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Reflections on the social learning process for community work in rural areas of Mexico

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Key words: Mexico, natural resource management, tropical forest, social learning

SUMMARY

This paper reflects on the principal lessons from ten years of work with rural communities on natural resource management, carried out through a non-governmental organization, Programa de Acción Forestal Tropical. The community work experiences originate from 24 small projects in 14 small communities in seven states of southern Mexico. The work emphasized a holistic and integral approach, known as social learning. Two elements required for community work were analysed: theoretical concepts and practical applications. The theoretical concepts are: dialogue, empowerment, plurality, validity of local knowledge and co-responsibility. The practical applications are: diversification of activities in projects, training, monitoring and feedback. Analysis revealed the need to pay attention to the above social elements in the community to achieve resource management, and emphasized the social learning process. The analysis was the result of observations on the development of each project and interchanges between researchers, technicians and the local population. The entire experience was non-conventional and anthropological in nature, designed by the local population and the technical team using a converging intervention model to achieve self-developing community processes and shared responsibility in actions.

INTRODUCTION

In the last century, conventional scientific and technological approaches for resource and ecosystem management have not been sophisticated enough to understand the complex reality of using natural resources (García 1986; Holling *et al.* 2002; Berkes 2004). Environmental and resource management crises need to adopt a different perspective to recognize the plurality of values, beliefs and perceptions of the people involved (Rölling and Wagemakers 2000). Today, to resolve resource management problems, an interdisciplinary approach is

required, considering social and ecological dimensions. Combining social and ecological elements with natural resource issues is useful not only for the community but also for all society at the local, regional and global scale (Mogina and Bourke 2004). In Mexico, the situation in rural areas requires approaches that take into consideration community characteristics, such as traditional knowledge, and the cultural context because anthropology and ecological studies have commonly been disconnected from each other and

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from agricultural issues (González-Jamome 2003; Torres-Lima *et al.* 2005). Social learning is a strategy for working with rural communities that considers people's interaction with natural resources.

Social learning theory explains human behaviour in terms of continuous reciprocal interactions among cognitive, behavioural and environmental influences (Bandura 1997). Social learning reflects the idea that shared learning of independent stakeholders is a key mechanism for communities to arrive at a more desirable future (Leeuwis and Pyburn 2002). Furthermore, as Rölling and Jiggins (2001) pointed out, social learning is about the interactive way of getting things done, such as actors in a theatre who are interdependent. The interactive way of getting things done is based on conflict resolution, negotiation, agreement, shared learning, convergence of goals, theories, and a system to monitor actions (Rölling and Jiggins 2000; Engel and Salomon 2002). Therefore, in our perspective, social learning implies an emphasis on the process of how local people are able to learn and transmit knowledge among themselves and to future generations, especially considering qualitative aspects. In addition, social learning allows people to develop their ability to propose new experiences or rescue practices of resource management, taking their own directions for the future, with benefits for their individual self-esteem and community development, which will help to build an empowered community or group.

In this paper, we analyzed and reflected on the social learning process behind community work. The work were carried out in 24 municipalities, in seven states of southern Mexico from 1992 to 2001. The activities were performed by a non-governmental organization, Programa de Acción Forestal Tropical (PROAFT) (Amo Rodríguez 2001). The projects were always related to resource management and community participation and produced qualitative and quantitative results. In each project there were technical and social workshops and periodical and annual evaluations. To explain our case, we considered theoretical similarities with other authors who have analyzed and studied complex cases (Rölling and Jiggins 2001; Engel and Salomon 2002). Finally, we acknowledge that the issue of sustainability requires a review of conceptual frameworks and different modes of operation according to the characteristics of the local populations. As a result of our activities and



through technical and social workshops, we identified social learning as a principal way to attain and motivate sustainable actions. Our experience supports the concept that sustainability in rural areas is achieved through awareness, self-management and empowerment. In this way, community members become owners of the resources, as well as the problems and solutions related to their use. If people are involved as primary participants, sustainability is attained and social learning is enhanced.

PROAFT'S COMMUNITY WORK IN RURAL MEXICO

In 1992, PROAFT created a mechanism for community work called Tripartite Alliance (AT) (Amo Rodríguez 2001; Amo Rodríguez and Rorive 2004). The model helped to promote co-responsibility among the community, the local advisor and the PROAFT itself. The alliance permitted dialogue and facilitated interactions with different cultures and worldviews. The AT approach is a converging intervention model for association or mediation to conciliate different interests surrounding resource management. The construction of these alliances created a proposal for social concepts and technical contributions to attain sustainability through social learning.

Our effort constituted a practical non-formal, but anthropological, study based on conceptualizing management problems, not only in biological or ecological terms, but also in social, economic and cultural terms. For us, local work is the foundation for valid and comprehensive conclusions to carry out community management. It means that we examine an issue as a multifactor or complex system using social learning with a holistic collective and action-oriented character (Van Wijk and García 2002). Many rural populations are conscious of the ecological, social and economic changes in their own communities. The communities are not static. However, in rural Mexico there are many conflicts created as a result of poor public policies that perpetuate employer-employee relationships used by government to control populations and political interests (Aramoni-Calderón 1992; Rivera 2002). There are also other factors, such as poverty, religious issues, migration and security, that make rural community work difficult. It was not until 2001 that a Rural Sustainable Development Law was passed (Diario Oficial de la



Federación 2001), however, we still face enormous challenges. The law, although a step towards sustainability, is still new and lacks many of the necessary mechanisms for its implementation. In spite of the difficulties that challenge community development work, PROAFT worked with rural communities and developed several projects. We present the general actions in rural areas performed by PROAFT and related to resource management (Table 1), showing the number of participants and main activities of the 24 projects completed.

There are two particular examples that helped us to reflect on the process of working in rural areas and to draw conclusions about the social learning process. The first case is that of the X'pujil Mayan community and the second is that of the Pajapan Community. The initial micro-project in the community of X'pujil in Campeche is a good example of self-development and growth. This project started in 1992 with eight participants who previously formed part of a church group. The group had been successful in reproducing small cattle (*Ovis aries*), forage and wood tree management, as well as enrichment of secondary forest. PROAFT coached this group and its experience was repeated in other parcels by the government agency, the Indigenous National Institute. In 1994, the initial small group changed both quantitatively and

qualitatively. The formal members created the Regional Indigenous and Popular Council of X'pujil. Today, the council has 23 *ejidos* with 1200 direct beneficiaries and 6000 secondary beneficiaries. The members have different types of projects including agro-silvopastoral and cattle and wildlife management, fallow enrichment and the use of agroforestry systems that help to prevent forest fires. The *campesinos* have experienced empowerment and they are actively seeking new management alternatives in the state of Campeche. They have been able to negotiate directly with government and international agencies, hire and pay for technicians, and send some of their youth for specialized training to the School of Ecological Agriculture of Maní in Yucatan. In conclusion, the group has refined their awareness about their resources, decision-making skills and self-development (Rorive 2006).

The second example had few people but is equally impressive. It is the case of reforestation at the Santa Marta volcano in Pajapan, Veracruz. In this locality, ten *campesinos* have worked on reforestation and understanding the importance and impact of their actions on the environment. A local technician assisted the project, which consisted of restoring native species using traditional practices; and commercial production of *Chamaedora elegans*. To date, the group has planted 100,000 trees and recently received government financial support and some technical assistance from the Universidad Veracruzana. The group has worked on an ambitious project and their members are independent and understand quite clearly the consequences of their actions. During an evaluation in 1999, we detected that this group was able to recognize the following strengths in their organization (Aguilar *et al.* 2001):

- **Awareness of producing and conserving:** the repetition of the cultivation experience with *Chamaedora elegans* showed the environmental and economic advantages of new crops. Although economic benefits were not immediate and initial work was hard, people obtained important benefits at the end through the crop sale.
- **Awareness of organization:** organization was obtained through legal association. Profit distribution was more transparent and equal, and the group used the money to solve the needs of the

Table 1 PROAFT's activities in rural areas from 1992 to 2001

Activities	Units
Number of participant states	7
Number of participant municipalities	24
Community organizations formed	20
Projects completed	24
Participants	1,421
Indigenous groups represented	9
Women as participants	455
Direct beneficiaries	4,932
Number of <i>campesinos</i> trained in technical aspects	1,332
Technical courses	83
Number of <i>campesinos</i> trained in social aspects	700
Social courses	11
Annual regional meetings	7
Area under management	2,670 ha
Planted trees	158,620
Plants produced in community nurseries	51,350

household economy and establish permanency of individuals in the group.

- **Awareness of inter-generational knowledge:** the use of local and traditional knowledge was fundamental to recover secondary vegetation. The great value of traditional knowledge and the need to transmit it to future community generations was clear.
- **Awareness of monitoring and follow up:** recuperation and conservation of resources is a long-term process. Objectives were achieved systematically, but the ultimate goal is permanent and adaptable.

Thus, through these two case studies we have defined social learning as an ensemble of teaching and learning lessons from local and particular experiences. The lessons are different in themes and magnitude. It is possible to duplicate them, although they require specific adaptations with regard to the community. Social learning was generated within local groups that have the will to change. Furthermore, social learning in a community is a long-term process that needs interactive accumulation of lessons, capabilities and abilities at different scales. The process of learning is more effective when knowledge is transmitted from the *campesino* to the technician or researcher; from the researcher or technician to *campesinos*, from *campesino* to *campesino*, and from the head of the family to the children. In this way, individual learning can be used as a foundation for collective learning (Figure 1). The transmission of knowledge and information in this way allows for a more egalitarian approach to decision-making and therefore power status among participants. Having the same type of information makes people own the problem with the same level of comprehension and to propose solutions that will be accepted more easily.

Nowadays, to face the current environmental situation, especially in rural areas, real communication between scientific and empirical knowledge is needed. It is essential to recognize the limits of

this communication and the skewed perspectives that people bring to a relationship, but also it is positive to acknowledge the possibility of a more sustainable and rational use of resources. Moreover, the empirical knowledge contributes not only to using biodiversity, but also to conserving spaces and territories. Nerbonne and colleagues (2003) showed that cooperation between *campesinos* and researchers, far from robbing their legitimacy, could integrate a more complete vision of the world to face rural problems. Using particular beliefs and knowledge in a common way is very helpful to establish bridges between researchers, technicians and *campesinos*. The main idea of this approach is that the *campesinos* share their knowledge with a research team and vice versa.

We acknowledged that another essential element for social learning is the design of integrative systems that collect local and regional information. Data can be used to create strategies and policies that could be applied to multiple social groups. In this case, the main goal of social learning is to recover indigenous and/or local knowledge to understand the adaptation processes that these groups have experienced. Therefore, social learning contributes to empowerment and, as a consequence, self-development occurs, despite the great challenges that *campesinos* experience in rural Mexico.

ELEMENTS FOR COMMUNITY WORK

We realized that the challenge of community work in rural areas is to plan and carry out actions for real advancement. Practical activities for community work imply the use of time in a dynamic way and it is possible to design action paths and to anticipate results. Desired results will be obtained if projects maintain community participation, motivation for self-development, interaction among participants and local monitoring. In the following section we give the minimum conditions required for a project

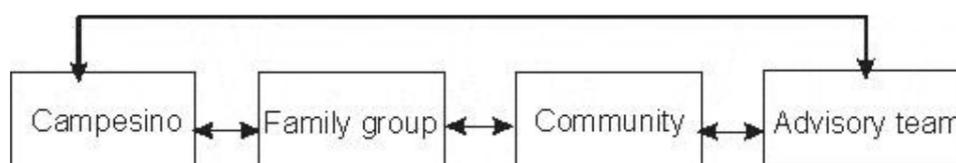


Figure 1 Transference of knowledge



that seeks sustainability and wants to be successful and describe elements that contribute to community work for rural projects. During our work with communities, we learned basic principles to develop community projects for resource management and conservation. We learned that biodiversity conservation and forest restoration is better achieved when natural ecosystems are imitated (i.e. use of agroforestry) because resources are managed in a continuous way. However, we also learned that conservation implies considering the plurality of local perceptions and interests from relevant social, economic and political groups. In Mexico there is a need to work at the local level. Traditionally, decisions about the development and use of resources are taken at the federal level, without considering local inputs (Aramoni-Calderón 1992; Bonfil-Batalla 1987). Therefore, local experiences have to be used as a base for development and these cases can be repeated and used at a regional scale. Examples in which we participated include the Regional Indigenous and Popular Council of X'pujil in Campeche, reforestation of the San Martín volcano in Pajapan, Veracruz; an agroforestry and wildlife management project in Santa Rosa de Lima, Oaxaca and an ecotourism project in the Biosphere Reserve of El Cielo in Tamaulipas (Amo Rodríguez 2001).

In Mexico qualitative elements for local development projects have often been ignored. A comprehensive analysis of a local community project should include both qualitative and quantitative aspects. The lack of consideration for qualitative aspects has hindered rural development and has created problems in the agricultural and rural sector. Our organization always worked to emphasise three fundamental premises for community work and sustainability that involved qualitative aspects:

- Global problems can be solved only if we provide local solutions;
- The future of natural resources depends on alliances with local populations and diverse social groups (e.g. universities, government agencies, non-government organizations) (Amo Rodríguez *et al.* 2001);
- Information and training facilitate community members to make valid and particular decisions, to reach for self-development, organization, planning, and project development (Amo Rodríguez and Rorive 2004).

Using the above premisses and a series of nine workshops offered annually in Catemaco, Veracruz from 1992 to 2000, we discuss qualitative concepts established as essential while developing our work and promoting social learning. We believe that these principles are usually forgotten in the Mexican rural context. The workshops helped us to motivate people to participate continuously in the projects. People of different ethnicities and with whom we discussed resource management, quality of life, sustainability, equality, family and economic issues were included (Morales-Torres and Amo Rodríguez 2001). It is important to point out that, during this work, there were several struggles and setbacks. Finances and continuity of actions were always difficult and restrained our capacity to complete some projects. We acknowledge that community cohesion, power distribution, local politics and willingness of people to participate in the projects always shape these processes and hinder or motivate achievement of sustainability goals. However, we established the following concepts to maintain participation in community work: a) dialogue, b) power and empowerment, c) plurality, d) validity of local knowledge and e) co-responsibility.

Dialogue

Dialogue is essential to establish continuous communication with and among community members. Dialogue must be reciprocal and used for mutual acceptance between technicians/researchers and the community and material and spiritual life are part of the dialogue. Discussion implies knowing about the use of the landscape, biotic and non-biotic resources, the meaning of agriculture, management practices, agricultural festivities and community organization. The exchange of ideas in the dialogue must be egalitarian and build trust, to avoid old paternalistic schemas that characterize Mexican agriculture. In our projects, dialogue helped us to recognize a plurality of criteria for understanding problems and solutions. Dialogue not only means hearing others, but also implies respecting their opinions and has to be motivated within groups. A relevant example of dialogue within groups was a project of horticulture where three different groups of women came together to produce crops, despite their religious differences (Amo Rodríguez 2001). Cooperation was possible





because they talked to each other and agreed on putting past conflicts due to their religious views behind them. Another example that makes us reflect on our relationship and dialogue with nature and with other people is the conception of the Tojolabales of Chiapas about the Earth. They believe that Earth is like our mother and belongs to everyone because it gives us the possibility of living: 'Earth is the source of life, for all those who have a heart. We as humans are part of the things that have a heart, so for this reason we are alive, and the heart is also the source of life' (Lenkersdof 1996). Concerted dialogue and negotiation provides a special tool to guarantee successful intervention, because it can shape mutual advantages of management and conservation of resources, and reinforce human dignity. In addition, a deliberation approach has the greatest potential to generate a legitimate process that benefits ecological and political circumstances (Brechin *et al.* 2002).

Moreover, lack of an effective dialogue between occidental and traditional knowledge has resulted in a colonial vision of 'development and progress'. In Mexico, we have unsuccessfully hidden, denied and isolated our indigenous identity (Bonfil-Batalla 1987; Esteva *et al.* 1994). There has been a clear effort to forget indigenous roots and to ignore indigenous populations. The main reason is the lack of purchasing capacity of indigenous populations for global market products. Indigenous and *campesino* populations are more marginal today than ever before. It is necessary to understand that indigenous thinking is more related to long-term basic survival and a non-accumulative lifestyle. In Mexico, not considering these two important cultural issues has resulted in many failed projects that initially looked for progress and development. However, in our projects, dialogue allowed us to create a confident and credible environment in which people could participate. Dialogue nurtured creativity and innovation in the development of new projects that permitted incremental community participation. One way to establish better communication was by using games. For example, we worked out the representation of sustainability and the quality of life by modelling clay figures. The objective was to invite people to reflect on community and people's needs. The games helped people to understand a complex concept such as sustainability, involving people from different places in the southeast of Mexico. In the exercise, harmony,

fraternity, change and love represented quality of life (Morales-Torres and Amo Rodríguez 2001). Another example of dialogue and tolerance was given by women in Chiapas, who had different ethnic and religious backgrounds, such as Man, Tzeltal, Catholic and Evangelic origins. These communities worked together in a vegetable garden, where producing food was a stronger incentive than cultural differences.

Power and empowerment

According to the classical definition of Weber (in Gerth and Mills 1946), power means having every opportunity/possibility within a social relationship which permits one to carry out one's own will even against resistance and regardless of the basis that these opportunities. Using this approach, poor people in rural Mexico currently lack opportunities to improve their lives and overcome marginality. Usually, government development and aid programmes are weak and superficial and have not resolved poverty issues. The programmes are palliatives to control people and not to give local populations power. Mexican history shows that developmental programmes such as the National Solidarity Programme (PRONASOL 1984–1994), Education, Health and Food Programme (PROGRESA 1994–2000) and the Agricultural Aid Programme (PROCAMPO 1990–2006) failed to reduce poverty (Gallardo-Latapí 2001). Recent data show that, in Mexico, extreme poverty increased 300% from 1995 to 2000 (Acosta-Barradas 2005). In rural areas, small groups or a few families centralize power in small towns and the rest of the community do not have many opportunities for empowerment. We developed the PROAFT strategy to empower people through small projects that did not present a visible goal of gaining power. Once people achieved certain objectives, they were able to gain some power, strengthen their own groups and involve new members. As discussed above, some small projects developed into larger experiences that changed population power dynamics and gave access to power to more and different groups. The new power dynamics made room for new ways of resource management and the possibility of improving people's life. We clearly noticed that, when small groups had access to power, they influenced other community members and behaviours changed through social learning. Ostrom





(1990) called these ideas self-governance, referring to the belief that individuals have the capacity to govern their lives and that they function most successfully when they develop their self-sufficiency to solve problems and implement innovation. Furthermore, these principles could play a key role in the process of increasing the likelihood of self-organization, enhance capabilities of individuals to continue self-organized efforts over time and exceed the capacity of self-organization to solve common resource problems without external assistance (Ostrom 1990).

Empowerment is the core goal for organization and the milestone for collective actions (Rubin and Rubin 2001). However, the concept is often used in an occidental framework. It is necessary to adapt empowerment for women and men in the Third World (Monhanty *et al.* 1991). Therefore, the term of empowerment comprises characteristics for overcoming ostracism and isolation of poor rural and urban populations. Community empowerment is achieved when its members make responsible and free decisions. This process occurs when a community is capable of auto-evaluation about its abilities, rights and obligations and, therefore, the community achieves particular life projects and overcomes marginality. Through our work in tropical rural areas of Mexico, we know that to overcome ostracism and reach empowerment, cultural reconstruction must be considered. If researchers and government officials do not work co-responsibly and with the same objectives, we would only be colonizing people's consciousness. Therefore, for *campesino* groups, empowerment is a necessary condition for organization, self-development and negotiation.

A special case of empowerment is women. In Mexico, rural women not only provide emotional and social stability (Steil 1995), but also are often the primary breadwinners for their families and principal natural resource managers (Hays-Mitchell 2002). Both roles denote the importance of considering women as main actors in the path towards sustainability and empowerment. A specific example of woman empowerment occurred in Veracruz, where PROAFT developed a project about the use and availability of fuelwood in rural areas from 1999 to 2001 (Amo Rodríguez and Yllescas 2004, 2005). Findings showed women as the primary users, consumers and administrators of this resource. When the participating women



understood their capacity for making decisions about firewood, they empowered themselves. The women became promoters of using firewood more efficiently within the household. They learned to make and constructed 150 rural wood stoves as an alternative technology. Finally, women's control over the resource resulted in public recognition of their work. It is important to point out that a great number of rural stove projects in Mexico or other countries have failed. Our case was different because women and their families were involved from the beginning of the process that took five years. In conclusion, women have to be the main participants in natural resource management (Larson 2002); their participation in productive projects is indispensable. However, their collaboration has to be in connection with other projects and not isolated. It is important to provide women with participant spaces where they can be heard, make decisions and use their capabilities and wisdom.

Plurality

Plurality is also an important issue that can be considered in philosophical and political terms as the existence of different and sometimes opposite positions over social or environmental planning (Anderson *et al.* 1998). In Mexico, plurality is very important because of its wide array of values, perceptions and expectations that come from different knowledge systems and groups. Accepting plurality creates a dynamic interaction among ideologies, interests and organizations. It is fundamental not to confuse plurality with diversity. Plurality reflects independence in autonomy of actions and diversity only recognizes differences between entities. These two issues cannot be resolved without taking into account plurality and diversity of actors in terms of political and environmental education. It is important to also recognize the plurality of values and personal interests nested within indigenous communities (Natcher and Hickey 2002) as well as the plurality of cultures in rural Mexico. According to Gómez-Pompa and Kaus (1992), solutions for adequate natural resource management in Third World countries have to be found in the local reality and not only in the occidental discourse of nature, as happens today. In this framework, civil society has the capability of carrying out activities for local and technical training with organization and self-management skills.





Local knowledge validation

Local knowledge validation is obtained through scientific experience; however, local populations also validate through time. Local knowledge is reproduced by its socialization in rural communities. To use and understand local knowledge, it is indispensable to form research teams with local people, to find an integrative model between scientific and traditional knowledge (Berkes 1993, Kimmerer 2000). This is because traditional knowledge is a link between human intervention and ecological integrity that incorporates pragmatic and spiritual issues (Kimmerer 2000). Also, research has to be multidisciplinary and scholars have to be responsible and accept traditional knowledge as useful. Recognition of local abilities provides new tools to motivate and facilitate community decision-making. In general, decisions among *campesinos* might differ from our decision framework of time and space, however, we must respect it. Incorporation of traditional/local knowledge has several advantages: technically, it can be used to evaluate the physical, socio-cultural and economic issues and to compare current scientific data; socially, it reflects history, experiences and relationships of a community; furthermore, it sheds light on information exchange procedures between small groups. For example, local knowledge offers information about traditional organization frameworks, cultural identities and place attachment. These factors were evident during our work with Nahuas and Zoque-Popolucas groups. These groups have a typology of soils that helped us to understand their land uses and to plan agricultural activities (Trolle *et al.* 2002). As planners, we acknowledged local practical abilities and local management strategies to increase participation in management actions. Hence, we need to regenerate local knowledge to assure potential use of resources that is complex in practice and tends to be experiential and closely related to a specific way of life (Berkes 2004). Furthermore, there is an increased theoretical interest in 'outdoor learning' (Pálsson 2000) that means we open our eyes to empirical knowledge and its application to resolve local problems (Berkes and Folke 2000) because qualitative knowledge is very applicable to management and restoration activities, which are the main challenges for conservation of the rural landscape (Kimmerer 2000). When we consider local knowledge and

motivate people to be empowered, we are solving real problems; this is the best path for legitimizing local systems of knowledge. Finally, in order to understand the propensity of a community to conserve resources, one must consider its internal attributes and decision-making processes as well as its relationships with outside institutions. Therefore, gender and ethnic relations within communities and interactions between the market, the state and communities are important to fully understand local knowledge and facilitate the social learning process (Agrawal and Gibson 2001).

Co-responsibility

Co-responsibility is one of the main factors required to succeed in a project. It is important to fight the tendency of individual interests over group interests. When a local population evaluates their problems, their existing resources and their potential uses, it is more feasible to plan for better resource management. The community reaches a level of consciousness about its own richness and the external factors that influence its daily life. When *campesinos* are included in planning, they can share information and knowledge and community members are able to recover ancestral ways of living with nature and share new relationships with ecosystems. New attitudes facilitate organization and motivate egalitarian relationships for self-development and community cohesiveness. A planned strategy for a rural project has to be the product of collaboration and financial responsibility between the state (federal and local level), civic society and the commercial private sector, or what Carlsson and Berkes (2005) call co-management. The state is obliged to solve and assist community problems in spite of recurrent economic crises. Civic society is comprised of organized neighbourhood groups, non-governmental organizations, cooperatives, volunteers, universities and the commercial private sector and has to participate and maximize its potentials for problem solving. The final intention is to motivate co-management between the community and government (Berkes 2004). Traditionally, in Mexico, the state and civic society do not work together. There is bureaucratic and rigid control over financial resources for rural communities. State programmes are often contradictory and people are





obliged to carry out contradictory actions. Opportunities for marginal rural and urban populations are limited. An answer to this problem is cooperation of all groups for community action over issues related to natural resource management, increasing the level of commitment from group members and the creativity and innovation in the development of new projects. This process implies the creation of social capital and, as Preetty and Smith (2004) explain, building social capital shows that rural people can improve their understanding of biodiversity and agro-ecology and thus build their relationships; at the same time, they can develop new social rules, norms and institutions. Furthermore, a strong social capital structure (rules, norms, sanctions, trust and reciprocal arrangements) allows social learning that helps conservation and biodiversity and implies a need to blend both the biological and social elements. We believe that the design of a successful set of rules can create community where community did not previously exist (Ostrom 1992) and empower individuals to change. The rules that the group creates become something of value to all the members because the entire community or group accepts them.

PRACTICAL APPLICATIONS FOR COMMUNITY WORK

If we emphasize all the above ideas for rural community work, obstacles to success would lessen and even be overcome. However, there are three more aspects to consider as technical applications for community work related to resource management: a) diversification of activities in projects, b) training, and c) monitoring and feedback. We believe that these applications facilitate the completion of rural development projects and strengthen capacity building.

Diversification

Diversification of activities in projects allows for generation of new initiatives because of community alliances oriented to integrated and sustainable resource management. Diversification of actions leads to a more holistic approach for resource management and to a further commitment for carrying out sustainable actions such as the reduction of agrochemicals and the conservation of

biodiversity. The compass and gyroscope method described by Lee (1993), where the compass is in conservation activities (an ongoing experiment where practitioners attend to generate increased and useful information for resource management), while the gyroscope is reinforcement of the democratic social process, can be used to generate projects. If local users exercise genuine control over their resources, they are better represented in the process of forming, implementing and evaluating devolution policies. In addition, the guiding principle for policy discussions should be to create sustainable livelihoods for local resource users, especially the poorest among them, rather than reducing the cost of government administration (Edmunds and Wollenberg 2003).

Training

Training is the necessary element to prepare community members for action, new ideas and methods to achieve objectives. It is essential for community empowerment to increase people's capabilities. Rural people have their own worldviews, and are often under-estimated, therefore they require tools to systematize their knowledge. Since environmental protection by definition is a social and a political process, biodiversity crises will have to focus on questions of human organization (Breachin *et al.* 2002). Training is a tool for social learning and has to be related to community life and daily activities. Non-formal education or training is very important for the completion of community projects (Pieck-Goicochea 1996, Shirur 1995). It is a factor for change and allows community problem solving. We must stimulate popular educative practices that value community identity, self-esteem, culture and traditional knowledge. Training should strengthen people's abilities for observation, self-development, organization and acquiring practical and technical knowledge using participatory techniques for including different interests to help communities. Successful training develops activities at the individual and collective level. Good quality training includes the exchange of information between *campesino* groups through workshops. When communication exists between groups in similar situations, people are able to learn how to solve other people's problems, propose solutions and meet goals. The exchange of information





helps to socialize local experiences of self-development and organization processes. Sharing and exchanging testimonies and experiences contributes to development of a sense of ownership. Some advantages of implementing training programmes are:

- Acknowledgement of local abilities;
- Preparation of *campesinos* as promoters for knowledge sharing;
- Revalidation and enrichment of traditional practices;
- Interchange of experiences and knowledge between groups;
- Power of learning and local capabilities for solution of natural resource issues;
- Community revalidation of uses and customs oriented to solidarity and a relationship with nature.

Monitoring and feedback

Monitoring and feedback are two main technical aspects. Continuous monitoring is necessary for the establishment of norms and controls, for improvement and to overcome errors. Performing evaluations gives us the chance to motivate dialogue among community members and continue planning actions. When properly designed, local schemes yield locally relevant results that can be as reliable as those derived from professional monitoring (Danielsen *et al.* 2005). When management decisions emanate from local settings, they are more often accepted and achieved. Feedback allows different community groups to achieve group cohesion. At this stage, the presence of civic, educational and research institutions is vital because their presence guarantees respect for local ways of life and cultural rights. As a result, more active and democratic community participation for a more egalitarian development is achieved, for which it is important to acquire information and an understanding of the factors that influence, regulate or govern human interaction with the environment. This understanding must relate to participating policies and training efforts in rural areas, ranging from agricultural alternatives to government policies, and to those who influence environmental health and planning issues, among others.

CONCLUSIONS

In this paper we have reflected and discussed concepts to improve social learning during the development of rural projects. We argued that social learning leads to true sustainability, but in the Mexican context, we also need to find mechanisms that facilitate social learning for community work, considering the educational and poverty issues in our country. Sustainability will be achieved when we stop denying the link between the use of natural resources and population well-being. Therefore, the challenge is to understand complex systems and design effective ways to study and evaluate them, using participatory methods and qualitative and quantitative methodologies (Campbell 2001). These reflections suggest guidelines to answer a question that came up during the 1980s: how to monitor and evaluate progress and impact of a project in a complex system. We have tried to establish interrelationships among various community elements using a holistic approach. Communities gain stability, an organized structure, and internal support once their members create trusted relationships (Wellman and Wortley 1990). Consequently, in rural areas the great challenge is to analyze how the micro and macro levels of social transformation and individual and household decision-making influence community activities. People's daily lives have to be considered in community work. Daily activities respond to local necessities and expectations and, as a consequence, their members have a great influence on conservation and management of natural resources. In addition, the consideration of micro levels of decision-making helps integrate local knowledge on natural resources.

Often community work relates to adoption of new technologies. Therefore, it is important to balance people's interests and the practical use of new technologies to overcome difficulties. When community needs are considered, members tend to be more sensitive and understand their own problems. The most important elements in a community and/or rural education strategy are to watch and to think in order to learn and act (Gomezjara 2002). This relates to 'praxiology', the theory that informs practice and keeps things in motion (Rölling and Jiggins 2001). In the Mexican experience, educational aspects, such as sensitivity, motivation and practical activities, motivate people to accept new technologies that ideally would contribute to community



development (López-Arzola and López 1999). Furthermore, when community integration occurs, members have the capacity to develop their own projects and evaluate their results. Therefore, we were constantly evaluating the plurality of our actions to take advantage of community relationships and social support. It is important to point out that social support is different in developed countries from developing countries, because of lower economic and political stability of the latter. In addition, doing community work implies a long-term commitment, patience and money.

In 1977, Lomnitz noted that Mexican shantytowns attracted migrants who were usually landless peasants from an economically depressed region with a low educational level and who would eventually bring their families (Lomnitz 1977). Unfortunately, this situation has not changed in the last 40 years. On the contrary, it has increased and affected rural areas. Nowadays, Mexican rural areas are centres for out-migration. Hence, community work in rural areas has to apply a holistic approach. We must understand that the rural space is a complex system and how all the parts of it fit together and relate to the environment (Rölling and Wagemakers 2000). A community's substance is the social interaction within (Wilkinson 1970). Thus, it is crucial to have a clear perception of participant actors, association schemes and procedures to carry out actions in a community (Wilkinson 1991). In addition, it is important to understand power structures in order to identify possible interactions among actors and conditions for action. Then the complete social structure is reflected in the interaction of power groups and their capability for

organization and networking that connect rural societies (Sharp 2001). In this sense, resource management at the community level will be transformed to local empowerment. Ideally it will lead to social justice with three rights: the right to participate at all levels; the right to self representation and autonomy; and the right to political, economic and cultural self determination (Brechin *et al.* 2002).

In Mexico and other developing countries, conserving natural resources also implies rescuing cultural and social elements or, as Alcorn (1997) defines it, recovering the bioculture. We need to use social learning to understand collective human cognition on natural resources, before deciding about its governance. We consider that it is impossible to separate the advantages of applying social learning for resource management. We need models of community-based conservation (Briassoulis 1989) that should consider elements such as dialogue, power, empowerment, plurality, local knowledge validity, co-responsibility, diversification of activities in projects, training, monitoring and feedback. Social learning, especially in Mexico, allows us to rethink conservation as a social and cultural process (Kimmerer 2000), because of the great influence of traditional knowledge in resource management. It is clear that we also have to include landscape planning, long-term goals and continuous monitoring. We acknowledge that group-based approaches centred on social learning are a necessary but not a sufficient condition for achievement of long-term biodiversity conservation. As a final thought, we must reinforce the idea of cooperation between researchers and local community members. In Figure 2, we show the interactions between

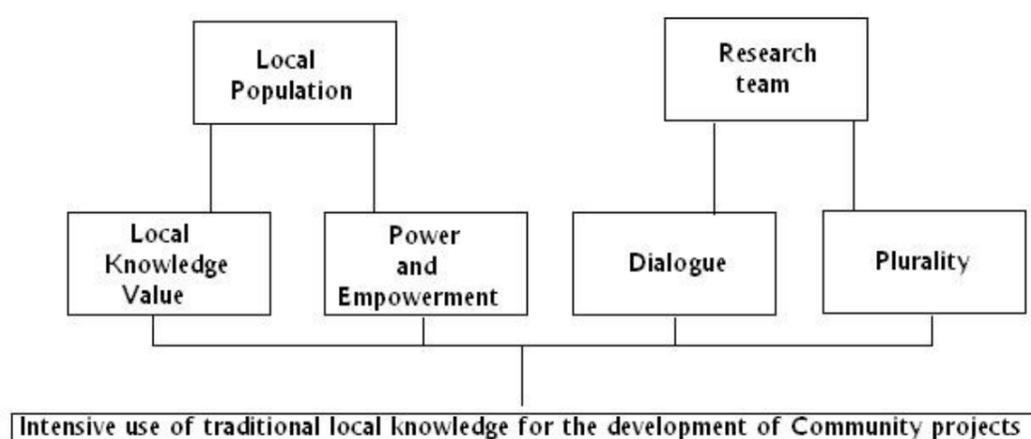


Figure 2 Interactions between the local population and the research team to build a community project

the research team and the local population to build a community project.

During the process of interaction, there is intensive use of traditional knowledge, and as a result, it is legitimized. The development of a social learning process requires new approaches for linking natural and social sciences. Combining different approaches would reflect better public policies and more environmentally friendly technological development. The research team needs to establish a dialogue and to recognize the plurality of values, perceptions and expectations in the community that are related to practice tolerance. The local population also needs to recognize the value of their own knowledge and to reach empowerment. The combination of these actions results in a successful community project. Finally, we want to note the difficulty of documenting this type of experience because of the complexity that it implies to record human interactions. Fieldwork requires objectivity and putting aside our own perceptions and cultural and educational background. We need to separate between people's personal claims and the real needs of the whole community. We agree with Campbell (2001), that in practice, it is very difficult to establish restrictions between needs

and feelings. Furthermore, it is difficult to separate concrete actions from intentions and these types of projects also lack hard data. For example, community risks and people's insecurities are real factors that determine community action and are hard to measure and integrate into community development. A participatory methodology is a constant work in progress that needs a solid conceptual framework. In this sense, our theoretical concepts and practical applications show how, in a real situation, community work can combine desired goals with possible actions. Policy reforms, in patterns of ownership, new incentives and protective regulations, and the removal of destructive subsidies are additional conditions for structuring the wider economic and social context (Nayar and Ong 1995). It is important that policy-makers and practitioners continue to seek ways to support processes that help people to play a proactive and positive role in biodiversity conservation, however complex and uncertain this may be (Preetty and Smith 2004). Ultimately, rural reconstruction in Mexico implies seeing people as creative persons capable of building and carrying out new ways of using resources to attain sustainability.

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