood and improve air quality. The third session in the workshops consisted on building an improved rustic stove with local materials. In total we built six improved rustic stoves, two in each workshop. We selected households that needed an stove. Before starting with the construction, we have an introductory talk about how to build and to maintain the stove.

Workshops helped to achieve a collective reflection of timber issues. For, Veracruz, we concluded that there is not a great difference on timber consumption and extraction practices, among the participant communities. The main problem that we detected was timber availability, determined by land tenure and access to forest areas. There are many families that do not poses land. In Chiapas, we detected that there is not a clear idea of timber scarcity. However, the workshop motivated the need for planning timber use in the future. Its important to point out that in Chiapas men are in charge of providing wood and these action characterize consumption patterns. Women do not know about the work that implies timber collection and therefore they use timber in larger quantities than other communities. In the community of Jerusalem we detected that the higher consumption of wood was heavily impacting the forest. In Campeche we also detected that there was not a clear perception of wood scarcity as a household energy source. All the people interviewed had access to forest (parcels) areas that are relatively close to their towns. However, the use of timber for drying hot chilly peppers was a very important concern among the participants. To dry hot chilly peppers they use a specific wood type (Manilkara zapota), which is difficult to find.

The general response after the workshop was very positive encouraging. The participants were able to use local materials to built their stoves and as a consequence to improve their lives. The experience motivated the direct interaction with community members and helped to continue with the study and to promote more actions related to the use of rustic stoves.

HOUSEHOLD WOOD CONSUMPTION IN VERACRUZ(Pajapan);CHIAPAS (Jerusalén) and CAMPECHE (Gral Castillo Brito)											
Pajapan, Veracruz				Jerusalem, Chiapas				Gral. M. Castilla Brito, Campeche			
Household Unit	Number of inhabitants per house	Average wood consumption per household unit (kg/24 hrs)	Wood consumption per capita	Household Unit	Number of inhabitants per house	Average wood consumption per household unitl (kg/24 hrs)	Wood consumption per capita	Household Unit	Number of inhabitat per house	Average wood consumption per household unitl (kg/24 hrs)	**Wo cons pti pe cap**
1	7	10.75	1.53	1	3	16.25	5.41	1	9	27.5	**3.**
2	8	20.00	2.50	2	6	7.00	1.16	2	4	10.0	**2.**
3	5	8.75	1.75	3	4	16.00	4.00	3	7	12.7	**1.**
4	4	9.00	2.25	4	7	9.75	1.39	4	12	9.5	**0.**
5	3	4.50	1.50	5	6	15.50	2.50	5	3	7.2	**2.**
6	5	11.50	2.30	6	9	41.00	4.50	6	8	10.5	**1.**
7	6	10.50	1.75	7	8	25.00	3.13	7	8	17.2	**2.**
8	7	6.00	0.85	8	8	13.00	1.62	8	3	16.2	**5.**
9	6	6.25	1.04	9	9	27.00	3.00	9	8	12.7	**1.**
				10	10	19.00	1.90	10	6	7.2	**1.**
				11	10	13.50	1.35				
				12	5	9.50	1.90				
				13	6	14.25	2.37				
				14	6	8.75	1.45				
				15	4	9.25	2.31				
				16	6	28.25	4.70				
Average	5.6	9.69	1.71	Average	6.68	17.11	2.66	Average	6.875	11.65	2.

4. Quantitative studies about consumption and availability of timber

The main objective of these studies was to generate quantitative and original information about the use, consumption and availability of timber. The communities in the study are the ones already described. To characterize demand or consumption we applied a 60 questions survey: 285 to household units in the three states. We also interviewed 18 bakery business in Veracruz of a total of 22. In Campeche we interviewed 35 hot pepper producers in of a total of 1200. These two productive activities consume wood as a surce of energy. In the all the interviews we also measured daily consumption of wood.

To characterize wood availability or demand, we carried out a forest tree inventory in each state. For this action a simplified tree inventory method was designed. We sampled forest and non forest areas, and consulted key informants. We also designed campesino maps reporting land's use and tenure types (Figure 1). To carry out a forest masses inventory, we used stratified sampling. We also measured tree diameters and estimated tree ages to project tree growth and timber supply, by using information and knowledge of local people. Totally, we sampled 108 forest parcels and measured 10,000 trees. To complete the interviews and the inventory we previously trained 11 promoters. Data was verified and systematized into a Microsoft Access data base that we called SICOREL and its available in a digital format.

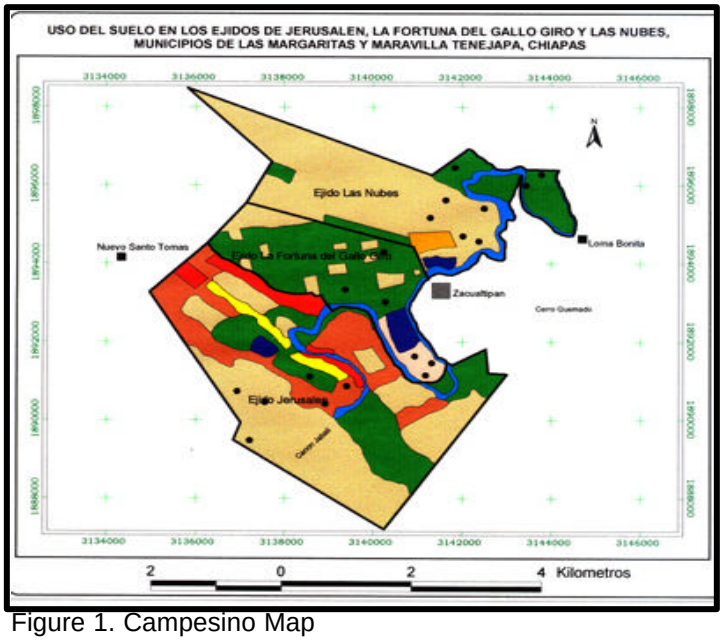

Figure 1. Campesino Map

The results of the quantitative studies show that the 71% of people in the study use wood as a source of energy; 22% use a combination of liquid gas and wood. The community that uses the larger amount of liquid gas is X'pujil, which it is close to Cancun (Table 2). In Campeche, the wood consumption for the hot pepper industry is twice the amount of the household consumption (30%) and in Pajapan the bakeries only consume the 4%.

Table 2. Percentage of types of energy used by household in the 1999 in three Micro regions

Micro region household (%)	Locality	Population	Percentage of energy used by		
			Wood	Wood and liquid gas	Liquid gas
Veracruz	Pajapan	7,053	74	24	2
	Jicacal	870	89	11	0
Campeche	X´pujil	2,000	25	40	35
	M. Castilla Brito	324	100	0	0
	La Mancolona	280	100	0	0
Chiapas	Jerusalén	700	93	7	0
	La Fortuna del G. G	302	93	7	0
	Las Nubes	400	100	0	0
AVERAGE			71	22	7

The use of liquid gas depends on wood availability, household income and cultural practices (Arias et al., 1997, Masera et al., 1997, Masera et al., 2000). The case of Pajapan is interesting because the economy has fluctuated in the last 30 years, and also the use of liquid gas. In the study, 70 people of Pajapan reported that the used the liquid gas combined with wood or only wood. From this sample 52 persons consumed 1.6 kg/per day of wood 22 people used a combination of liquid gas and wood with consumption of 1.5 kg/per day.

Through the households interviews we confirmed that the wood extracting activity defines gender tasks depending on the micro region. In the majority of the towns, men are in charge of bringing the wood to their homes and women are in charge if timber use in the household (Table 3). The most relevant case of this situation is Chiapas, were women are not allowed to cut or bring the wood.

Table 3. Person responsible of bringing wood into the household

Locality	Men(%)	Women (%)	Children(%)
Pajapan	60	37	3
Jicacal	61	39	0
X´pujil	78	12	10
M. Castilla Brito	77	23	0
La Mancolona	74	12	4
Jerusalén	90	10	0
La Fortuna del G. G	67	33	0
Las Nubes	96	4	0

The interviews reveled that women were very concerned about the health damages caused by fumes exposition of wood combustion to them and their children. In the majority of the towns that participated in the study, half of the families extracted wood varying from daily to weekly extraction. The extraction activity corresponds to a 2.4 to 6.6 daily 8-hour work shift in a month. In the special case of X'pujil, 42% of the families use a vehicle to transport timber and this represents 1 daily 8-hour work shift in a month.

Timber availability and consumption studies of the last 10 years, point out that household consumption is not the main factor in the lost of forest (Arias 1993, Arias et al., 1997, Masera et al., 1997, Arias 1999, Núñez et al., 2001, Montesinos et al., 2001). The reason of this phenomenon is that wood household extraction utilizes already perturbed areas, as secondary vegetation, life fences, coffee plantations and pastures areas. In our case, the analysis shows that the wood physical availability exceeds the current demand or consumption for the next ten years. This estimation is based on the tree's wood productivity (Table 4). It is important to clarify that a very few amount of wood is extracted from alive trees that are found in primary forests.

Table 4.Offer and Demand of Wood

Micro-region	Wood productivity (m3 a-1)	Wood consumption (m3 a-1)	Consumption/productivity x 100	Balance (m3 a-1)
Veracruz	19 310	8 120	42 %	+ 11 190
Campeche	5 586 000	35 930	0.6 %	+ 5 550 070
Chiapas	22 960	1 930	8 %	+ 21 030

To determine trees availability, we analyzed the different vegetation types in each state (Table 5). We found that in Veracruz and Campeche wood is obtained in a 40% from the primary forest. By contrast in Chiapas, the majority of the times wood is extracted from the rain forest, which is well preserved

Table 5.Offer and Demand of Wood, according to Vegetation Type

	Veracruz			Campeche			Chiapas		
Landscape Geographical Unit	% of families that obtain timber	Micro regional consumption $m^3\ a^{-1}$	Productivity $m^3\ a^{-1}$	% of families that obtain timber	Micro regional consumption $m^3\ a^{-1}$	Productivity $m^3\ a^{-1}$	% of families that obtain timber	Micro regional consumption $m^3\ a^{-1}$	Productivity $m^3\ a^{-1}$
Forest	6 %	490	5 200	29 %	10 420	2 813 290	59 %	1 140	3 450
Mangrove	9 %	730	2 090	---	---	---	---	---	---
Flood Plains	---	---	---	10 %	3 590	420 140	---	---	
TOTAL OF NON-PERTURBED ECOSYSTEMS	15 %	1 220	7 290	39 %	14 010	3 233 430	59 %	1 140	3 450
Secondary forest Acahual	38 %	3 080	10 060	30 %	10 780	2 352 810	11 %	210	6 980
Milpa Parcel	17 %	1 380	---	28 %	10 060	---	2 %	40	---
Life fences and pasture	23 %	1 870	1 960	---	---	---	---	---	---
Coffee plantation	---	---	---	---	---	---	22 %	420	12 290
Pasture	---	---	---	---	---	---	6 %	120	240
Home gardens and Roads	7 %	570	---	3 %	1 080	---	---	---	---
TOTAL OF HUMAN PERTURBED ECOSYSTEMS	85 %	6 900	12 020	61 %	21 920	2 352 810	41 %	790	19 510

TOTAL	100 %	8 120	19 310	100 %	35 930	5 586 240	100 %	1 930	22 960

Finally, the only species case that deserves mention is the chicozapote (Manilkara zapota) of Campeche. This three is the most consumed for the pepper producers, in comparison to other species (21%). This is the only species that is cut in diameters larger than 25 centimeters. The reason to prefer Manikara zapota is its burn durability. As a conclusion of the study we can say that the household forest extraction is not causing deforestation in the places of the study.

We also can conclude that the pressure over the timber as a resource is because of population's increment caused by migration. Therefore, new human settlements do not possess land to extract timber. We also have to consider that this situation brings out conflicts among land owners.

5. Data return to the communities

During the year of 2000, 5 workshops were carried out, in all the communities involved in the wood consumption diagnostic studied. The objective of the workshops was to share the knowledge generated in the study (PROAFT, A.C. 2000 a, b, and c). We identified efficient ways to use wood in the localities. Another objective was to explore people's stoves preferences that better suits their necessities and conditions.

Table 6. Data return workshops

Workshop	Locality	Number of participants	Ethnic group
1	Unión 20 de Junio (La Mancolona), Campeche.	33	Tzeltales
2	Ejido Gral. Manuel Castilla Brito. Campeche.	28	Choles
3	Ejido Nuevo Campanario, Campeche.	25	Choles
4	Las Nubes, Chiapas.	35	Tzeltales
5	Pajapan, Veracruz.	42	Nahuas
	Total of participants	**151**	

The workshops were designed with a methodology that considers different steps to achieve the objectives and the setting up of the materials for the presentations. The main themes in the workshop were: a) presentation of main findings, summarizing the most important issues and conclusions. b) comments and conclusions of the participants in small groups guided by key questions and a conclusion's plenary session. c) a talk about the health damage causes by the exposure to wood fumes. d) photographs of improved stove constructions and the different types of stoves, e) woman selection of the preferred stoves, using drawings and clay models, f) identification of the actions to reduce wood consumption, g) final conclusions and commitments of the communities, promoters and PROAFT's members. In each workshop there was a person translated all the information into Spanish and the indigenous local languages. Finally, we proportionate a copy of the final report to the municipal authorities, the promoters and the technical advisor of the participant organizations. The next section presents the main events for each locality involved.

Municipio de Calakmul, Campeche

Unión 20 de Junio, La Mancolana- The perception of the people that attend to the workshop is that there is no reason to take any preventive measure for tree conservation, because there is enough wood in the surrounded areas. Then, reforestation practices and agreements for establishing reserves was not the main concern. However, after we presented photos of improved rural stoves, several women were interested in building them. Three men were instructed as facilitators for building the new stoves.

General Mauel Castilla Brito- A big concern was shown by the people that attend to the workshop when they knew the large amounts of wood spend. They were surprised about the large quantities for the smoked and drying processes of chilly peppers. The community proposed different actions to improve wood uses, such as create a forest reserve. At the same time, people asked us for specialized training in the design of a small business oven for drying peppers.

Nuevo Campanario. The people agreed that the result were interesting, but they do not represent their community. However, women discussed the advantaged and disadvantaged to change the traditional stoves. One community member was in charge to learn how to build improved rustic stoves.

Las Margaritas and Maravilla Tenejapa, Chiapas. The community was very pleased with the results of the study, because from their perspective it was becoming more difficult to obtain wood. However, the most important issue for them was the health problems caused by smoke in their houses. Most of the workshop participants were women and they agreed on the importance of reforestation of the common lands, back yards and secondary vegetation; however, they decided that those types of decisions had to be taken by the males in the community. It was evident, as the case in Chiapas, which women's decision on wood are only concerned inside the household. There was also a discussion about the different stove types and finally they agreed to learn how to build improved rural stoves.

Municipio de Pajapan, Veracruz

All the participants in the workshop agreed in the importance of knowing about the final results of the study. In their opinion, results are never shared with them. The participants concluded that in Pajapan is more and more difficult to the access wood and that there are respiratory health problems caused by non-improved stoves. There are more than 3 000 inhabitants in Pajapan that do not have access to land. Participants agreed that the solution of the wood scarcity problem is a complex task that must be tackled by local and regional authorities. They expressed that there is a need for organized work about forest management. They also concluded that social and economic problems related to the use of wood start to appear in a small scale and there is a need to conciliate and prevent future disagreements between different actors in the community. About the use of an improved stove, they agreed on implementing a chosen model. One of the members of the community was trained in the construction of the improvement stoves and he taught others members.

The "Data return workshops" were interesting for all the people that attend. They shared their knowledge and experienced the opinions of other communities. By their comments we realized their common problems around in the use of wood and its recollection. Some people were not aware of the time spend and effort increment in wood recollection over the time. The participants realized that there are risks in the use of stoves with a poor construction. They also recognized the amount of wood

wasted during meals' preparation and the health problems that can be caused by fumes inside the houses. The participants pointed out a huge variety of species with different types of burning qualities and growth characteristics. An important feature of the workshops was the possibility of empowering rural women, which was demonstrated by the decision making process and knowledge that they shared with their husbands.

6. Collective agreements

Collective agreements facilitated the successful reduction in timber consumption and its social acceptance. As result, 10 communities built 151 rustic stoves according to previously designed models that were culturally accepted. We built 43 rustic stoves in Campeche, 78 in Chiapas and 30 in Veracruz. All the stoves were built with local materials. To build the rustic stoves at least one person was trained per community. This group had the task of promoting the use of the new stoves and to demonstrate how to build them.

To assurance collective agreements it is important to establish a follow up phase. Specially, in the case of improved rustic stoves it is crucial to evaluate their efficiency and use by the local populations. This type of analysis is difficult to achieve, because it implies a complementary financial support and an auto-analysis. The lack of a follow up phase has favored agencies' errors and bad habits. Therefore, we implemented an exercise of self-evaluation to make sure that previous efforts were beneficial to people. We applied a 31-questions survey to 124 of the 151 people that built a rustic stove (Campeche 37, Chiapas 62, Veracruz 25), four months after we finished the project. We determined that the use and adoption of the rustic stoves is directly related with people's participation in the process of its construction. Also, during the process, we realized that the constant use of the stoves is a measure of the success that we had with the stove's project. We concluded that 83% of participants use their stove all days and 10% of the participants, use their stove 2 to 3 days per week. In general terms we can say that the rustic stoves are working efficiently at 90% in Campeche 90%, 100% in Chiapas and 95% in Veracruz.

A second agreement with the people that participate in the project was to build a small business oven for drying hot peppers in the community of General Castillo Brito. The construction was done in collaboration with two experts. The oven was build with two rooms and a burning stove. We performed a pilot test to demonstrate its use and its efficiency. During the test we calculated a saving process of 40% of timber with a 20% of time reduction in the pepper drying process.

In conclusion, we can say that this type of projects promotes family household organization and improves life quality in the communities. During the process, women participate actively and in Pajapan, Veracruz five women were trained in building stoves. Nowadays, they use this activity to support their families. We noticed that people in Chiapas and Campeche adopted the rustic stoves mainly for the improvement of family health conditions, while in Veracruz people were more aware that stoves helped to save firewood.

Learned Lessons

This project was a social-learning process (NRC 1999). We learned about the need of socializing any action in rural arena. The problem of wood use was seen as a multiple issue that implied participation of several actors, and the use of communities' knowledge to solve a problem. In this case, participants pointed out the best solutions and the use of potential species for timber extraction. A second important lesson was to recognize that researchers have to be more involved in the solution of natural

resource problems. In Mexico, we have to look and design new and feasible ways to cover local demands for energy use.

To achieve sustainability, we need to promote productive self-sufficient groups. In the case of assuring timber use supply these groups should take into consideration the following:

1) Design mechanisms that propitiate discussion, reflection and evaluation over the use and availability of timber.
2) Agree at the local level in the use of land for extracting wood. In the case of Pajapan, Veracruz, authorities needed to regulate newcomers' timber extraction for avoiding future scarcity.
3) Promote and assure timber plantations using agroforestry management parcels. This management allows for forest diversification.
4) Consider cultural and technical issues, to be successful in a rustic stove project.
5) Achieving a sustainability use of timber is possible, if local populations participate and local and federal governments give their support.

Timber is and it will continue to be a source of energy for rural populations. Then, an action plan is necessary to achieve its adequate ecological use and it follows the next steps:

Diagnostic: A participative diagnostic gives the opportunity of valuate local knowledge and look for solutions. This activity helps to establish a direct relationship with people.

Awareness: Working with rural communities in awareness issues, needs a lot of persuasion. Projects and actions require of time to appreciate a problem. Also awareness needs of identification, and the searching of joint solutions with local populations (Del Amo e Yllescas 2004). This implies social learning that is not contemplated in governmental programs.

Sensibility and appropriation of the project: Once a project is appropriated by a group, continue demonstrations are needed. Repetition allows for people to understand in better ways the problem.

Local promoters. For having successful projects, it is essential to train and have local human resources. Local promoters have the capacity for calling people and to be leaderships.

Availability as a limiting factor. In any project it is fundamental to establish natural resource levels. In the case of timber, there are still levels of use that can not be overcome, although the demand is secure for a relatively long time.

Learning and teaching process. The learning process is linked to concrete actions since we are children. So, in rural communities it is very important to propose actions in the context of the daily life (Del Amo and Rorive 2003). This very simple fact is many times overseen and therefore, training is not related to feasible and concrete solutions.

Women's participation. In this case women's participation was essential, because they were directly affected by the use of timber. Then their role and opinions were vital for the success of this project. Moreover, the continuation of the project and many others depend on womens participation.

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