CREATING SPACE FOR INTERACTIVE PARTICIPATION OF GRASSROOTS ORGANIZATIONS IN RESEARCH AND DEVOLVED MANAGEMENT OF CRITICAL RESOURCES TOWARDS CONSERVATION AND DEVELOPMENT : EMERGING ISSUES AND LESSONS FROM LANTAPAN

ABSTRACT

Development efforts have largely co-opted participatory processes,reducing them to technocratic machinations designed mostly to improve the effectiveness and efficiency of the delivery of development packages, rather than transform the dominant power structure in resource-dependent communities throughout the developing world which perpetuates people's marginalization, powerlessness and profligate use of critical resources. Poverty, experience teaches , is strongly associated with both a lack of assets and /or the inability to put assets into productive use.

In the context of rural households who constitute grassroots groups and organizations in Lantapan, the financial or economic asset base is a key dimension of livelihood hence a central element of development. It is tempting to simplify decision making of these households as focusing on short-term subsistence needs . Nevertheless, their sheer vulnerability to , for example , the vagaries of the market and climate, also requires them where possible to take a longer term view of their conservation and development needs since formal safety nets for them are lacking.

This paper describes a strategy that draws its strength from training and participatory research approaches and methodologies not only to increase income and food flows,but also to improve the socioeconomic conditions of grassroots households as well as address aspects of vulnerability. It focuses on trees and tree seed (and other tree products) as a store of wealth that supports rural livelihoods and encourages conservation and devolved management of the critical natural resource base . Trees, and tree products are discussed in the context of agroforestry systems and component technologies designed to increase income, improve productivity and cultivate conservation ethics .

INTRODUCTION

Trees are one form of natural capital – the stocks of resources generated by natural biogeochemical processes and solar energy that yield flows of products which can be marketed or used domestically (e.g. fodder, food, fruits, fuelwood, medicines), and services that increase and improve environmental resiliency (e.g. boundary delineation, carbon sequestration, enhanced nutrient capture and cycling, soil conservation, shade) (Sanchez et al 2000,NFT 1999,ICRAF 1997, Cooper et al 1996, Cossalter 1996, Unruh et al 1993).About 1.2 billion people living in abject poverty in developing countries, or 20% of humankind , depend almost entirely on agroforestry trees for their nutritional needs and economic wellbeing (ICRAF 2000).

Growing trees on farms and the agricultural landscape, or agroforestry*, is clearly a major livelihood strategy for the world's economically disadvantaged billions. A livelihood comprises the capabilities, assets (including material, social resources) and activities required to earn a living (Carney 1998). In addition to increasing income and/or food flows, livelihood strategies should also focus on the long-term improvement in social and economic relations within the family cycle as well as addressing aspects of vulnerability (Ravindran & Thomas 2000). Scones (1998) identifies five different types of assets upon which individuals draw to build their livelihoods: physical, natural, human, social, financial. Poverty is solidly associated with both a lack of assets and/or the inability to put assets to productive use (Moser 1998), and abject poverty breeds environmental degradation (ICRAF 2000 , Sajise and Baguinon 1982).

Since assets form a strong basis of livelihoods (Ravindra & Thomas 2000), it is logical to infer that a key strategy in the conservation-development continuum in grassroots communities would be to increase the options for individuals/groups /organizations to build up their asset base. This paper focuses on trees, as stores of wealth whose efficient and profitable cultivation would support rural livelihoods, and ultimately, foster conservation and protection of critical ecosystems such as the Manupali watershed and the Mt Kitanglad Range Nature Park (MKRNP) in Lantapan.

*Leakey (1997) provides a more technical definition of agroforestry

Grounding in the case study of the Agroforestry Tree Seed Association of Lantapan (ATSAL) (see Koffa and Garrity 2001), a grassroots association, the paper discusses the process of needs assessment in the context of agroforestry systems and component technologies, presents a brief account of the basic fundamentals for "creating space" and, finally, explores a number of emerging issues and lessons learned.The participatory research and development efforts directed on people and trees are an integral component of the SANREM-CRSP workplan "Technical and Institutional Innovations to Evolve Agroforestry Systems for Sustainable Agriculture and the Management of Protected Ecosystems."

COMMUNITY NEEDS ASSESSMENT AND AGRFORESTRY APPLICATIONS

1.1.**Participatory assessment of training needs and interest in trees**. In 1995 a series of planning exercises were carried out in 3 systematically selected buffer-zone villages (Cawayan,Kaatuan, Songco) of the Mt Kitanglad Range Nature Park (MKRNP), to seek answers to some important agroforestry planning questions, chief among whom were : What importance do farmers attached to trees ? What particular tree species do farmers prefer and what are the management constraints and related knowledge gaps ? Why did only 3 tree species (G.arborea Eucalyptus robusta, E. camaldulensis)(in decending order) dominate Lantapan's landscape ? The specific PRA methods used to find answers to these questions , in addition to open discussions, were focussed group discussions and semi-structured interviews.

The 41 farmers who attended the planning workshops listed 40 tree species which provide cash , products(firewood, charcoal, fertilizer, medicines , fruits ,timber,etc) and services (shade, windbreaks) as benefits. As management constraints and pertinent knowledge gaps, the farmers listed limited repertoire of potential timber species to choose from, and inadequate knowledge on recent developments in tree germplasm collection , handling, development and management .Out of the general list of 40 species, individual farmers were asked to list the species they prefer most, their uses and the desired quantity of planting stocks (seedlings).

Totalling the number of seedlings which each farmer desired per a given species, the 40 species were ranked. The first ten popular species were initially chosen to be included in a species x site matching experiment (species trials).Indeed, farmers have played a pivotal role in setting research and training agenda.

1.2.Species evaluation trials

Using the 10 most popular species and an additional 4 , on-farm trials were established to examine the growth performance of 14 (***Acacia mangium ,A. aulacocarpa, A.crassicarpa, Albizia lebbekoides, Casuarina junghuniana, Eucalyptus deglupta, E.pellita, E.robusta, E.torilliana, E.urophylla, Gmelina arborea, Paraserianthes falcataria***, ***Pterocarpus indicus*** and ***Swietenia macrophylla***)tree species on 10 sites of varying elevations (meters above sea level) . This article discusses only 6 of these species. Because of the effect of elevation on plant performance (Booth 1996 , Khasa et al 1995), it was decided to test the various species farmers prefer as to their ability to thrive on the various sites where they were to be cultivated . The trials were laid out in a randomized complete block in 3 replicates , with species as treatments and elevation as the blocking factor.Prior to establishing the trials, the 3 species listed earlier in this article dominated Lantapan's landscape.

After the first 21 months of the trials, statistical analysis of growth data (survival , height and diameter growth) indicated that as to adaptability and growth, the tested species fell into 4 categories : those that performed better on sites of relatively low altitudes(in meters above sea level) (470-750), those on sites within a relatively high altitudinal range (800-1160), those that perform well on the high elevations (1200-1500) and those species that perform equally well on all elevations(Table 1). Other experimental details on the management of the trials and data collected on site factors (soil characterization, weed sampling,etc),are not covered in this paper. However, suffice it to say that plant growth indices (survival, plant height and diameter) were the main parameters used to assess plant performance.

About 25 million Filipinos inhabit the nation's mountainous areas of which the MKRNP landscape is a perfect example. For decades in the Philippines, reforestation projects have not been successful on such steeply-sloped ,degraded and grassland-dominated lands which they uplands essentially are. One of the major causes of such failures has been species-site incompatibility. The study has addressed this concern but more species need to be tested, including fruit and non-timber forest-based plants. Conclusive results are yet to be published,however, it is clear that the trials have become a useful decision-making tool in the choice of appropriate species mix by tree farmers and other interested parties and do constitute a novel approach to extension.

SOME BASIC FUNDAMENTALS FOR CREATING SPACE

How can resource-limited, small-scale farmers be empowered to recognize and resist inappropriate development initiatives? How can they influence decisions about what essential development is ? How can the participation of smallholders be facilitated in designing development projects that are meant to find solutions to their problems and the deteriorating natural resource base upon which their lives almost exclusively depend directly ? Action taken to find credible answers to these and related questions constitute what is termed here as " creating space". Essentially the philosophy behind creating space is to build on and implement the principle espoused and embodied by Agenda 21 of the 1992 Summit, which states that locally controlled sustainable development is the way to reverse both poverty and the environmental degradation it engenders.

People have the right to seek a livelihood within their environment. This right is coupled with a responsibility to protect the environment both for their own benefit and humankind as a whole. Such rights and duties imply that people need to maintain control over their own local development and interest in protecting and improving their environment as well as the necessary knowledge to do so. Sustainable wealth creation without local knowledge and participation does not lead to sustainable development, but rather to mass poverty and environmental degradation (Ojo and Ashton-Jones 1999)

The paper now outlines 3 basic fundamentals for creating space or for empowering farmers to cultivate trees as a natural capital, as the ATSAL experience illustrates :

1.1. Participatory research and development

Soil erosion continues to be a serious problem of the Manupali watershed and the MKRNP, largely because of the current landuse practices. This problem of land degradation is directly related to the immediate survival needs of farmers . Rarely, however, has this been because of ignorance on the part of farmers. Years of experience with farming communities in Lantapan and elsewhere in the Philippines suggest that because they generally live in close contact with their environment and are dependent on local natural resources (soils, forests, rivers) for their livelihood, farmers do understand their environment.

The missing element in these respects , however, is the knowledge about how to have a level of control over government and commercial interests that seek to force inappropriate development activities upon farmers in Lantapan, such as the so-called Kitanglad Agribusiness Venture and other agricultural entities which have established huge monocultural plantations of banana and other commercial crops in the watershed, displacing dozens of farmers from their land and encroaching on what remains of the MKRNP. Large sums of money are spent by well-meaning organizations on environmental education, teaching people what they already know.What they need is economic and political clout to put their environmental knowledge into practice. As assets, trees and tree products can provide this economic and political clout as it will help farmers to put their assets, trees, into productive use.

With the 4 cornerstones that serve as the programme's operational guidelines, SANREM-CRSP epitomizes the "creation of space" for farmers, particularly the small-scale, resource-limited ones, who continue to survive in economic and geographic isolation. Genuine participatory research and development processes are a way out of this fix.In "ATSAL-uplifting lives while protecting the environment"(Update 2000), an ATSAL member puts it this way:

“I am particularly grateful to the SANREM program for they have , in effect , helped me send my children to school,train other farmers on tree farming, and protect the environment alongside our livelihood activities”

The Agroforestry Tree Seed Association of Lantapan (ATSAL) is a symbol of an empowered grassroots institution that has its roots in a technology, tree seed, unquestionably the primordial input to agroforestry. Its birth has been a result of a participatory research and development process that draws its strength from working directly with farmers to improve on what they genuinely believe would improve their standards of living. This is not to suggest in the least that farmers have all the answers, but rather that researchers and other development professionals must learn to start with where the farmers are and what they have.

ATSAL collects tree seed, sells seed or seedlings which members collect and propagate If the association gets the level of sustained support (technical and logistical) that a young association deserves, ATSAL will substantially benefit from the rich assortment of products and services which agroforestry trees provide. Table 2 shows the quantity of seeds ATSAL had collected and sold, and the income accrued. This cash benefit does not only assist members to send their kids to school, put good clothes on their backs and improve their homes, it also provides other inputs such as fertilizers and draught animals which farmers can buy to cut down the drudgery of manual labor and to improve productivity on otherwise impoverished soils.

Empowerment is an expression that gained considerable currency within development discourse throughout the 1990s.It implies, Leal (1990) argues, reaching equalizing or near equalizing power relations for those who do not have power. Power here is equated with the capacity or authority to contribute to decision making (Fisher et al 2000). Empowerment,Leal(2000) concludes, is also about accessing and enabling people’s transformative capacity through the facilitation of collective analysis of the causes of marginalization and powerlessness and what actions are needed to counteract them.

1.2.Marketing research

The presence of markets for tree products is a critical element if farmers are to realize the potential of their trees as a store of wealth. Easy access to markets with relatively low costs and risks is particularly important if poor farmers are to realize the benefits from trees. Access to other sources of income or food is a crucial element in the small farmers' decision to participate in tree farming. Incentives, either economic or technical or both, could be one of the approaches to make it possible for the small farmer to be willing to wait for returns from trees.Economic incentives in the form of subsidies, however, are likely to be mis-targeted or could have undesirable implications as some studies indicate (see Arnold 1995). Hence improving the range and quality of adaptive technologies such as for example, tree species that can be intercropped with early yielding crops, may be a better option for enabling small farmers to garner benefits from trees, without compromising their immediate subsistence needs (Ravindran & Thomas 2000).ATSAL has built up its own capital from seed.

Agroforestry systems and component technologies have successfully raised productivity of smallholders whose production has generally been largely subsistence. There, however, has been a remarkably limited progress in efforts to assist smallholders to profitably dispose of the expected excess produced (FAO 1996,Vergara 1987). An objective of buffer-zone agroforestry as an approach to protected area management in Lantapan, is to create an environment that would enable smallholders to incorporate trees into their farming systems located in the margins of the MKRNP.Market-related variables such as declined timber prices are a potential disincentive in the quest to engender this on-farm tree-planting culture among farmers,experience teaches.

Productivity ,conservation and the capacity to generate income can be enhanced or constrained by market-related factors , and improved marketing systems can compensate for productivity losses caused by environmental degradation (Kamara and von Oppen 1999,Scherr 1999).A study was carried out to determine and examine some of the market and marketing opportunities and constraints for trees produced by smallholders on scattered farms in villages isolated by rugged terrain and poor access roads in Lantapan.

The study employed questionnaire-based (semi-structured) interviews and open discussions to learn more about the reasons for planting trees(including motivating factors), the most common forms in which wood is sold and cash income accrued, buyers of wood,the process of price formation, the single most dominant species planted and preference indices,farmers' reaction to prices (farm gate),the prices of processed wood , the structure of wood flows, the reaction of wood purchasing ,processing and marketing industries and institutions(industrial markets) to the quality of wood, and the character of wood supplied from smallholder-managed tree production systems.

Interview and open discussions were held with 15 smallholders (as individuals and in 3 separate groups of 5) and proprietors of 7 industrial markets in Lantapan ,the Municipality of Valencia and the city of Malaybalay. Open discussions were also conducted with 10 additional staff of the the industrial markets of note and 3 leaders of 2 tree farmer groups in Lantapan and Valencia.These individuals served as key informants. The 15 farmers were selected systematically. Industrial markets were randomly selected from a list provided by a local office of the Department of Environment and Natural Resources(DENR). A discussion on some key findings follows:

1.**Most common species,preference indices and reasons for planting trees**

Gmelina arborea was the single most dominant species planted on-farm. It accounted for more than 70% of the total volume of wood sold(as logs, lumber ,poles) but for less than 50% of the corresponding cash income (Table 3). Experience with the various tree species planted across the landscape of Lantapan and nearby towns and villages confirms Gmelina's dominance. Table 4 shows some of the key timber production and marketing themes discussed and farmer's responses to question on each of them. An important findings here was that a fifth of the sampled farmers said they planted a particular tree species, G.arborea, as a mere habit and 67% said it was because of the ease with which the species is propagated (Table 4A & 4B).

Eucalyptus robusta was the distance second to G.arborea in popularity and dominance. The abundance of G.arborea wood meant , among other things , an assured source of raw material for industrial markets. For smallholders, however, it meant an oversupply that ultimately drove down the price of the species in 1998 and 1999.Farmers sensed and complained about this price decline. A major contributing factor to this oversupply was the lack of adequate market and production information. To fill the information void, farmers simply copied from one another. Adequate marketing information could improve access to markets as it could help link tree farmers directly to industrial markets and other consumers, thus making it possible for farmers to get detailed information about consumers' needs and wants so as to adjust production, products and distribution practices accordingly.

Formation of marketing cooperatives or other farm associations could improve marketing information. Farmers could then gain marketing power with traders or middle men to maximize their incomes. It is , however, important to note that simply organizing farmers into cooperatives is just not enough. There must be a carefully thought-out program of training to prepare farmers to undertake pertinent tasks.This study also found that a limited number of species are grown on-farm .Clearly, there is a need to introduce new and quality tree germplasm to diversify the species base and tree products.

Diversification should be made an integral part of a larger marketing strategy that incorporates market demand into the design and management of agroforestry systems and component technologies. If, for instance, there is a good market for poles but not for lumber in a given time , a farmer may choose to plant trees along his cropland or in a block for poles. Adequate and appropriate marketing information is critical here.

2.**Price formation, farmers's reaction to prices tree-growing motivating factors**

All farmer respondents said prices (farmgate) were determined by negotiation (Table 4C). This, in principle,meant that neither the buyer nor the producer (farmer) dictated the

price; a fact which seemed to have suggested that both parties were satisfied with the prices . Sixtyseven per cent (67%) of the satisfied farmers said they felt this way because none of them could afford to have harvested and transported their wood from isolated farms to distance timber markets. The rest, or 33%, said they harvested their trees because they needed cash so badly and were in fact grateful to have earned any money from selling the trees.

On the other hand, 80% of the farmers said they were not satisfied with timber prices(Table 5). Seventyfive percent (75%) of this group said they had to accept "poor" prices as they had no facilities to harvest, process and transport wood to distant markets. The belief was that better prices were possible if they could sell directly to the markets. The remaining 25% said that the other reason for dissatisfaction was that harvesting and processing (lumbering in this case) were so wasteful. These activities were entirely undertaken by sawmill and chainsaw owners and operators, and truckers who had been identified in this study as middlemen. These middlemen constitute marketing channels in Lantapan and are a critical link for smallholder producers to distant timber markets.

When asked if they have ever visited any market(s) to learn about existing timber prices before deciding on harvesting trees, only 13% said they did; the 87% that did not investigate prices said they depended entirely on middlemen. Those who probed into timber prices said that either no prices existed for their particular species (those other than G. arborea and P. falcataria) or existing prices were too low for all species that they felt selling directly to distant markets was simply not attractive .

Most farmers, again because of inadequate marketing information, depended on enterprising middlemen with whom they had to negotiate prices. Agroforestry systems and component technologies have helped increase farmers' productivity. But less account has been taken into market and marketing conditions that would enable the farmer to profitably dispose of the excess produced. Over production, which is almost always a result of increased productivity, ensures depressed market prices and has a strong potential to wipe out profits and investments of middlemen and farmers alike. Depressed

timber prices are a disincentive to the introduction of trees and the expansion of tree cover on farms. The need is urgent for site-based market and marketing research in agroforestry projects and programmes.Table 6 reflects the various motivating factors which famers said encourage them to grow trees on their land.

3.Learning from farmers in designing appropriate agroforestry systems and technologies

As mentioned earlier , one of the greatest benefits of an agroforestry application is that it integrates trees and agronomic crops, a combination that helps to meet farmers' immediate needs while giving them a long-term perspective because of the longer life-span of trees relative to crops. What is very significant about the long life span of trees (high value timber species in particular) is that it gives farmers a long-term view of their consumption needs.

One of the tenets of participatory research and development that has been tested is to enable farmers themselves to feature in research independently. This, as is strongly believed,is one of the result-oriented means to develop farmers'skills and for researcher to learn from farmers' successes and shortcomings. The strategy has been to work with interested farmers in the production of seedlings of a variety of tree species . This planting stock, chosen by the farmers and reseachers, was produced in several small-scale /backyard nurseries and in ICRAF's central mini nursery.

Farmers participated in all activities,from germination of seeds to the production of seedlings.When plantable size was reached ,farmers were asked to collect a certain number of seedlings as was needed , and to plant them anywhere of their choice and in any pattern on their land.Table 7 shows the list of species and the number of seedlings farmers planted on their farms,backyards and on steeply-sloped areas which were not in cultivation at the time. Initial results show that farmers have intercropped some of the trees with corn ,tomato and Taro. There also are diffferent planting patterns and numerous spacing regimes.

Careful assessment and documentation of these different management regimes are expected to help elucidate farmers' decision-making criteria and some of the management skills, constraints and knowledge gaps. An initial assessment of plant survival and growth performance shows that the trees have been well managed. As of 1999, the percent survival, on the average ,was 80%.This approach is also a training method for farmers. Much of this type of research is needed for future work with farmers.

EMERGING ISSUES AND LESSONS

1.The over-reporting of success.Success related to development initiatives are often quantified, documented and communicated to a greater extent than failures. There is therefore a lack of understanding of lessons learned and their communication. In theoretical discussions, development experts will readily agree that failures are an important part of the learning process (Botes and van Rengsburg 2000). Yet ,when considering their own projects,development experts at all levels in the process have interest in presenting a picture of success. Success is rewarded, whereas failure , however potentially informative, is not. The result, it seems , is that knowledge of the nature of the failure, the very information which could allow intervention policy to be improved, is lost (Dudley 1993,Friedman 1993, Rahman 1993). We need more studies of what went wrong in development initiatives, the reasons why they went wrong and some suggestions as to how the mistakes could be avoided. SANREM-CRSP has often asked researchers and scientists in this programme to report problems encountered and how they were resolved , but there is no mechanism in place to encourage this sort of reporting.Clearly, no researcher would want to dwell at any length on failures,but this altitude may change if such reporting is somehow encouraged.

2.Excessive pressures for immediate results(accentuation of products at the expense of process**)**.There is always a tension between the imperatives of delivery (product) and community participation (process),between the cost of time and the value of debate and agreement. Excessive pressures for immediate results accruing from the products and

services delivered, often undermine attention to institution-building and make it difficult not to address poverty reduction from a relief and welfare standpoint. Any pressure on development workers to show quick results may force them to take matters out of the hands of individuals in the community and complete them themselves. For example, the distribution of food or seeds bought by a given project is much more easily achieved than teaching people how to grow their own food and collect their own seeds.A field worker who is pressured to show quick results may simply buy and distribute food or seed than wait to have farmers to produce these products by themselves.

3.Livelihood of various groups. Previous and, to some extent, current private and state-run tree planting projects have often not recognized the legitimate needs of villagers and hence had failed. Local people are often recruited as source of cheap labor and as if such projects could meet their needs on a sustainable basis. Employment in a project and meeting livelihood needs are completely different entities which urban-biased, centralized planners do not understand. Employment is a concept of the urban, industrial, formal sector economy where people have jobs. It implies employers, employees, and cash remuneration but when transferred to rural and subsistence conditions, this term often does not fit (Chambers et al, 1990).

Rural people are often members of small or marginal farm families, or landless laborer families who often piece together a living through many different activities and enterprises. For them the concept of livelihood fits better than employment. Livelihood is used here to describe an adequate and secure stock and flow of cash and food for the household and its members throughout the year, and the means to meet contingencies. Many poorer rural people are seeking livelihood by exploiting a repertoire of varied activities at different seasons. To help the poor entails strengthening the repertoire and adding to it (Raintree 1991,Chambers et al., 1990). Enabling grassroots organizations to engage in profitable , largely tree-based agroforestry solutions adds to and strengthens the repertoire.

Recognition of the distinction between employment and livelihood is very crucial in our endeavor to improve the lives of the rural people through the sound management of

natural resources and the protection of natural ecosystems. As is true with individuals in the 3 villages covered by this study, there are various groups in the Manupali Watershed whose needs must also be met. An integrated approach, which also takes the needs and aspirations of these groups into account, is needed. Herders who depend on vacant grasslands and forest biomass for fodder in the watershed are a case in point.

Generally for village communities in the Philippines, draught power will continue to play a major role in rural agrarian economies as it has historically been. It is therefore expected that the number of livestock in the watershed would increase with time as would grazing be, within forest margins and grasslands. Alternatives of short – and long-term sources for fodder should be identified and developed. Failure to do so may eventually lead to conflict between the current tree planters and local people involved in forest protection activities on one hand, and with other farmers who have cattle but are not involved in the project on the other. In this regard, development of appropriate livestock management practices and silvopastoral systems within the watershed are of utmost necessity.

4.Redefinition of roles.The level of success achieved in this work with farmers is a result of a new role by project staff which has been that of a facilitator and supporter rather than a regulator . This new role has evolved a change from target orientation to task orientation. In the target-oriented, “topdown” approach,working first with existing local groups would not have been possible. This change in approach has given room to the establishment of a collaborative learning and sharing relationship between local groups and researchers on one hand ,and international research and development agencies on the other.

To build sustainability in resource management, projects should not be pre-designed but should grow on a common ground of shared understanding through the social acts of facilitation, participation and accommodation. The process demands attitudinal change and creativity from staff, patience and commitment from local people and some rethinking of the problems projects are meant to solve on the part of donors (Johanson 1995). This approach is multisectoral, as diametrically opposed to the traditional single-sector approach.

5. Hard-issue bias.In many development projects the so-called “hard” issues (technological, financial, physical and material) are perceived as being more important for the successful implementation of these projects than the “soft” issues (such as community participation,decision-making processes, the establishment of efficient social capital, capacity building and empowerment)(Moser 1989, Sowman & Gawith 1994). Cernea (1994,1983) describes the soft-hard issue dichotomy as follows:

“while many technologies are available for the “hardware” components of development projects, this is not the case for the institutional components and socio-cultural parts of these projects (“software”), which in no way are less important for the projects’ ultimate success .Thus, creating and strengthening adequate social organization – the social capital that sustains ,uses and maintains the technology - and involving the user of the technolovy , is no less important than the technology itself”

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Table 3 Table 3. Smallholder tree production and marketing parameters in 4 villages of the Municipality of Lantapan

Farmer (#)	Village (Name)	Species planted (Scientific name)	Trees Harvested (#)	Age at harvest (Years)	Net income (USD*)	Year of harvest and sale
1.	Songco	Gmelina arborea	150	10	285.72	1997
2.	Songco	Erythrina orientales	14	27	628.58	1997
3.	Baclayon	Gmelina arborea	200	10	457.15	1997
4.	Songco	Paraserianthes falcataria	18	24	114.29	1997
5.	Kaantuan	Albizia lebbekoides	12	12	371.15	1997
6.	Songco	Gmelina arborea	11	10	114.15	1997
7.	Songco	Gmelina arborea	150	10	200.00	1997
8.	Balila	Albizia lebbekoides, P. falcataria	30	23	842.11	1999
9.	Baclayon	Gmelina arborea	200	10	815.79	1999
10.	Songco	Eucalyptus robusta	15	7	592.11	1999
11.	Balila	Gmelina arborea	20	12	605.27	1999
12.	Balila	Gmelina arborea	60	12	657.90	1999
13.	Baclayon	Albizia lebbekoides	52	37	473.69	1999
14.	Baclayon	Albizia lebbekoides, G. arborea	100	7	947.37	1999
15.	Balila	Albizia lebbekoides	25	21	1052.64	1999

*(1997:P35.00 = $1.00, 1999: P38.00 = $1.00)

Table 1. Matching species to sites of varying altitudinal ranges on the basis of adaptability and growth performance

Altitudinal range (masl)	Species
450 – 750	Acacia mangium Albizia lebbekoides Eucalyptus robusta* Eucalyptus torilliana Gmelina arborea** Swietenia macrophylla
800 – 1160	Acacia mangium Albizia lebbekoides Eucalyptus robusta Eucalyptus torilliana
1200 – 1500	Albizia lebbekoides Eucalyptus torilliana Eucalyptus robusta

* was attacked by insects and root pathogens on sites within this altitudinal range
** check plant

Table 7. Trees planted and maintained on-farm and in other areas of the agricultural landscape by farmers

Species	Main uses	Seedlings planted (#)
Acacia mangium	Firewood, timber, lumber, furniture	19
Albizia lebbekoides	Shade, firewood, lumber	178
Casuarina equisetifolia	Firewood, charcoal, timber	133
Eucalyptus deglupta	Lumber, timber, medicines	7
Eucalyptus grandis	Lumber, poles, timber	248
Eucalyptus pellita	Poles, lumber, timber	550
Eucalyptus robusta	Posts, lumber, timber	3899
Eucalyptus torilliana	Firewood, lumber, timber	5880
Eucalyptus urophylla	Firewood, lumber, timber	70
Gmelina arborea	Timber, lumber, medicine	289
Grevillea robusta	Timber, poles, lumber	205
Pterocarpus indicus	Lumber, timber, furniture	38
Swietenia macrophylla	Timber, lumber, medicine, furniture	211
Total 13		11,727

Table 5. Farmers' reaction to prices of logs, lumber and poles sold to middlemen (at farm gate price)

Reaction	Respondents (#)	(%)	Reasons
Satisfied	3	20	> Could not have afforded to transport logs/poles from farm to market (grateful that someone could do that on their behalf (2)
			>Needed cash so badly at the time (1)
Dissatisfied	12	80	> Could not have afforded to transport logs/poles from farm to market (a better price was possible if product were sold directly to the market) (9)
			> Harvesting and lumbering were so wasteful that very little quality wood was left for sale (3)
Total	15	100%	

Table 2. Seeds sold by and income accrued to ATSAL members in 1999 – 2000

Species	Quantity of seed sold (Kg)	Unit price (Peso)	Total cash received (Peso)
Acacia magnium	30	1,000.00	30,000.00
Albizia lebbekoides	50	2,000.00	100,000.00
Arthocarpus heterophyllus	50	50.00	2,500.00
Durio zibethinus	60	50.00	3,000.00
Eucalyptus pellita	1	14,000.00	14,000.00
Eucalyptus robusta	5	10,000.00	50,000.00
Eucalyptus torilliana	10	12,000.00	120,000.00
Eucalyptus urophylla	3	12,000.00	36,000.00
Flemingia macrophylla	1,300	250.00	325,000.00
Gmelina arborea	2,000	50.00	100,000.00
Lithocarpus llanosii	5	300.00	1,500.00
Maesopsis eminii	500	500.00	250,000.00
Nephelium lappaceum	20	50.00	2,000.00
Shorea contorta	20	300.00	6,000.00
Tithonia diversifolia	5	2,000.00	10,000.00
Total	4,059		1,050,000.00
$1.00 = P38.00 (P1,050,000.00 = $27,631.58)			

*Severity per cent (70%) of each sale went to the farmer collector, 10% to the association, 10% to the germplasm and marketing specialists and 10% for the expenses incurred in marketing.

Table 4.Some key interview and open discussion themes on the production,processing and marketing of wood

Table 4A.Preference indices for tree species		
(Indices)	Respondents	
	(#)	(%)
Seed readily available	3	20
Seedlings provided free charge	2	13
Ease of propagation	10	67
Total	15	100
Table 4B. Reasons for planting trees	Respondents	
(Reasons)	(#)	(%)
Cash	7	47
Habit (got in the habit from watching neighbors)	3	20
Timber (for household use)	2	13
Nurse tree (abaca and coffee plants	3	20
Total	15	100
Table 4C. Price formation for logs/lumber sold		
Price formation	Respondents	
(Main actor/process)	(#)	(%)
Farmer	0	0
Buyer/trader	0	0
Negotiation (between trader/buyer and farmer	15	100
Total	15	100

Table 6.Farmers' reasons for growing trees on their land

Motivating factors	Response (%)
Farming is risky	68
Savings for the future	51
Low labor requirement	75
Meeting contingencies	45

Note: Total percentages go beyond 100% as several farmers cited each motivating factor more than once