

## 2. IMPROVING FINANCIAL RETURNS TO SMALLHOLDER TREE FARMERS IN THE PHILIPPINES: ISSUES AND WAY FORWARD

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This paper provides an overview of ASEM/2003/052 Improving Financial Returns to Smallholder Tree Farmers in the Philippines funded by the Australian Centre for International Agricultural Research (ACIAR) and which commenced on 1 January 2004. ASEM/2003/052 involves a series of interrelated research activities investigating ways to improve financial returns to smallholder tree farmers in the Philippines. The paper first discusses the main drivers for current low returns to smallholders that have been identified from research and extensive consultations with stakeholders. In particular, the effects of regulations on market access and product quality appear to be the dominant constraints on smallholders receiving higher returns from their existing tree farms. The paper then outlines the general research strategy that has been developed to address these constraints by improving the implementation of policy, helping smallholders access markets and through longer term policy initiatives. The important economic, social and environmental benefits of the project are outlined.

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### INTRODUCTION

Most upland farmers in the southern Philippines have incomes below the poverty line. Timber production from smallholder tree farms provides a mechanism for income generation and capital accumulation. However, current returns to smallholder tree farmers are low, for a variety of reasons. Research conducted as part of a four-year project funded by the Australian Centre for International Agricultural Research suggests that tree farmers could receive much higher financial returns from their tree farms if they had better market access and knowledge of prices, produced greater volumes of timber per unit of cost, and could better produce timber of appropriate species, log size and quality as desired by the market. In order for smallholders to access markets they must first obtain log transport permits and sometimes harvest permits. In order to do this, they must first register their tree farms with the Department of Environment and Natural Resources. There are many institutional impediments restricting the ability of farmers to register trees, and hence these act as a barrier to them gaining access to markets, thus restricting timber sales to local markets, which are often thin and non-competitive. In addition, many smallholders lack information about how and where to market their trees, and lack knowledge of the current market value of their trees. For these reasons, they often accept the first, and often low, price for their timber. Smallholders also lack knowledge about what the market requirements are for timber and as result do not manage their tree farms to optimize the output of these desired products. This paper first discusses the factors that contribute to poor returns to smallholder tree farmers and then discusses strategies that will be employed as part of ACIAR Project ASEM/2003/052.

ACIAR Project ASEM/2003/052 – Improving Financial Returns to Smallholder Tree Farmers in the Philippines – commenced on 1 January 2005 and will run for three years. The project is designed to improve the livelihoods of smallholder farmers in Leyte Province through investigating ways of improving financial returns from forestry, and promoting the adoption of these improved management methods.

Forest industry development for both economic and environmental reasons is a high priority for the Philippines, as indicated in the Revised Master Plan for Forest Development (Revised MPFD) issued by the Department of Environment and Natural Resources (DENR) in 2003. In particular, the role of forests and forestry in poverty eradication and support of sustainable livelihood has been recognised in the Revised MPFD as being one of the important new developments in forestry in the Philippines.

Currently, the twin problems exist of shortage of timber hence reliance on imports from other provinces, and slow uptake of forestry in spite of availability of underutilized sloping lands. Forest industry development warrants high priority in Leyte Province. Plantings are carried out for production forestry, limited harvest and conservation purposes, which are all considered important under the Revised MPFD. At the farm and community level, this generates a timber resource for on-farm use, sometimes provides a supplementary income, and creates opportunities for value-adding from log timber. At the wider community level, forestry expansion will provide environmental benefits, reduce pressure for logging of native forests and unnecessary cutting of mature coconut trees, and reduce reliance on timber imports from other regions or other countries.

This paper discusses the various strategies for improving financial returns to smallholders that will be investigated under ACIAR project ASEM/2003/052. The context of this project is first outlined, including a discussion of how the results of past research and consultations with key stakeholders have guided the development of the project. The specified goals and objectives of ASEM/2003/052 are then outlined and the research strategy discussed. The three main areas of focus – policy implementation-related activities, helping smallholders access markets and longer term policy initiatives – are then discussed in detail. This is followed by an assessment of the potential economic benefits that the project can provide to smallholders.

## **PROJECT CONTEXT**

The current project follows from ASEM/2000/088, which identified the social, economic and policy requirements for the facilitation of smallholder and community forestry in Leyte Province. Research undertaken as part of ASEM/2000/088 suggested that Leyte tree farmers could receive much higher financial returns from their tree farms if they had better market access and knowledge of prices, produced greater volumes of timber per unit of cost, and could better produce timber of appropriate species, log size and quality as desired by the market. In order for smallholders to access markets they must first obtain log transport permits and sometimes harvest permits. In order to do this, they must first register their tree farms with the DENR. There are many institutional impediments restricting the ability of farmers to register trees, which act as a barrier to them gaining access to markets, thus restricting timber sales to local markets, which are often thin and non-competitive. In addition, many smallholders lack information about how and where to market their trees, and lack knowledge of the current market value of their trees. For these reasons, they often accept the first, and often poor, price for their timber. Smallholders also lack knowledge about what the market requirements are for timber and as result do not manage their tree farms to optimise the output of these desired products.

Findings of the survey of 200 households in four communities conducted as part of ASEM/2000/088 provide support for the developing need to facilitate tree farmer access to formal timber markets (Emtage 2004). In the Focus Group Discussions (FGDs), two of the four involved identified the 'poor market for tree products' as a major factor constraining their tree management activities (Emtage 2004). While 10% of respondents are growing trees with the intention of selling them, few of those respondents were able to name where they would market their trees beyond naming the nearest large town, and few knew the prices they may receive. Most of the respondents who planned to sell some trees asked the

enumerators where they could sell them and what prices they could expect to receive. Only 2% of respondents had registered their trees, and just 16% reported they knew how to do so. Every time a DENR person accompanied the researchers to the communities, they were asked many questions about the regulations and their implications for farmers. A policy workshop was held involving community and LGU representatives Emtage et al. 2004, none of the LGU representatives and few of the community representatives had any knowledge about the tenure and tree harvesting and transport regulations. They strongly recommended the need for a comprehensive IEC program by DENR, as also recommended in the Revised Masterplan for Forestry (UNFAO and FMBDENR 2003). The household survey also revealed that of the 15 constraints to tree management presented to respondents, the most highly ranked constraints that relate to existing tree farms were 'policies related to tree harvesting' and 'risk of additional fees'.

All the available evidence including data from project ASEM/2000/088 and from extensive consultation with Filipino stakeholders points to the effects of regulations on market access and product quality being the dominant constraints on smallholders receiving higher returns for timber from their *existing* tree farms. The four highest ranked impediments from the four-community survey (i.e. 'lack of access to land for tree planting', 'lack of finance to pay for tree growing needs', 'concern over security of tenure', and 'low availability of seedlings') do not apply to existing tree farms. Because the new project focuses on existing tree farms, these constraints have not prevented landholders from planting trees, and there is no need to address them. They apply to an earlier stage of the process of making the decision to plant trees.

A number of large research projects have been undertaken in the Philippines concerning both forestry regulatory reforms (including on harvesting and transport regulations) and improving tree farming techniques,<sup>1</sup> and these have been considered in the design of the current project. Further identification of the desirable project directions has been generated by a meeting of the Project Advisory Committee for ASEM/2000/088 held in conjunction with the end-of-project workshop in Ormoc, Leyte, in August 2004. These recommendations were:

- Investigation of harvesting and transport permit issues would be best done by working with a community and investigating actual experiences in obtaining permits.
- Attention be placed on sawn timber value in addition to stumpage value in financial analysis of smallholder forestry (with implications for on-farm value adding).
- Any consideration of timber prices needs to take into account timber quality and hence the way in which it is produced.
- The returns from mixed-species plantings and agroforestry (timber with other crops) be investigated, to provide information needed by DENR.
- The project should investigate 'What would make tree farming in Leyte profitable'. In this context, there is a need to evaluate non-wood benefits of smallholder forestry,

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<sup>1</sup> These include the Sector Adjustment Loan (SECAL) Program funded by the World Bank (e.g. see de Los Angeles 2000, Guiang 2001a and b), the Natural Resource Management Program (NRMP) funded by USAID, and various forestry development projects funded by ADB. de los Angeles (2000) critically reviewed the present extent of tenure arrangements, the lack of management plans for most forest areas and the lack of best management practices in public forestlands. Comprehensive examinations of the NRMP sponsored CBFMAs have been provided by Hyde *et al.* (1999), Bisson *et al.* (1997) and Nasayao and Zara (1997), the latter reporting a survey of farmers' attitudes to agroforestry. These projects have provided valuable insights into the potential for the management of forestlands in the Philippines, and constraints to successful management. Points raised in them are covered in the more recent review in the revised master plan for forestry (UNFAO FMBDENR 2003), as well as the ITTO review by Cassells *et al.* (2002) and the doctoral dissertation of Emtage (2004).

because these may be what is required to raise the financial performance from marginal to acceptable.

- Efforts be made to overcome the critical lack of information amongst smallholders about tree growing.
- Industry logistics and timber flows be investigated for Leyte.

Land tenure has also been identified as a major constraint to greater uptake of smallholder and community forestry. The LAMP project (part-funded by AusAID) is already examining measures to facilitate land titling in Leyte province. Discussions with AusAID staff in Manila have indicated that key land tenure issues that affect smallholders are being addressed under the soon to commence LAMP 2 activities.

## **PROJECT GOAL, OBJECTIVES AND RESEARCH STRATEGY**

The goal of the project is to improve financial returns to existing tree farmers and intending smallholder tree farmers. The research strategy is reflected in the following objectives.

- Objective 1: Assist DENR to overcome policy implementation constraints to tree registration and log transport currently restricting access to markets
- Objective 2: Assist smallholder tree growers to satisfy market requirements and improve productivity
- Objective 3: Identify and promote livelihood systems and policies which incorporate forestry and which recognise the socio-economic circumstances of smallholders

In designing the project, a systems approach has been used, which has been applied at a number of levels. At a broad scale, a systems approach has been applied in the conceptualization of the project. That is, the issues associated with improving financial returns to smallholders have been conceptualized as being interrelated such that they cannot be addressed in isolation (as would be the case in a reductionist approach). At a finer or operational level, systems thinking is embedded in supply or value chain management which is the framework on which many of the activities in falling under Objective 2 are based. Also, a systems approach is embedded in the investigation of livelihood systems in Objective 3; this approach recognizes that forestry cannot be undertaken by (or recommended to) smallholders in isolation without consideration of the broader context (or livelihood system) of which it will form a part.

The research strategy to address the project aim has three components. First, the university researchers will collaborate with DENR officers and smallholders to identify and remedy impediments to timber market access. Many of the current problems with DENR regulations arise from the way in which these regulations are implemented, rather than the nature of the regulations per se. The focus is to work with DENR Region 8 to make the existing regulations work more effectively. This will result in immediate short-term benefits to tree farmers wishing to register trees and obtain permits to transport logs. It is anticipated that in the longer term the project outputs will influence national level DENR policy and regulations. The research will first identify why there are large differences in the rates of tree registration between Community Environment and Natural Resource (CENR) Offices and how higher rates of tree registration can be facilitated. Mechanisms will be developed and tested, to improve the flow of information about regulations affecting tree harvest and about transport approval mechanisms, from DENR to LGUs and smallholders.

Second, research will be undertaken to identify the market requirements for timber in terms of species, type, quantity and quality of timber required by processors. The market potential from existing tree farms in Leyte Province will then be assessed. This assessment will

involve four interrelated activities: (i) an assessment of timber quality and likely yield per product class, (ii) further financial analysis including on mixed-species agroforestry systems (mixtures of trees and crops and mixtures of trees with non-wood products including abaca), (iii) modelling of timber supply and demand, and (iv) an investigation of the social and economic factors that affect the management of plantations and the types of outputs produced. Using an *action research* methodology, a pilot scheme will also be developed which brings together buyers and sellers of timber. Existing tree farms are poorly managed and are likely to produce only timber suitable for low-value construction materials. Fifteen existing tree farms will be used as sites to demonstrate the financial benefits of improved management to produce timber that better meets market requirements. In addition, the tree farming systems most suited to different types of smallholders will be identified.

Third, a detailed analysis will be undertaken of livelihood strategies adopted by various types of smallholders and then recommendations made on appropriate farming systems that incorporate forestry and that recognize the socio-economic circumstances of smallholders. University researchers will collaborate with DENR to develop policy recommendations based on the findings from the various project activities.

## **IMPROVING THE IMPLEMENTATION OF POLICY**

This section outlines in more detail the various project activities that are being implemented to improve financial returns to smallholders. These activities are essentially pilot activities and programs which are being evaluated as part of the research project with a view to wider implementation should they prove effective.

### **Understanding factors affecting tree registration (Activity 1.1)**

A survey will be undertaken of smallholders who have established tree farms, and includes those who have and have not registered their trees with DENR. Each tree farmer selected will be interviewed and their experiences, both positive and negative, documented. There is likely to be many other smallholders who are growing timber trees for commercial purposes but who have not registered them and their experiences may be different to those with registered tree farms. Analysis of smallholder experiences, combined with information from research into improving the institutional framework for tree registration (see Activity 1.3), will form the basis of policy recommendations to the Director of DENR Region 8 and will also provide a baseline against which project impacts can be assessed.

### **Improving the flow of information (Activity 1.2)**

A mechanism will be developed and tested for improving the flow of information about tree registration and harvest and transport regulations and approval mechanisms from DENR to the LGUs and communities. Existing technical materials are available through DENR. These materials will be identified, revised and presented in a more understandable form to smallholders, and a strategy for dissemination developed in collaboration with DENR. This information will be collected together in a 'one-stop shop' form, based at Leyte State University and managed by two DENR staff members seconded to the project office. A weekly radio program will be developed which might highlight a particular aspect of tree registration or harvest or transport approvals. The penetration and impact of this radio segment will be monitored by community surveys on a random sample basis stratified by locations which receive the broadcast. In addition, a package of extension materials about tree registration procedures will be compiled and distributed to LGUs. It is possible (though unlikely) that distribution to the LGUs will be sufficient to ensure the materials are accessible by communities and individual smallholders.

### **Improving the institutional framework (Activity 1.3)**

Substantial scope exists to improve the institutional framework within which forestry development occurs. A workshop was held in May 2005 attended by DENR staff, both senior and at an operational level. This workshop will reviewed existing DENR practices and policies adversely affecting the ability of landholders to access markets for their trees, including problems with current tree registration and timber harvesting and transport approval procedures. This workshop also canvassed solutions and identified avenues to be explored to improve the approvals framework. The workshop also provided input into the design and administering of the semi-structured questionnaire to be used in Activity 1.1.

## **HELPING SMALLHOLDERS ACCESS MARKETS**

### **Identifying Market Requirement for Timber (Activity 2.1)**

A preliminary step in helping tree farmers to access formal timber markets will be to identify the market requirements for timber in terms of species, type, quantity and quality of timber required by processors. Information about market requirements will be collected by a survey of timber processors in Leyte Province, and the nearby furniture manufacturing centre of Cebu, in a two-stage procedure, using a semi-structured questionnaire in the second stage. The survey instrument will be based on one developed for a similar purpose by UQ and Ministry of Agriculture and Rural Development (MARD) researchers in Vietnam.<sup>2</sup>

### **Assessing the market potential of wood from existing tree farms (Activity 2.2)**

This activity will involve sampling up to 500 tree farms in Leyte Province. At the project implementation workshop and in subsequent discussions between project researchers it was decided that the sampling area be all of Biliran, Leyte and Southern Leyte Provinces, but excluding the upland areas where subsistence and shifting agriculture is practiced and where security is more difficult, and also the south-east of Southern Leyte province where road access is difficult.

The tree-farmers interviewed in Activity 1.2 will be included in the sample. Volume tables, based on the product classes identified in Activity 2.1, will be developed for each selected species which will indicate reductions for merchantable volume, given the presence of specific stem defects common in smallholder tree farms. For Gmelina, particularly, it will indicate the reduction of log volume to merchantable volume due to lack of stem straightness. The volume tables will be used as input to detailed financial analysis using models developed for the common tree farm systems. These models will be supplied to DENR for use in policy development, a priority identified at the August 2004 ASEM/2000/088 project advisory committee. The models will be used to guide policy development in respect to species selection and agroforestry system selection. In particular, it is envisaged that the financial models will be used by DENR staff in the design of extension materials promoting tree farm systems to smallholders and in the targeting of limited research funds into species and agroforestry systems which are likely to produce the greatest financial returns to smallholders.

Owners of the tree farms will be interviewed where available and will be asked to respond to a structured questionnaire which will seek their intentions and aspirations with regard to the trees and socio-economic information. In combination with the financial models, this information will be used to investigate the links between socio-economic characteristics, intentions, expected financial outcomes and the ways in which tree farms or stands of trees are managed. This information will also be used in developing management strategies for smallholders to improve the quantity and quality timber produced and access to formal

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<sup>2</sup>This is an activity under ACIAR project FST/2000/003, *Mixed species plantations of high-value trees for timber production and enhanced community services in Vietnam and Australia*.

markets. The spatial coordinates (boundaries) of each timber stand on the sampled tree farms will be recorded using a hand-held GPS which will allow the linking of the information collected with various environmental variables. This will facilitate modelling of market proximity and thus potential access, timber supply and local processing activities and potential for export to other regions such as Cebu, including development of a linear programming model of timber flows in the timber production pipeline including processing and transshipment. This will provide insights into efficient industry organisation. The objective will be to evaluate the net financial payoff from improved silviculture. The focus here would be on logistics (supply locations, demand locations, transport paths, and on efficient scale of processing plants, in relation to the various timber types and uses (e.g. furniture, construction timber).

### **Bringing Together Buyers and Sellers (Activity 2.3)**

A pilot scheme will be developed which brings together timber buyers and sellers. The purpose of this activity is to test a pilot scheme which facilitates the establishment of formal markets for timber from existing tree farms, where none currently exist. It is not designed to reduce the market power of buyers. There may be reduced market power of timber buyers from Cebu; however, these buyers will benefit from the resulting better communication within the supply chain flowing from project activities. The likely vehicle to facilitate linking buyers and sellers will be either a People's Organisation or NGO acting as a middleman or timber broker. In designing the pilot scheme, experiences will be drawn from research undertaken as part of Project ASEM/2000/088 and observations elsewhere in the Philippines and South East Asia. Two possibilities include the establishment of a local timber auction system and the creation of a timber supply information system. This initiative would be implemented through the College of Forestry at LSU and may be incorporated into a radio segment developed as part of Activity 1.2.

### **Improving Silviculture Practices of Smallholders (Activity 2.4)**

Many of the current woodlots established by smallholders and communities are poorly managed and likely to produce only small volumes of merchantable timber of low quality and not suited to market requirements. Fifteen existing tree farms will be identified as part of Activity 2.2 and to be used as sites in which to demonstrate management and financial alternatives. Activity 2.4 will involve working with smallholders to maximise the returns they can expect from their tree farms by increasing both the volume and quality of timber per unit of input. A participatory approach will be used which initially involves the owners of the 15 selected tree farms being interviewed (using a semi-structured questionnaire developed from focus group discussions with smallholders) to reveal their intentions and aspirations with respect to their trees. In conjunction with each landowner, an improved management regime will be devised drawing on the market information collected in Activities 2.1 and 2.2. With the permission of the smallholder, the management strategy will be implemented on the one half of the tree farm on a continuing basis. The other half of the tree farm will remain untouched. Identification of suitable demonstration sites is currently being undertaken by project researchers and support being sought from the respective municipality mayors and barangay captains in which the sites are located.

Twelve tree farms will be selected which are growing *Gmelina arborea*, the most common species grown on tree farms. At elevations above 500m, *G. arborea* has poor growth rate and form, and three tree farms with *Acacia mangium* or *Eucalyptus deglupta* will be selected as examples of high elevation areas. The financial performance of each management strategy, including possible alternatives, will be evaluated using the *Simile* modelling environment. From field observations and interviews in Leyte, the three silvicultural operations least understood by smallholder tree growers are initial spacing of the trees, thinning and pruning, particularly as they relate to *Gmelina arborea*. Hence, the aim in proposing to thin demonstration plots is to provide an opportunity for tree growers to evaluate their spacing and thinning practices. The aim is for farmers to make a considered

decision based on information provide to them as part of extension activities. Further, pruning is being conducted in an inappropriate way. The pruning tool, which all farmers have at their side, is a bolo or machete and this is used to hacking off the limbs, leaving a long branch stub which is a vector for fungal infection of the tree trunk. Pruning with a bolo is the antithesis of value adding to the timber produced from the trees. Correct tree pruning will therefore be one of the activities demonstrated on the demonstration plots.

The 15 tree farm demonstration sites will be chosen at locations close to roads or central to a community, where they can be accessed and inspected by other smallholders. Signs will be erected outlining the management that has been undertaken and the reasons why it was applied. Care will be taken that the owners of the sites are well respected persons within their communities and that these owners are agreeable to their land being used as demonstration sites. No cash payments will be made for used of the demonstration sites, but the owners will be compensated for their labour input in maintaining the sites. Visitation details, including visitor origins and occupations, will be recorded by the smallholders. In addition, a sign will indicate additional information is available free by contacting the ACIAR smallholder forestry staff at LSU. Details of these contacts will be logged. Follow-up visits to the demonstration sites will be made at six-monthly intervals until the end of the project will be undertaken by the researchers to the landowner and the community members to assess the impact of the demonstration sites. Focus group discussions, field days and individual interviews will be used to collect information about the effectiveness of the demonstration sites in improving understanding of the need to apply appropriate management practices in order to achieve higher prices. A financial analysis will be undertaken of the likely financial benefits of the improved management of the tree farms.

#### **Measuring the Biodiversity Impacts of Treefarms (Activity 2.5)**

A great opportunity exists for adding value to the social, economic and attitudinal data collected at each of the tree farms sites by also collecting data relating to biodiversity. Biodiversity data can be collected from the same circular quadrats that will be used to record information about undercropping in the tree farm and simply involve recording plant species in addition to cash crops and the timber trees. Additional data will be collected from quadrats placed in the farmland adjacent to the tree farm. These data will be used to assess the biodiversity value of smallholder tree farms and the role that these farms can play in restoring the highly degraded natural biodiversity on Leyte following decades of inappropriate clearing, intensive farming and shifting agriculture.

Importantly, the biodiversity dataset can be directly linked to datasets containing social, economic, attitudinal and productivity information also collected from the 500 sites. This would form a unique dataset to assess the socio-economic factors that affect biodiversity and its management, and the economic consequences of increasing biodiversity within smallholder tree farming systems. This would form one of the few comprehensive data-intensive study of its type anywhere in the world. This activity involves cutting edge multidisciplinary research and will have many practical implications, both for the Philippines and other countries.

### **LONGER TERM POLICY INITIATIVES**

#### **Designing Better Agroforestry Systems (Activity 3.1)**

Information from interviews with tree farmers as part of Activity 2.2 will be used to identify existing livelihood strategies, and will be linked to the financial models. A substantial amount data relating to livelihood strategies was previously collected in the household survey undertaken in ASEM/2000/088. That information has been used to develop a typology of livelihood strategies. A predictive model will be developed using discriminant analysis and



used to classify each of the tree farms surveyed into one of the types identified in the typology work – which will allow linking of the data collected from the existing tree farmers with that collected in the household survey. This data set will be used to identify the tree farming systems most suited to distinct types of smallholders. In particular it will allow extrapolation of the information collected from the tree farms which comprise only a small proportion of households to the wider community (as represented by the ASEM/2000/088 household survey).

### **Improved Policy (Activity 3.2)**

Research undertaken within the project will inevitably produce information relevant for policy development and reform. Where appropriate, this information will be forwarded on a timely basis to DENR for use in policy development and implementation. A further policy workshop will be held towards the end of the project, probably mid to late 2007, to refine recommendations for policy reform based on the findings of the field activities and various surveys. These policy recommendations will then be communicated to the DENR Secretary in Manila through the appropriate channels.

## **COMMUNICATION AND DISSEMINATION STRATEGIES**

Communication and dissemination strategies are built into every project activity. Each project activity involves the active involvement of one or more key stakeholders, the two most important being DENR and smallholders. For instance, activities 1.1 and 1.2 will involve both DENR staff and smallholders will identify the reasons for differences in the rates of tree registration between CENRs and will form the basis of policy recommendations to the Director of DENR Region 8. Summaries of key findings and recommendations will also be disseminated to those participating.

The successful Project Advisory Committee (PAC) which was formed as part of ASEM/2000/088 will be reconstituted as part of ASEM/2003/052. The PAC comprises of representatives of the major stakeholders of the project and functions as a technical advisory body to assist in the formulation of policy based on the research outputs of the project, and communicating research findings to policy makers. As part of ASEM/2000/088, members of the PAC have already provided feedback on the design of the new project from a meeting held at the end of project workshop in August 2004. Apart from assistance with policy development, the PAC will provide strategic guidance on research focus, technical assistance, and interpretation of research findings. The proposed membership of the reconstituted PAC is as follows:

Dr Romulo Aggangan, Forestry Division, PCARRD  
Dr Paciencia P. Milan, President, Leyte State University  
Forester Celso P. Diaz, National Director, Ecosystems Research and Development Bureau, DENR  
Director Leonardo Siballuca, Regional Executive Director, DENR Region 8  
Dr Edilberto Nasayao, Regional Technical Director for Region 8  
Dr. Jose L. Bacusmo – Leyte State University, Director of Research and Coordinator, ViCARP- the Visayas Research Consortium and implementing arm of PCARRD  
Mr Willard Chan, prominent Leyte business and owner of 1000 ha plantation  
Professor Jerry Vanclay, Chair.

Dr Mangaoang (LSU) and Drs Herbohn and Harrison (UQ) will be *ex officio* members of this committee.

The project builds on the close links already established with DENR staff, including DENR Region 8 Technical Director Dr Edilberto Nasayao. A DENR staff member will be seconded

to the ACIAR project and will be based permanently in the ACIAR smallholder project office at LSU. The seconded staff member will act as a conduit for project results to flow to the relevant DENR sections. In addition, the results of two workshops to review DENR policy will be organised in conjunction with DENR Region 8 senior officers and the recommendations for policy reform which result will be communicated directly to the DENR Secretary. The financial models in Activity 2.2 are being developed at the request of DENR and they will be consulted at various model development. The models will be used to guide policy development in respect to species selection and agroforestry system selection. In particular, the financial models will be used by DENR staff in the design of extension materials promoting tree farm systems to smallholders and in the targeting of limited research funds into species and agroforestry systems which are likely to produce the greatest financial returns to smallholders. Information generated on industry organisation will also be supplied to DENR and will form the basis of applications for assistance from aid organisations to facilitate industry development.

Smallholders are a focus of the research and information will flow to them in many ways. As part of Activity 1.2, a 'one-stop shop' for information about tree registration and harvesting and transport permits will be established, along with a regular radio segment. Both will also be used to disseminate other relevant research results to smallholders. Extension materials will also be provided to LGUs and directly to smallholders with existing tree farms or those wishing to establish tree farms. Smallholders with tree farms will be a focal point of the research. A strategy will be developed to communicate to smallholders (and particularly existing tree farmers) the information about the market requirements for timber collected as part of Activity 2.1. The 500 tree farmers participating in the assessment of the market potential of their tree farms will be provided a summary of this assessment and average data from similar farms and an 'ideal system' against which they can benchmark the performance of their tree farms.

The fifteen demonstration plots established as part of Activity 2.4 will be in locations close to roads or central to the community, where they can be accessed by other smallholders. Signs will be erected to outlining the management strategy and the reasons why it was applied. Evidence suggests that demonstration sites are most effective if they are on sites owned by respected persons in the community, and this will be a criteria used for site selection.

The publication strategy will be similar to the highly successful one applied in ASEM/2000/088. A series of publications will be produced as an integral part of project activities, including proceedings, research reports, conference papers and journal articles. Proceedings of the two policy workshops will be produced, along with an Executive Summary and Recommendations, and distributed to participants and other key stakeholders. As series of detailed research reports based on the findings of the various research activities will also be produced and distributed to relevant organisations and people. It is also envisaged that a large number of journal articles will be produced, based on these reports.

## **ENHANCEMENT OF RESEARCH CAPACITY**

Enhancing institutional capacity in socio-economic analysis in the Philippines is central to this project. The enhanced research capacity of LSU College of Forestry staff was a significant outcome of ASEM/2000/088 and further enhancement of this capacity will continue in the current project. Further informal training and mentoring of Filipino collaborators will be undertaken through their involvement in all research activities undertaken as part of the project. Additional training will be provided in the area of data analysis and to develop writing skills of staff, including through their involvement in the preparation of project reports and journal articles.

There will be four new permanent research assistants/enumerators employed in the project and these will receive training in various research methods and techniques. Evidence from ASEM/2000/088 is that this enhanced research capacity will be sustained through on-going research activities of the College, which is developing an active research culture and at the enhanced research capacity developed during the current project will place it in a position to attract further international projects.

## ECONOMIC BENEFITS

The project is designed to provide economic benefits to current tree farmers. The flow-on benefits of higher timber prices, leading to higher incomes of smallholders, is potentially significant, especially relative to their current low earnings (i.e. more than 50% of rural households are below the poverty line). Herbohn and Harrison (2005) have estimated the economic benefits associated with ASEM/2003/052 (Table 1). The benefits reported in Table 1 are based on *highly conservative estimates* of total area of tree farms, timber prices and likely uptake rates by smallholders. There is a high likelihood that the benefits realised will be much higher.

Table 1. Financial benefits expected to be realised by smallholders from project activities. Source: Herbohn and Harrison (2005).

Tree farm intervention	Net Present Value (\$)		
	(1) Immediate incremental benefits to existing farmers	(2) Incremental benefits to tree farmers subsequent rotations	(3) Net Income generated by additional plantings of 500 ha per year for 10 years
Additional income from improved management of tree farms (5% of tree farmers affected)	596,267	2,133,268	Not estimated separately
Additional income from higher prices from better market access (30% of tree farmers affected)	<u>1,771,926</u>	<u>1,747,536</u>	<u>Not estimated separately</u>
Total benefit expected to be realised	<u>\$2,368,193</u>	<u>\$3,880,804</u>	<u>\$23,243,870</u>

Herbohn and Harrison (2005) have also identified a number of additional economic benefits likely to arise from the project which have not been quantified as part of the preceding analysis. Additional timber resource will be available for on-farm use, house construction and repair, stakes to support crops, and use as fuelwood. Increased smallholder and community forestry will reduce the need to spend scarce cash on purchase of these items. A supplementary source of income will arise from sale of fuelwood and charcoal. Tree growing will allow a more diversified smallholder production base, greater creditworthiness, and greater income stability.

## **SOCIAL BENEFITS**

Expansion of tree plantings and higher timber prices will lead to welfare improvements from greater self-reliance with respect to timber and fuelwood and greater off-farm earnings from timber sale. Some improvements in housing standard may arise from increased availability of timber. The difficulty of obtaining permits for tree harvest and timber transport will be reduced for tree growers, including those with existing plantations, from reduced time requirements and reduced uncertainty in obtaining permits. Social harmony will be improved from fewer prosecutions for infringing regulations. The increased activity of community organizations can lead to greater shared goals and social cohesion, and to creation of community development funds which can support asset purchase and infrastructure development. The beneficiaries from the project will be mainly smallholders, of which about 50% are currently below the poverty line (Emtage 2004). There will probably be little gender impact, though there may be a reduction in effort needed to collect fuelwood (generally a task undertaken by females).

Benefits could arise from having more settled rural communities, particularly in sloping and upland areas, for which forestry is well suited. The practice of shifting cultivation would be reduced, there could be reduced insurgency activity, and cash income from forestry is sometimes used as a means of affording children's education.

## **ENVIRONMENTAL BENEFITS**

Forestry expansion will provide environmental benefits through watershed protection and siltation of marine habitats. Flood mitigation benefits will reduce loss of life and damage to crops and infrastructure from floods. Greater availability of fuelwood and charcoal will reduce reliance on gas as a fuel for cooking and water heating, with consequent lower CO<sub>2</sub> emissions. Further benefits are reduced pressure for logging of native forests (mostly illegal), and reduced felling of productive coconut palms for cocolumber (with associated erosion impact and encouragement of urban conversion of productive farm land).

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