Updating peasant competencies to mitigate poverty in the Chorti community, Copan (Honduras)

Actualización de competencias para mitigar la pobreza en campesinos de la comunidad Chortí de Copán (Honduras)

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ABSTRACT

The Copan department of Honduras has a low Human Development Index (HDI 0.56) but it is very rich in hydric resources, all ranges in temperature, ecosystems, agricultural and livestock biodiversity, and rural knowledge because its original Mayan ethnic groups (Chorti and Lencas, and mixed race peasants). This article analyzes and evaluates the strategies used in the components of rural production and management of the basin of the Project 'Local Self-managed Development for Poverty Reduction in North Copán, Honduras' (NCP) that worked with the Multifunctional Agriculture (MFA) approach between 2003 and 2007. The main results were: To promote agro-ecological management innovations, creation of two funds to improve the farmers production, environmental protection of the basins, to consider the hydric and eco-systemic services in the management of the territory, to reassess social learning systems as the extension methodology "farmer to farmer".

Key words: environmental management, local participation, new rurality, eco-systemic services, actitivity systems, micro-basins.

RESUMEN

El Índice de Desarrollo Humano del departamento de Copán, Honduras, es bajo (HDI 0.56) pese a la abundancia de recursos hídricos, pisos térmicos, diversidad biológica en eco y agro-sistemas y saberes mayas (comunidades chortí y lencas y campesinos mestizos). El artículo analiza y evalúa las estrategias de entrenamiento, innovación, interacción de prácticas y técnicas en sistemas de producción y manejo de micro-cuencas desarrolladas en el 'Proyecto de Desarrollo Local Auto-gestionado para la Reducción de la Pobreza en el Norte de Copán' (PNC) ejecutado entre 2003 y 2007 y que utilizó el enfoque de Multifuncionalidad de la Agricultura (MFA). Los principales resultados fueron: apropiación de innovaciones de manejo agroecológico, creación de dos fondos que contribuirán a mejorar la producción campesina, preservación ambiental de micro-cuencas, considerar los servicios eco-sistémicos e hídricos en la gestión del territorio, revalorar sistemas sociales de aprendizaje, como la metodología de entrenamiento "campesino a campesino".

Palabras clave: gestión ambiental, participación local, nueva ruralidad, servicios eco-sistémicos, sistemas de actividades, micro-cuencas.

Introduction

The territory for intervention of the Project 'Local Self-managed Development for Poverty Reduction in North Copán, Honduras' (NCP), financed by Finland and managed by the United Nations Development Program (UNDP), covers 10 municipalities from the Chorti community. This ancestral territory was part, along with southern Mexico and Guatemala, of the 'Mayan Area of the Pacific' —a vast center of plant and bird domestication for family gardens (Girard, 1976)—.

Currently, the territory is cohabitated by the heirs of Mayan wisdom and mestizo country people, which causes an hybrid of cultures as evident in the systems of planting and breeding of native and introduced plants and animals, using land plot smaller than 5 ha, which generate 60% of the regional economic activity but only receive a score of 0.56 when represented with development indicators as HDI.

Visions of development have been limited to reducing the rural to the productive, to disqualify the rural workers, given their lack of technique and their adherence to tradition, to account in terms of monetary revenues the gaps among rural homes, to emphasize on the lower provisions of the rural workers' territories for agriculture, etc. These paradigms are not able to visualize, recognize, and assess other forms of wealth that are abundant in rural settings

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in Latin America. We have a surplus of ethno-cultures whose knowledge of soils, meteors, plants, animals, crops, etc., could enter into cyclic relationships with technical sciences knowledge to re-design operations of eco-systems of rural worker activities (Barrera-Bassols *et al*., 2006; Sumberg *et al*., 2003; Winkler and Barrera-Bassol, 2004). The re-design would consider the multiplicity of contexts of use and, as key characteristics of agro-forestry systemic technologies, management of hydric resources, nutritional systems, and provision of eco-systemic resources (Sumberg e*t al*., 2003).

Given these considerations, the following objectives were formulated for the article: 1) To present achievements in training on practical and technical innovations in modes of cultivation and in management of hydric resources, along with socioeconomic aspects of the PNC. 2) To distribute the transference from productive mono-functionality to the multi-functionality provider of goods and services of agro-ecosystems as a path in poverty reduction in peasant rural communities.

New approaches and paradigms of rural development

Increased urban populations in cities propitiates greater demand for food resources, hydric resources, reduction of space, and social problems, which suggests approaching the planning of the rural setting from new alternative visions of rural development and not merely centering it on production and productivity for agriculture and livestock. The rural and urban settings are no longer exclusive and become complementary and interdependent potentiating multiple functions: Food, fibers, environmental services (water, air, biodiversity, and recreation), and recreational activities. *Environmental* or *eco-systemic services* are those obtained from their ecosystems and there are different kinds like: *provisioning*, food, water; *service regulation* like floods, drought, soil degradation, and diseases; *protection,* soil formation, nutrient cycle; and *cultural services* like recreation, spiritual, religious, and other non-material benefits. Support services are those needed for the reproduction of the whole ecosystem and others like primary production, oxygen production, and soil formation. (Adamowicz *et al*., 2005; Bellows *et al.,* 2001).

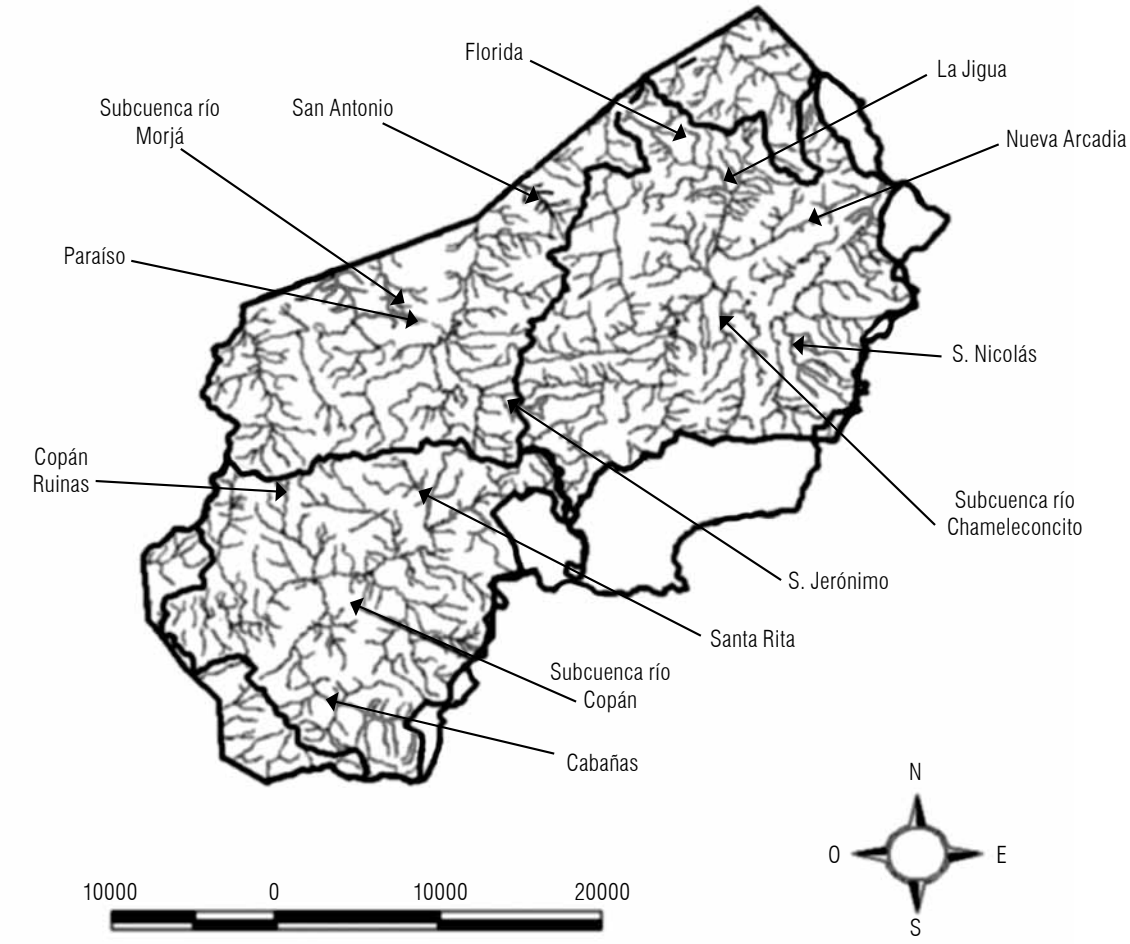

FIGURE 1. Hydric network and municipalities comprising the Chorti community, Copan (Honduras). Source: NCP (2007).

From the mono-functional to the multi-functional as an alternative to rural development

Recognizing the great diversification of the rural economy and the complexity of dimensions and external factors generated in the exploitation of natural resources, it is necessary to sharpen the reflection on the ideal models of basic rural production. The great environmental, cultural, social, and political diversity and heterogeneity in Honduras permits suggesting the coexistence of a range of new systems to recreate the rural setting; among these: 1) Abundant labor, especially women and youth who must integrate local and regional processes of the agricultural economy; 2) Evaluation of local native traditional knowledge as basis for the construction of a new technological paradigm; 3) Singular conditions of tropical agriculture until now unknown; 4) Suggestive opportunities offered by environmental wealth and the services derived therein; 5) Need to generate a distributive and inclusive economy (Echeverry and Ribero, 2002; Piñeiro, 2002).

The concept of 'multi-functionality' supposes a new paradigm for public intervention based on correcting market faults and on providing public goods, which are positive external factors generated by agriculture through joint production processes (Atance *et al*., 2001; Gafsi *et al*., 2006).

Methodology

Bio-physics of the territory

The NCP was executed between 2003 and 2007 in 10 municipalities (Copán Ruinas, Cabañas, San Antonio, Santa Rita, El Paraíso, La Jigua, San Jerónimo, San Nicolás, Florida, and Nueva Arcadia), with a population of 161,052 inhabitants and a territorial extension of 1,849 km^2. The territory is covered by rivers from the sub-basins of Chamaleoncito (El Capucal, Pasquingual, Chiquito, Seco, Tiste, Tepemechin, Salsoque, Jagua, Chinamito, and Obraje), Copán (Amarillo, Blanco, El Mirador, Mirasolito, and Jila), and Morja (Managua, Blanco, La Pena, El Pimienta, La Pita, Ocote, Chalja, and Jubuco) (Fig. 1).

The terrain ranges from 100 to 2,285 masl (Cerro Azul National Park). In most of the territory the slopes vary between 30 and 50%. The mean temperature is between 17 and 20°C, with a mean annual precipitation of 1,624 mm.

Soils are grouped into three series: 1) *Milile* (deep and well-drained, developed over volcanic ash, altitude over 1400 m, horizon A rich in organic matter, corresponding to *Andic Eutropepts* in the 7th approximation revised); 2) *Naranjito* (deep, well-drained, slightly acid, developed over limonites and inter-stratified limestone with inclusions of sandstone and conglomerate, abundant in the rainy region of the nation's northeast. These have moderate internal drainage, high capacity to conserve humidity, and do not have a compacted layer. These are associated with Chimizales and Ojojona soils, found at heights below 1,200 m. Up to 20 cm, they are silty loam to silty clay loam. These are dark brown, friable at varied humidity conditions and only moderately adherent and plastic in humidity. They are reddish yellow podzols and in the 7th approximation revised correspond to *Typic Tropohumults*. In the study area, there are slopes between 20 and 40% (covered by grasslands in the lower parts); 3) *Sulaco* (shallow, well drained, developed over limestone or marble, in great part dolomitic and of steep relief, stony between 40 and 60% on the surface, slow internal drainage, moderate capacity to retain humidity, high risk of erosion; these are *rendzinas* and in the 7th approximation revised correspond to *Typic Ustorthents*).

The surface soil, up to 20 to 30 cm, is a dark brown, black, clay, hard when dry, adherent and plastic when wet, with a neutral reaction (pH 7.0 to 7.5); frequently found on limestone and the thickness varies from a few centimeters to nearly 40 cm; they are abundant in rocky outcrops and in some areas the rock constitutes over 50% of the surface.

Crop systems

In small farms (<5 ha), these represent close to 70% of the productive units, the intercropping orchard, fallow land, rich biodiversity, and double or triple use of resources (Carranza, 2004). The most frequent agri-systems:

1) *Parcel system (family orchard),* with a diversity of crops, maize field, parcel crops, in the countryside there are permanent orchards next to the home, to grow fruit trees, pumpkins, dyes and spices (Newson, 1992). Among the plants grown, there are: squash, pipian, fig-leaf gourd (chilatocayotes), juniapa, nances, tomatoes, granadilla fruit, pacaya, bitters (amargos), caral (carales), passion fruit (maracuyá), pitos, macuces, annatto (achiote), bean pod (frijolillo), malanga, saizocos, guamo, guava, lorocos, sapodilla plum (zapotes), avocado, cashew nut (marañón), chaya, güisquiles, chichicuilotes, bledo, siguanperos, paternas, chilutos, morros, jocotas, piñuela, suctes, quiletes, choras, sweet potatoes, custard apple (anonas), cassava, corn, izotes and papayas (Carranza, 2004).
2) The *milpa* or *guatal,* is intercropping of corn and beans, most of which is for consumption of the family unit and the remainder is commercialized in the zone. The

milpa (maize field) takes place in rented or own land or in inducted land (Carranza, 2004)

3) *Arabica coffee farm* ('finca') intercropped with fruit trees (bananas, oranges, avocados, lumber, etc.) is the main commercial crop and the center of the zone's economy.

4) *Vegetable plots* grow for commercial purposes peppers, tomatoes, lettuce, cucumber, onion.

5) *Systems for small-animal breeding* (chickens, turkeys, and pigs); some have one to three heads of cattle.

Human occupants of the territory

The NCP territory is occupied by 161,052 inhabitants, density 84 inhab/km^2. Most of the population is *mestizo* and their ancestral roots are from the Mayan, Lenca, and Chorti ethnic groups.

The indicators of unsatisfied basic needs (UBN) are very low: access to water ranges between 10.0 (Santa Rita) and 30% (San Nicolás) of the population; basic sanitation between 8.3 (San Antonio, Florida) and 32.8% (Cabañas); overcrowding between 6.7% (La Jigua) and 20.7%; education between 6.7% (La Jigua) and 24.1% (Cabañas) (Tab. 1).

These municipalities can be accessed via paved road, except for El Paraíso and Cabañas, and are crossed by the international roadway between Honduras and Guatemala. The Chorti community is equidistant to big cities like Guatemala City (San Salvador) and San Pedro Sula (Honduras). The area is considered the nation's most important tourism route given its proximity to Copán's Mayan Archaeological Park.

Methodological strategies

Prior to the intervention strategies, a situational diagnosis was conducted characterizing the zone from a systemic, contextual, retrospective, prospective, descriptive, and evaluative focuses consigned in the document *Base line study of the Chortí community,* the state of the institutions, local organizations, productive systems, local economy, woodlands, micro-basins, level of participation of civilian society, infrastructure deficit, technical and administrative dependencies of the town halls, etc.

Methodological strategy for the micro-basins component

To define the territory, create maps, characterize, and update the municipality land use data base, each municipality inventoried its natural, cultural, and recreational resources: micro-basins, woodlands, archaeological areas, tourism zones, etc. This way, the local governments (town halls) would plan local development, considering socio-environmental and eco-systemic service variables: recreation, archaeological, research, water, biodiversity. Following the perspective by Bejarano (1998) reassessing the rural from an outsourced perspective is not limited to re-evaluating the agricultural, the productive, it should also reach the cultural and socio-political functions, the environmental services of the agro-systems and eco-systems of the territory.

The agreement committed Municipal Environmental Units employees from the local governments with two NCP facilitators: an agronomy engineer (agrarian component) and a forestry engineer (micro-basin component), whom interacted in participative manner with local players by developing training sessions, theoretical and practical events for the peasant workers on priority themes of the agenda on comprehensive management of micro-basins (Induction to environmental management, elaboration of profiles of community projects for the protection of micro-basins, environmental legislation, protection and management of natural resources). Training sessions concluded with monitoring plans. Water administration committees (WAC) were organized and carried out from their production units what had been planned during the training sessions.

TABLE 1. Indicators of Unsatisfied Basic Needs (UBN).

Municipality	HDI* 2006	Population	% Water	% Sanitation	% Overcrowding	% Education
Copán Ruinas	0.558	30,703	22.8	15.7	15.7	18.6
Cabañas	0.534	9,818	22.4	32.8	20.7	24.1
San Antonio	0.554	9,670	13.3	8.3	13.3	10.0
Santa Rita	0.554	24,157	10,0	28.3	15.0	10.0
El Paraíso	0.550	18,397	21.9	18.8	18.8	23.4
La Jigua	0.578	7,915	21.7	26.7	6.7	6.7
San Jerónimo	0.571	4,555	17.7	19.3	19.3	12.9
San Nicolás	0.595	6,017	30.0	13.3	8.3	13.3
Florida	0.563	26,703	17.7	8.3	12.9	17.7
Nueva Arcadia	0.615	30,136	11.7	25.0	15.0	16.7

* Human Development Index. Source: NCP (2004).

The action and methodological planning of the proposal was characterized by:

1. Integration and participation of local organizations from the micro-basins (Farmers' Association, cooperatives, water administration committees) through agreeing on actions and planning commitments.
2. Payment for environmental services. A financial mechanism was created to recover funds to support activities in the process of catchment, maintenance, and purification of the water network. With the added value destined to actions of environmental conservation of the micro-basin (reforestation, protection of recharge areas, etc.).
3. Update skills of government participants and of the locality.
4. Community and micro-basin organization.

Methodological strategy for the production component and local economic enhancement

Conventional outreach programs have been based on positions by Rogers (1966) and this component was initially used for the dissemination of innovation among which agro-ecological technologies were disseminated. Such process permitted recognition of the importance of using innovative tools like that of the 'farmer to farmer', belonging to the social learning approach or practical communities with greater success in innovation and adaptation of technologies.

Through a *Trust Fund for Production,* local regional impact networks and chanels were enhanced, creating the local economic development unit Local Unit for Economic Development (LUED) to study, plan, and manage the potential of productive or service enterprises, focusing on productive chains.

A community office for local economic development was created with the local governments. Another *Fund* for *Environmental Development* was invested to subsidize micro-basin landscape protection and adaptation projects (management of solid wastes, sanitation, reforestation, care for recharge zones, proposal for payment of municipal hydric service, agro-forestry proposals).

Results

With a budget of US$4,532,418 legalized through a finance agreement between the governments of Finland and Honduras, and distributed thus: 29% for production; 28% for management capacity; 19% for operational costs; 15% for management of micro-basins and 8% for training (Tab. 2).

TABLE 2. NCP accumulated budget execution from 2003 to 31 August 2007.

Activity	Accumulated execution, USD	% used
Production	1,296,509	29%
Management capacity	1,267,559	28%
Operational costs	873,040	19%
Management of micro-basins	686,563	15%
Training in production and micro-basins management	380,555	8%
Evaluation	28,191	1%
Total	4,532,418	100%

Source: NCP (2007).

Micro-credits and the Trust Fund for Production

Created to support producers with scarce resources and who do not have access to institutional loans from banks. However, these economically poor producers have the capacity of undertaking activities that will eventually increase their income. They are the so-called "poor entrepreneurs" and they are different from the poor who have no capacity of undertaking economic activities because of the lack of personal skills or of their degree of indigence. The latter must be helped preferably through other types of social programs. Nevertheless, some micro-credit programs have managed to help the extreme poor (Martínez, 2004). The Fund began with a capital of US$173,000 in 2004 and for 2007 it was increased to US $1,226,267 (Tab. 3). It had legal representation and was administered by one of the nation's banking entities, which acts as a second-order finance entity; in a first order the moneys are given to six local financial entities (Funed, Comframul, Hermandad de Honduras, Finca, Fundahmicro, Fundación José María Covelo), which promote and lend to the rural banks that are the organizational units in the countryside. In 2007, 2,925 micro-entrepreneurs were supported of which 72.6% were women and/or mothers heads of household; the size of the loans ranged on the average of US $348.41. Good identification of the target population is important for the creation and maintenance of the credit discipline, which is a necessary condition for the subsistence of the program. Women constitute a common target group in the micro-credit programs. This is because, among other reasons, women have demonstrated better entrepreneurial qualities and better payment rates than those registered for the men; the income earned by women usually bears greater impact on the family wellbeing; it improves their position within the family and society, their self-esteem and their decision power (Martínez, 2004).

TABLE 3. Evolution of the NCP Trust Fund for Production in the Chorti community (Honduras, 2007).

Year	Amount of the Fund USD	N^0 Users	N^0 women users	N^0 men users	Average Credit USD
2004	196,751.20	629	441	188	312.80
2005	982,463.40	3141	2200	941	312.80
2006	1,069,797.00	2925	2126	799	503.20
2007	1,226,267.80	2052	1440	612	596.40

Source: NCP (2008).

This fund has: 1. Board of directors, 2. Regulations of eligibility of financial intermediaries, 3. Credit regulations y 4. Regulations of the trust operational functioning.

The PNC supported 3400 producers in adapting agro-ecological technologies in the transformation of coffee: Improving coffee milling processes, construction of over 40 oxidation ponds to avoid contamination with mead, and composting of organic waste keeping them from being dumped into bodies of water. One hundred (100) low-cost ecological coffee driers were introduced. For farmers with cattle, 15 bio-digesters were promoted to take advantage of the methane from manure as a fuel source for the farm. In the transformation of sugar cane, higher efficiency systems were adopted to avail of the combustion of improved furnaces, ecological evaporators, and improved galleys.

Local commercialization systems and networks were enhanced as farmers' markets (weekly farmers' fair). Production systems were promoted to guarantee food quality and safety for peasant farmer families like, for example: *Milpa* to guarantee protein source (beans) and corn; small-animal species for local family consumption and local markets, 110 school orchards with pedagogical, educational, and nutritional purposes. Agro-ecological technologies were promoted: organic fertilizers, conservation of traditional seeds, improvement of the corn-bean intercropping system, utilization of local organic raw materials, etc.

Micro-enterprises related to crafts, *Alfarera el Rubi*, dairy products, pickled products, and bakery goods were funded.

The Fund for Environmental Promotion

Its main objective was to finance forest protection, agro-forestry, management plans for micro-basins, management of solid wastes, initiatives of eco-tourism; in total 37 projects. This fund had an organizational structure independent from the PNC, with regulations and finance criteria and an amount of US$543,812 (Tab. 4).

This fund complemented the achievements of the following component.

Territorial planning and management of micro-basin

Given the inadequate use of the soil, land tenure, and the bad quality of the water in the micro-basins, the decision was made to intervene in an area covering 1,894.9 km^2, to protect it and reduce its environmental vulnerability and committing the participation by the local governments, local communities, NGOs, producers and beneficiaries of hydric resources in the municipal areas.

The first step was to elaborate a *Five-year Plan for Forest Protection*, aimed at creating volunteer brigades, developing a process to protect natural resources with community participation, reducing forest fires, pests, and illegal forest logging. Organization, training (participative diagnosis of micro-basins, comprehensive planning of basins, geographic information systems, environmental and forestry legislation, agro-ecological technologies, farm diagnosis and planning, environmental sanitation technologies) and incentives were promoted for the local peasant communities. The annual operational plans of the Municipal Environmental Units (MEUs) were strengthened. Municipal ordinances were created to curtail harmful practices like illegal logging, land burning, and agricultural exploitation in protected areas. The priority zones were: micro-basin areas (17,250 ha), Cerro Azul National Park (12,218 ha), Cerro Redondo (7200 ha), areas of recreational interest (700 ha), due to their hydric offer and biodiversity.

Nine comprehensive management plans were elaborated in the following micro-basins: Chiquito River Nueva Arcadia (1453 ha); el Rosario Creek, El Paraíso (883 ha); Seco River, San Jerónimo (1346 ha); la Escabroza Creek, San Nicolás (832 ha); Otuta Creek, Santa Rita (3.945 ha), los Salitres, Cabañas (372 ha); Piedras Coloradas, Florida (714 ha); Marroquín Santa Rita (467 ha); La Estanzuela, and La Jigua (94 ha).

These management plans were characterized by: 1) Organization and training at the level of the municipal and community structure; 2) Participative bio-physical and socio-economic diagnosis in the micro-basins; 3) Socialization and validation of the diagnosis; 4) Formulation of the

TABLE 4. Projects funded by the Finland Foreign Affairs Ministry at Chorti community (2009**).**

Type of project	Amount	Municipalities
1. Micro-basin management plans	20	San Antonio, El Paraíso, Florida, La Jigua, Santa Rita, Cabañas, Copan Ruinas, San Nicolás
2. Environmental education projects	02	Nueva Arcadia and San Antonio
3.Support to training centers in El Tesoro and El Tejute parks	02	San Antonio and El Paraíso
4. Municipal oxidation lagoon	3	San Antonio, El Paraíso and San Nicolás
5.Latrines	5	San Antonio, Nueva Arcadia Santa Rita
6.Plant nurseries and adaptation of showcase farms	2	San Nicolás and Florida
7. Reforestation of micro basins	20	Mancomunidad
8. Construction of sanitary land fills	04	San Nicolás, Nueva Arcadia and La Jigua, Copan Ruinas
9 Support to recycling micro enterprise	01	San Nicolás
10. Eco-tourism project 11.Ecological technologies for agro-forestry coffee production	01	Santa Rita Mancomunidad (ten municipalities)
Total budget	US$ 543,812	

Source: NCP (2008).

management plans; 5) Elaboration of maps for planning in specific areas; 6) Socialization and validation of the management programs; 7) Administrative procedures with the governmental entity in charge of approving the plans; 8) Editing and publishing of management plans; 9) Execution of programs from the comprehensive management plan.

A mechanism was launched for the payment of hydric environmental services. The hydrographic basins can offer multiple environmental services (ES) even when they are intervened. Through this perspective, adequate use of land in hydrographic basins provides the following hydric environmental services (Adamowicz *et. al*., 2005; Jiménez and Faustino, 2005; Cosbey *et al*., 2007): 1) Regulation of water flow, especially during the dry season and flood control; 2) Maintenance of water quality when reducing contaminant load; 3) Erosion and sedimentation control; 4) Reduction of soil salinity and/or regulation of subterranean water sources; 5) Maintenance of aquatic habitats, especially for species at risk.

Hydric eco-systemic services serve as instruments to create awareness in the local population in managing their resources, sending signals to land owners to change practices, strengthen local capacities and aid in the resolution of conflicts of land use. Improving efficiency in assigning natural, social, and economic resources generates financing sources for conservation and evaluation of remnant ecosystems that favor the recharge of hydric bodies, transfer economic resources to vulnerable sectors offering environmental services (Rosa *et al*., 2003). Through an agreement the offer (rural zone) and demand (urban zone) of water in La Escabrosa micro-basin in the municipality of San Nicolás, Copán, funds are collected, increasing by US$0.50/ subscriber per month (environmental rate), which is reinvested in a community fund to care for the infrastructure of the catchment process, management and distribution of the liquid, as well as to be invested in construction work to protect the micro-basin. With 550 subscribers, US $3,473.68 is collected per year. The average rate for a user of the water source without the environmental rate ranges between US$1.36 and US$1.83 per subscriber/month and with the environmental rate readjustment it would range on the average US$2.2.

Update of peasant skills

Most farmers in the zone adopt-adapt new agro-ecological innovations through social learning, given that they observe the practices of the techniques in the farms of the minority of early innovators and incorporate reforms to the system of activities to those compatible with physical resources, cultural knowledge, and the objectives of the system. Popular methodologies to disseminate practices of rural knowledge have been incorporated in the zone and in the nation for many years in, for example: 1) *Teaching and learning centers*, TLC. (Groups between 10 and 15 peasants sharing practical agricultural knowledge), addressing cultural, social, and psychological aspects that influence on the agricultural and ecological decisions of the participants; 2) *Farmer-farmer* or *peasant worker to peasant worker* strategies permit quick, effective, and sustainable changes at the local scale, to accomplish baseline development with leadership by the peasant farmers, in addition to the low costs of the training and extension services, and; 3) The concept of the "Human Farm", philosophical and methodological proposal of agricultural education with poor peasant in Honduras, which was driven as a life option by Mr. Elías Sánchez (RIP), engineer and extensionist, who innovated on how peasant agricultural extension was to be conducted, bearing in mind the following principles:

a) Change starts technologically and conceptually small; b) Train by doing, seeing, and cohabitating with the peasant farmers; c) Respect for human dignity through action and expression; d) Innovation is carried out with minimal costs, using local resources; e) Carrying out tasks in excellent manner; f) Sharing what is learnt; g) Creating personal and community satisfaction; h) By innovating with spirituality. In the human farm we can identify elements of popular education by Paulo Freire, principles of applied education by John Dewey, techniques of natural agriculture by Masanobu Fukuoka, and participative development by Robert Chambers (Smith, 2004).

Conclusions

A new paradigm in development policies must consider complementing expert knowledge and local popular wisdom; given that often researchers tend to assume scientific positions as external agents and associate change from view point of experts outside the local reality. Scientific research represents the external interests of the agricultural workers and these produce local knowledge and carry and represent internal interests of the specific location. An external point of view creates false conceptions of the reality of the local agricultural workers, suggesting discontinuities between different decision-making players and local players. As a result, the agricultural workers assume a passive and receptor position of scientific knowledge. Endogenous development is a collective learning process among professionals, researchers, and local communities (Sinclair and Walker, 1998; Rist, 2004; Leff, 2001).

Agricultural research has generated new problems in agriculture. This is the reflection of the predominant emphasis of research characterized by the short-term increase of agriculture's economic, technical, and production efficiency. Current expectations of agricultural research lie in finding paths to reduce the consumption of non-renewable resources, reduce environmental impact, reduce toxic residues in foods, halt the deterioration of the organizational and knowledge systems in rural communities, and preserve the long-term productive capacity (Doran *et al*., 1996; Sevilla, 2002; Kratochvil *et al*., 2003).

Rural development policies with multi-functional approach seem a promising paradigm, given that they comprise economic, socio-environmental, and culturals variables for rural communities, avoiding conflicts between the rural and urban settings. As has historically been conceived, from a multidimensional dimension the rural setting is complementary and interdependent of the urban centers. Multi-functionality in Agriculture (MFA) comprises much broader functions than primary production, it must also guarantee food quality and safety, biodiversity, eco-systemic services (water, climate, recreation, climate regulation, health), social cohesion, and preservation of the rural landscape. Traditionally, agriculture has only been recognized as a source of basic goods like foods and fibers, but in recent decades the negative external factors have been evaluated. The MFA approach would not only have functions for primary production, but broader functions to guarantee nutritional quality and safety, environmental protection, and conservation of biodiversity; thus, contributing to the social and economic cohesion of rural settings and to the preservation of the landscape (Labarthe, 2009).

The most suitable territorial unit for development projects with multi-functional approach is the basin or microbasin (ecoregion) because it frameworks landscape aspects (hydric resources, soils, woodlands), economic aspects (productive units, producer and consumer networks of goods and services), and cultural aspects. The political-administrative units fall short for the analysis, research, and development of multi-functional proposals.

Within the context to update activity systems, we must consider the transfer from mono-functional production to multi-functional production provider of goods and services from agriculture and ecosystems; thus, the approach shifts from "adopting practices" in the conservation of soils, waters, species, etc., to be included among the objectives of the activity systems like conservation of rural resources, territories, and agricultural cultures as a necessary condition to improve the dignity and quality of life of the inhabitants and relativize the idea of poverty, visualize the biodiversity wealth of the peasant farmer orchards and in ethnic knowledge of the rural worlds, which is not yet accounted for by the limited econometric calculation.

In updating farmer competencies, we must shift from the paradigm of 'difussion of innovations' (Roger, 1966) to 'social learning' within the framework of practice communities.

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