Sustainable Community Forest Management

A Practical Guide to FSC Group Certification for Smallholder Agroforests
Written by Robin Barr, Ann Busche, Michael Pescott, Agung Wiyono, Agus Eka Putera, Arlan Victor, Bahrun, Novi Fauzan, Sugeng Prantio, and Untung Karnanto

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## Acronyms and Abbreviations

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<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AAC</td>
<td>Annual Allowable Cut</td>
<td></td>
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<tr>
<td>CAR</td>
<td>Corrective Action Request</td>
<td></td>
</tr>
<tr>
<td>CB</td>
<td>Certification Body (i.e. FSC Auditors)</td>
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<tr>
<td>CI</td>
<td>Conservation International</td>
<td></td>
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<tr>
<td>CIFOR</td>
<td>Center for International Forestry Research</td>
<td></td>
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<tr>
<td>CIRAD</td>
<td>Center for Agriculture Research for Development</td>
<td></td>
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<tr>
<td>CITES</td>
<td>Convention on International Trade in Endangered Species</td>
<td></td>
</tr>
<tr>
<td>DBH</td>
<td>Diameter at Breast Height</td>
<td></td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
<td></td>
</tr>
<tr>
<td>ESIA</td>
<td>Environmental and Social Impact Assessment</td>
<td></td>
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<tr>
<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
<td></td>
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<tr>
<td>FMU</td>
<td>Forest Management Unit</td>
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<td>FSC</td>
<td>Forest Stewardship Council</td>
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<tr>
<td>FSC P&amp;C</td>
<td>Forest Stewardship Council Principles and Criteria</td>
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<tr>
<td>GFTN</td>
<td>Global Forest and Trade Network</td>
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<tr>
<td>HCV</td>
<td>High Conservation Value</td>
<td></td>
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<tr>
<td>ICCO</td>
<td>Interchurch Organisation for Development Cooperation</td>
<td></td>
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<tr>
<td>ICRAF</td>
<td>World Agroforestry Centre</td>
<td></td>
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<tr>
<td>IFM</td>
<td>Integrated Fire Management</td>
<td></td>
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<tr>
<td>IIED</td>
<td>International Institute for Environment and Development</td>
<td></td>
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<tr>
<td>ILO</td>
<td>International Labour Organization</td>
<td></td>
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<tr>
<td>IPM</td>
<td>Integrated Pest Management</td>
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<tr>
<td>ITTO</td>
<td>International Tropical Timber Organization</td>
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<tr>
<td>IUCN</td>
<td>International Union for Conservation of Nature</td>
<td></td>
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<tr>
<td>NGO</td>
<td>non governmental organization</td>
<td></td>
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<tr>
<td>NTFP</td>
<td>Non-Timber Forest Product</td>
<td></td>
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<tr>
<td>RECOFT</td>
<td>Center for People and Forests</td>
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<tr>
<td>SIA</td>
<td>Social Impact Assessment</td>
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<tr>
<td>SLIMF</td>
<td>Small and Low Intensity Managed Forest</td>
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<tr>
<td>SOP</td>
<td>Standard Operating Procedures</td>
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<tr>
<td>TFT</td>
<td>The Forest Trust</td>
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<tr>
<td>TNC</td>
<td>The Nature Conservancy</td>
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<tr>
<td>WWF</td>
<td>World Wide Fund for Nature</td>
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Thank you to each and every one of you.
Message from the Authors

TFT was founded in 1999 with the primary focus of reducing the rate of deforestation and improving the lives of forest dependent people. TFT is a membership organization made up of international retail and manufacturing companies who are committed to sourcing responsible products. TFT staff provide technical training, empowerment and support to local forest managers; teaching them best management practices in a variety of forest management systems, including natural forests, plantation forests and smallholder agroforests. TFT also assists smallholder forest managers to sell their wood to international companies seeking wood from responsibly managed forests.

Since 2003, TFT has been working in partnership with community-led forestry initiatives in Southeast Asia. TFT’s initial community partnership was in Indonesia, assisting a local cooperative in Southeast Sulawesi made up of smallholder farmers to manage their teak agroforests sustainably and achieve FSC certification. On May 20, 2005 the smallholder cooperative Koperasi Hutan Jaya Lestari (KHJL), succeeded in obtaining an FSC Group Certificate for 550 small forest owners. Since then, TFT has developed a series of smallholder agroforest group certification programs, including three more in Indonesia, one in Laos, one in China and another two in India. To date, two of these have achieved FSC Forest Management certification, two have achieved Verified Legal Origin (VLO) certification. One more is expected to achieve FSC Forest Management certification in the near future. Even after these community enterprises achieve FSC certification, TFT continues to provide support and guidance on how to expand the group, and constantly improve business and forest management.

This handbook is based on TFT’s seven years of experience working with smallholders to set up group certification systems in remote and diverse settings. It is designed to provide simple and practical solutions to the most common challenges smallholders face when trying to achieve group certification. The information presented here is general in nature; its implementation should be adjusted according to local conditions. Criticisms and suggestions from readers are welcome, and will be used to improve and adapt this guide to address real-world conditions and experiences.

It is hoped that this book will be useful not only as a guide for NGO’s and forest managers, but also as a topic for further discussions to improve best practices and increase forest dependent communities’ role in sustainably managing the world’s forests.

Sincerely,
The Authors
Section 1: Introduction
Introduction

What is community forest management and why focus on agroforests?

Community forest management is “any situation which intimately involves local people in a forest activity” (see Textbox 1.1). This broad definition encompasses many different types of situations, both in terms of land ownership and forest management, with the underlying connection that local people are in charge of the forest management decision-making. Smallholder agroforest groups make up just one possible community forest management type, and like other systems there are a number of challenges local people must face when working collaboratively to manage a forest resource they depend upon for economic, cultural and spiritual needs.

Agroforestry is a traditional form of land use that involves the growing of trees alongside agricultural crops and/or animals. The trees provide

Textbox 1.1: Community forest management

Community forestry includes any situation that intimately involves local people in a forestry activity. It embraces a spectrum of situations ranging from woodlots in areas short of wood and other forest products for local needs, to the growing of trees at the farm level. It includes the processing of forest products at the household, artisan or small industry level to generate income, and the activities of forest-dwelling communities. It excludes large-scale industrial forestry and any other form of forestry that contributes to community development solely through employment and wages, but it does include activities of forest industry enterprises and public forestry activities at the community level. The activities encompassed by community forestry are potentially compatible with all types of landownership.

Section 1: Introduction

Trees in agroforests provide many ecosystem services at both the local and global scale. Trees are commonly planted along streams and waterways, or along terraced hills to reduce soil erosion and the risk of landslides. These trees also provide habitat for wildlife. Multiple tree species will further increase the biological and structural diversity of the agroforest, which also prevents plant disease or pest outbreaks that can affect monocultures. In some places the trees serve as a buffer around protected areas and a corridor in which wildlife can travel long distances. On a global scale, planting trees on farms can also be a good approach to increase carbon storage in aboveground biomass. The Millennium Ecosystem Assessment 2005 report described agroforestry as a key “win-win” strategy, whereby negative aspects of cultivation are reduced while economic benefits to farmers are increased.

Agroforestry provides economic benefits to communities of smallholders in various ways. Valuable hardwood species such as teak, Indian rosewood and mahogany can provide poor families with a large amount of cash when they harvest and sell the tree. This money can be used to invest in children’s school fees, new buildings, land for the family or to pay for unexpected emergencies like hospital bills. For many small rural farm families

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Textbox 1.2: Agroforestry in Java

On the island of Java, community forests often form contiguous forests across the landscape, with small openings allowing for housing, roads, and rice paddies in addition to other important crops. These forests resemble the structure of a natural forest, consisting of multiple canopies of growth and provide habitat for a wide variety of species. In a TFT study of community forests in Central Java in 2005, researchers identified 34 different tree species in the region. Timber trees such as mahogany, teak, albizia, sonokeling and acacia generally form the upper canopy layer, alongside coconut palms and bamboo. Fruit trees and trees that produce cash crops such as coffee, clove and nutmeg trees usually form the lower canopy of community forests. Other common fruit trees include rambutan, breadfruit, mango, sirsak, jackfruit, melinjo, durian, orange, banana and salak palm fruit. The floor of the community forest supports naturally-occurring ground plant species such as grasses, ferns and mosses in addition to cultivated agricultural crops such as the greater galingale, turmeric, ginger, yams, cassava, peanuts, dry rice and corn. With such a high diversity of agroforest products, families in Java often rely on a small agroforest plot ½ to five acres in size to provide food, firewood, building materials and cash crops, all of which form the basis for the families’ livelihoods.

Rice paddies surrounded by community forest kebun, Logandu Village, Java
who may not have access to a bank, their trees serve as a form of savings, sometimes referred to “green banks”. Additionally, if farmers can sell a diversity of timber species and non-timber forest products, they can better protect themselves from the price fluctuations of individual species. On a local level, these activities can provide jobs in the community in logging, trucking, building, as well as sawmill operations, handicrafts and carpentry shops. Tree nursery management and planting also provides jobs.

Trees from agroforests can be a significant source of wood on the global market. In TFT’s experience, the volume of wood coming from communities of smallholder agroforests is significant to the international supply chains of many companies. For example, wood from small privately owned agroforests is used in large volumes by furniture factories in Indonesia and India, with many factories selling to international customers relying solely on agroforest wood sources. Also, in Indonesia many plywood factories rely 100 percent on Albizia falcatara and Gmelina species coming from smallholders to make up the plywood core. In Vietnam, Acacia mangium grown by smallholders is commonly used in furniture and in China, Populus and many other species grown in agroforests are commonly used in factories selling plywood and other wood products internationally. As valuable timber species from natural forests are depleted, companies will likely increasingly rely on wood from agroforests to provide a secure and sustainable source of material.

Despite the widespread prevalence of agroforest wood use, there is a lack of practical guidance and focus on sustainable community forest management, especially as it applies to agroforest systems in the literature.

What is forest certification?

Certification of the management of forests – or in short – “forest certification” is a way to verify whether or not forests are well managed based on a combination of economic, social and environmental indicators. Certification is a market-based mechanism which provides a link between production and consumption of forest products. Similar to food labels such as halal, kosher and organic, forest certification labels communicate to consumers how a product was made, enabling consumers and businesses to make purchasing decisions that benefit people and the environment. For
forest owners and managers, certification is a voluntary way to gain market recognition by committing to good forest management practices.

The most well respected international standards for sustainable forest management were developed by the Forest Stewardship Council™ (FSC), an independent, nongovernmental, nonprofit organization established in 1993 to promote the responsible management of the world’s forests. Since its inception, FSC has brought together experts from around the world to discuss and improve global and regional FSC standards and develop strategies to reduce the pressures on forests and the people who depend on them.

FSC forest certification standards consist of 10 principles that are meant to ensure that forest management is legal according to national and international laws, respects the rights of workers and indigenous people, limits negative environmental impact and protects areas in the forest that are culturally significant or are habitat for endangered plants or animals. Each principle also has a set of more specific criteria that are characterized by one or more locally adapted indicators, which are used to assess if forest management is meeting FSC standards (Table 1.1). On the next page is a table listing the 10 principles that are used to certify all forest types (see Appendix 1 for a full description of FSC’s Principles and Criteria).
Forest management shall respect all applicable laws of the country in which they occur, and international treaties and agreements to which the country is a signatory, and comply with all FSC Principles and Criteria. Long-term tenure and use rights to the land and forest resources shall be clearly defined, documented and legally established. The legal and customary rights of indigenous peoples to own use and manage their lands, territories and resources shall be recognized and respected.

Forest management operations shall maintain or enhance the long-term social and economic well-being of forest workers and local communities. Forest management operations shall encourage the efficient use of the forest's multiple products and services to ensure economic viability and a wide range of environmental and social benefits.

Forest management shall conserve biological diversity and its associated values, water resources, soils and unique and fragile ecosystems and landscapes, and, by so doing, maintain the ecological functions and the integrity of the forest

A management plan — appropriate to the scale and intensity of the operations — shall be written, implemented and kept up to date. The long term objectives of management, and the means of achieving them, shall be clearly stated.

Monitoring shall be conducted — appropriate to the scale and intensity of forest management — to assess the condition of the forest, yields of forest products, chain of custody, management activities and their social and environmental impacts.

Management activities in high conservation value forests shall maintain or enhance the attributes which define such forests. Decisions regarding high conservation value forests shall always be considered in the context of a precautionary approach.

Plantations shall be planned and managed in accordance with Principles and Criteria 1 - 9, and Principle 10 and its Criteria. While plantations can provide an array of social and economic benefits, and can contribute to satisfying the world's needs for forest products, they should complement the management of, reduce pressures on, and promote the restoration and conservation of natural forests.
The FSC Principles and Criteria were designed for all forest sizes and intensity of management; however FSC has recognized that the certification process can be more challenging for smallholders and community managed forests. To streamline the process and reduce the direct costs of certification, FSC has developed guidelines for assessing many forest managers together under group certification. Additionally, FSC has modified procedures for Small and Low Intensity Managed Forests (SLIMF), both of which are typically used to assess agroforests.

In Chapter 1, we will discuss FSC certification in more depth, and describe the different types of FSC Certificates. In Chapter 25, we will give you an overview of the process of forest certification and provide advice on how to prepare for the FSC assessment.

**Why certify agroforests?**

For smallholders and their communities, the certification of their agroforests can have multiple benefits. Through the process of becoming certified, smallholders can learn how to improve the management of the trees on their lands, including appropriate planting, pruning and thinning techniques. This can lead to a higher productivity for small forest plots, and a higher quality of timber produced, which may in turn lead to higher prices for their timber. FSC certified forest products may sell for a higher price over uncertified products if the community is selling to markets which are specifically seeking FSC certified products. If smallholder groups are able to market larger quantities of timber together, they may also be able to negotiate a higher price from buyers and further increase the financial benefits they receive. All of these benefits are very dependent on the specific situation that each community of smallholders operates in. For this reason, they should not be assumed to be applicable to all communities, and for many smallholders certification may be costly and not provide much benefit. Chapter 4 of this handbook outlines how to do a preliminary assessment of your own situation, and make a judgment as to whether or not certification will bring benefits to your community.

FSC certification may play a greater role for many international companies in the future who are concerned that their wood is not coming from legal sources. In many countries, wood from agroforests is considered to be high risk because it is difficult to trace back to its source, and illegally logged timber is often laundered onto international markets as community or agroforestry wood. This creates a disincentive for companies who want to buy legal agroforest wood, and puts the livelihoods and savings of many smallholders, who are often living in poverty, at risk. However, if companies who want good wood can find FSC certified wood from communities, they
will be able to confidently purchase it, with assurance that it comes from legal, well-managed sources.

For companies whose products are made with agroforestry wood, certification of agroforests can help them prove to customers that they are supporting sustainable forest management internationally. For agroforest managers, wood traders and factories, certification can help them to establish traceability and legality systems to prove that the wood is coming from legal, sustainable smallholder forests. It can also help agroforests to be recognized as legitimate and important sources of wood, since they are so often overlooked in government forest policy and forest development planning. In this way, certification can help to ensure the sustainability of agroforests, which provide important ecological and economic benefits to millions.

TFT specifically works to improve marketing of agroforest wood so that smallholders can sell their wood at higher prices to factories seeking certified wood on the international market. Wood from certified forests continues to be in high demand in the U.S., Australia, New Zealand and the EU, and FSC certified wood from agroforests can be seen as a good alternative to natural forest or plantation wood. Agroforest wood also easily meets most of the social criteria under FSC, since the money from sales goes directly to local people and the nature of the community-based supply chain supports local economies. Agroforests are also rarely associated with large-scale land conflicts, and may even help to strengthen local peoples’ land tenure claims, while supporting traditional use rights, for example improving claims to certain fruits, and access to water.

Here are some examples of direct benefits of forest certification for smallholder agroforest groups that have been observed:

- In Laos, encouraging the sale of trees by volume rather than standing units has increased the average price farmers of the Luang Prabang Teak Program (LPTP) received (see Figure 1.5). Although prices vary with tree size, form, and distance from the road, farmer interviews in early December 2010 suggest that average prices for standing teak trees of diameter 20 – 30 cm have increased by about 40 percent since TFT’s involvement and adoption of sale by volume.

- As a result of their goal to achieve FSC certification, the cooperative KOSTAJASA has improved engagement of women in forest management activities. In Java, there is a strong patrilineal culture, resulting in women traditionally being excluded from land management decisions. KOSTAJASA has issued letters and opened group discussions to discuss equal rights between men and women in all
activities. Good progress has been made, with 16 of the 21 farmers’
groups actively involving women. This involvement is also spreading
to other groups in the region.

- For all of the smallholder agroforest groups, the certification process
  has increased the protection of buffer zones around water sources
  and waterways within the forest area, and has led to the identifica-
tion and documentation of many culturally and historically important
  sites in villages.

- Certification has resulted in new jobs at the local level for tree invento-
  rying (a process which previously did not take place), and administra-
tive jobs related to wood grading and chain of custody documentation.

- Many of the community led forestry initiatives have distributed large
  numbers of tree seedlings each year. For example, in central Java
  the group manager of Dipantara distributed over 60,000 teak and
  Albizia seedlings to group members in their first three years.

- All the projects have required safety training for chainsaw opera-
  tors and those responsible for harvesting. These operators now use
  safety equipment and have a system in place to adequately warn
  nearby people when a tree will be harvested.

In addition to the direct benefits of forest certification, several indirect ben-
efits have been noted from TFT projects:

- In Southeast Sulawesi, Indonesia, the forest certification process
  helped farmers to negotiate with the local government on clarifying
  what harvest and transport licenses were required for wood from pri-
  vate land. Before this process, the license requirements were unclear,
  and as a result bribes often had to be paid by smallholders wishing
  to harvest, transport or sell their own wood.

- After Koperasi Hutan Jaya Lestar (KHJL) achieved FSC group cer-
  tification in 2005, there was a shift in perception with the regional
  government. FSC certification showed the Ministry of Forestry that
  communities can comply with international standards for community
  forest management. As a result a new Community Timber Estate, or
  ‘HTR’ program was established in Konawe Selatan, and KHJL was
  issued a forest licence to manage over 9,800 hectares of state
  owned forest in December 2008.
For the Luang Prabang Teak Program in Laos, the training programs also provided a positive interaction with the government of Laos and improved farmers understanding of the complex government rules and regulations relating to the harvest and transport of teak.

In KHJL, as a result of learning how to financially manage their wood business, many village leaders reported using the same approach in managing the village finances. Others have used the organizational development skills they learned to start their own small businesses.

Several community group leaders in Indonesia who were part of group certification are now more involved with local government, more active in conferences regarding development and the environment, and have increased recognition as key stakeholders in many government and non governmental programs.
Why is it difficult to certify agroforests?

Despite FSC’s twenty-year history of forest certification, smallholder and community owned forest operations in developing nations have consistently made up only a small portion of the FSC certificates. There is a lot of debate about why this is, and there are multiple organizations working to improve access to small forest owners and communities around the world, such as CI, CIFOR, FAO, Forests of the World, FSC, ICCO, ICRAF, IIED, ITTO, Rainforest Alliance, RECOFT, TNC, WWF and others (Appendix 2).

From TFT’s experience with agroforest certification, the main challenges are:

- Agroforests fall into a ‘grey’ area between natural forests and plantations. Similar to plantations, most of the trees on agroforests are planted and intensively managed. However, agroforests are usually more like natural forests than plantations in forest structure because they include multiple tree species, planted alongside a wide array of other understory plants, shrubs, vines, etc. Also, agroforest managers often allow some trees to grow naturally, while planting others. Thus, agroforests tend to have a higher diversity and more complex structure than plantations. That said, every agroforest is managed slightly differently—with some looking more like plantations and others more like natural forests. Currently, FSC does not have specific guidance on how to assess agroforests.

- Many forest governance systems do not recognize agroforests as legitimate sources of wood, and therefore do not include them in their laws regarding timber harvesting, transport and sales. As a result, local forestry officials often must make their own interpretation of the laws, and these can vary widely from official-to-official. Such unclear governance can often lead to corruption.
• Many smallholders do not have legal land titles or certificates issued to them for their land, primarily because the local government does not have the capacity to issue land licenses at the scale necessary. Thus, it can be difficult to demonstrate long-term land tenure and use rights.

• Agroforests are often small in size, making it expensive and time-intensive to create management plans and monitor every single plot. Additionally, to reach a large-scale size, groups will often need to include hundreds of households, each managing their agroforests differently with different goals in mind. It is challenging to get this many stakeholders to agree on group governance and fully understand the group rules.

• Even with a group with hundreds of households, there remains a relatively high cost for FSC audit in relation to the amount of timber produced.

• A long term commitment is needed to initiate or improve forest management. Many smallholders manage not only timber trees, but a large multitude of species and crops. Annual crops often provide more annual income to the farmers, but are also time-intensive to manage. As a result, farmers can only afford to put a limited amount of their time towards tree management and certification.

• Supply chains for timber from agroforests are often very complicated, involving seasonal, part-time or full-time traders. Much is done on the informal market, making traceability a challenge.

• FSC requires a large amount of documentation, and the FSC guidelines are difficult to interpret for specific environmental and socio-economic conditions. Farmers from poor, developing countries often do not have good reading, writing, computer or documentation skills. Many will only have schooling up to middle or high school level, making it difficult to understand complex standards. There may also be a lack of accessible information on how to implement good forest management in their region.

Despite these challenges, it is important to remain committed to working with smallholders on good forest management due to the huge livelihood and environmental benefits that can be gained from doing so. This book is designed to help other organizations who feel likewise to support the sustainable management of agroforests in their region, and to help smallholders get better prices for their wood and increased capacity-building skills through involvement in group certification.
How to use this book

This handbook is meant to provide practical advice for nonprofits, businesses, government agencies and community organizations who want to develop a FSC group certificate for smallholder agroforests. Whether you are beginning a community agroforest program from scratch, or you are in the early stages of FSC group development, it is recommended that you read through the entire handbook. The advice and suggestions mentioned throughout the text are based on TFT staff experience in Southeast Asia and is in no way meant to be prescriptive. We believe that the best approach is to be adaptive and customize your solutions to the unique challenges that each group and location presents. We also believe that the best programs will be based on collaboration and active participation of local communities, businesses and government agencies.

This text is organized into six sections that follow the general process of program development:

Section 1: Introduction is a brief overview of group certification for smallholder agroforest communities, and provides an introduction to the Forest Stewardship Council and FSC certificate types.

Section 2: Getting Started provides guidance on defining group goals and objectives, assessing initial program needs and developing an action plan. Chapter 4 of this section provides guidance on how to implement a preliminary survey to gather the information you will need to decide if certification is right for you, and to develop your action plan.

Section 3: Group Management includes guidance on developing group structure and organization structure, including how to develop group rules and procedures, and monitor membership.

Section 4: Forest Management describes how to develop a forest management plan, and chain of custody systems that will meet FSC’s guidelines.

Section 5: Business Management provides advice on budgeting, financial reporting and marketing strategies for a community forest enterprise.

Section 6: FSC Assessment and Group Expansion is an overview of the FSC certification process and includes advice as you prepare for your first FSC audit, and continue to expand your smallholder agroforest group.
Overview of the Forest Stewardship Council

The Forest Stewardship Council (FSC) is an independent, nongovernmental, nonprofit organization established to promote the responsible management of the world’s forests. FSC develops forest management and chain of custody standards, delivers trademark assurance and provides accreditation services to a global network of committed businesses, organizations and communities.

FSC does not issue certificates itself. The certification process is carried out by independent certification bodies (CB) that evaluate forest enterprises and companies using FSC’s Principles and Criteria. There are many CBs which have been accredited by FSC (see Appendix 3 for a list or visit www.fsc.org).

FSC has certified forest management enterprises in 80 countries, covering approximately 150 million hectares of forest globally. The majority of the certificates are held by companies in Europe and North America, although FSC has acknowledged there is a need to improve access to smallholders in Africa, Asia and Latin America.

For Smallholders FSC Certification is aimed at:

- Giving recognition and access to smallholders who manage their forest sustainably
- Improving forest management practices to meet national and international best management standards.

www.fsc.org


Section 1: Introduction
FSC standards for responsible forest management are meant to ensure:

- That a forest manager is operating legally and following all the applicable laws relevant to their operations.
- That the forest is managed in a way that is socially responsible, which is to say in a way that respects the rights of workers, local communities and indigenous peoples’ traditional rights to their land. Forest management should benefit the local communities (whether they are recognized as indigenous people or not) within and surrounding the forest area.
- That the forest is managed in a way that is environmentally responsible—meaning that the forest ecosystem is not harmed any more than necessary.

Key FSC Terms

Principle: An essential rule or element of forest stewardship. FSC has 10 Principles for responsible forest management.

Criteria: A category of conditions or processes by which forest management can be assessed: a criterion is characterized by a set of related indicators which are monitored periodically.

Indicator: A quantitative or qualitative variable which can be measured or described, and which provides a means of judging whether a forest management unit complies with the requirements of an FSC Criterion.

Non-compliance: Any failure to meet the threshold requirement(s) of an indicator.

www.fsc.org
FSC’s 10 Principles are applied in tropical, temperate and boreal forests and include natural forests and plantations. All forests are evaluated against 56 specific criteria, each with a set of related indicators that can be monitored (see Appendix 1). During an FSC audit, assessors from the CB will issue Corrective Action Requests (CARs) when the forest management is not according to the standard requirements (see Section 6).

In many cases, specific criteria and indicators have been developed to better evaluate the conditions in the region or nation. As we will describe in Chapter 3, it is a good idea to contact a CB operating in your region early to get a copy of the standard for your region. It is also important to note that not all criteria and indicators may be relevant to your community forest program. If you think this is the case, you can always contact a CB and ask them.

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**Smallholder**

For FSC certification the term “smallholder” is used to describe those who own, manage, or use forests which are considered small in relation to others in their region, and those who apply low intensity harvesting practices to timber and/or non-timber forest products (NTFP). FSC has a Smallholder Support Program that works through regional and national channels to bring more capacity to the FSC Network to work with smallholders in locally appropriate contexts.

www.fsc.org
FSC Forest Management certification types

There are several different types of forest management certificates for forest managers or owners. Forest managers can apply for certification, whether the forests are owned by governments, by indigenous or other communities or privately, if the forest management unit is large or small, or managed by groups of small landowners. Additionally, FSC offers a Chain of Custody (CoC) certification that applies to producers, manufacturers, processors and traders of forest products.

**Figure 1.7:** Diagram showing individual, group, and group SLIMF forest management certification
Forest Management certification of single forest management units

In the basic Forest Management certification, one forest manager holds his or her own certificate for the forest area they manage, and is responsible for meeting all the FSC standards within its forest area. This is the typical type of certification for most FSC certificates, for example for large timber concessions or plantations.

Certification of forest management groups

Group certification is issued when forest managers or owners join together to form a group, and one group manager holds one certificate for all of them. This group may be in the form of a cooperative, a company, an association or a nongovernmental organization (see Chapter 6). The group manager will be responsible for ensuring that each member of the group is following the FSC standard. If they are not, the group manager will need to issue a warning or exclude the member from the group certificate.

Certification of Small and Low Intensity Managed Forests (SLIMF)

SLIMF certification is determined by the size of the forest and the intensity of utilization of the forest being managed. In order to be called SLIMF, one of the following criteria must be fulfilled7:

- The area size of the managed forest is no bigger than 100 hectares, OR
- The forest is managed for non-timber forest products, OR
- The forest is managed for wood forest products, provided the amount of harvesting is less than 20 percent of each annual average harvest in all production forest areas to be managed and the sum of harvesting is no bigger than 5,000 m³/year.

Forest Management Units (FMU) of up to 1,000 hectares in area may be classified as SLIMF units when this is formally proposed by the FSC-accredited national initiative for the country concerned, or in countries in which there is no FSC-accredited national initiative and this size has broad support of national stakeholders in the country concerned8.

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7 SLIMF Eligibility Criteria FSC standard FSC-STD-01-003 V1-0 EN. Retrieved from www.fsc.org
Smallholder agroforest managers typically apply for FSC certification as a group. This option is significantly less expensive for each member of the group because the CB assesses the group manager and only a sample of the group members during the assessment, and surveillance audits. Smallholder agroforests groups will likely qualify as SLIMF, in which CBs use a simplified assessment process compared to larger and more intensively managed forests.

In Chapter 25 we explain the process of applying for FSC certification in more detail. In Chapter 22 we will discuss how smallholder groups can budget for certification costs.

**Chain of Custody Certification**

Chain of Custody (CoC) certification is an administrative system that allows a company to track purchased wood back to its forest source (see Chapter 20 for more details). This is important because it ensures that wood being sold as FSC certified truly comes from a certified forest, and isn’t mixed with wood from forests that are poorly managed. Once the log or timber leaves the forest, an FSC CoC system is necessary to trace it through the transport, manufacturing and retail processes.

The FSC logo signifies to consumers that this is a product that has been verified using the FSC standard for responsible forest management. To receive a CoC certificate the forest manager and each factory in the supply chain must have a system in place to track and verify the origins of every log or piece of FSC timber. There typically are many intermediate factories and processing facilities for a final product (like a chair, a table or a piece of paper). To carry the FSC logo, each forest and factory in that product’s supply chain must be FSC CoC certified.
Section 2:
Getting Started
Introduction

Effectively managing a community agroforest program can be a big challenge. Managers must balance the social and financial needs of group members, while developing realistic forest management practices that meet the high standards required for FSC certification. Having a clear plan for the group is essential in balancing these demands and focusing resources where they are needed the most. In addition, managers may be working with nongovernmental organizations, universities or government partners. A clear plan can help to increase the effectiveness of collaborations by increasing transparency and accountability for all parties with a stake in the success of the program. Figure 2.1 explains how these key activities form the Action Planning Cycle.

In this section of the handbook, we will provide advice on four of these key steps:

Chapter 2: Clarifying Goals
Chapter 3: Gap Assessment and Certification Action Planning
Chapter 4: Preliminary Survey
This diagram illustrates the cyclical nature of action planning. When first starting a program, it is a good idea to clearly define the goals and objectives of the program (1). Next conduct a Gap Assessment (2) to identify where the program already meets the objectives (3), and where there are gaps, or challenges that need to be overcome to achieve the objectives of the program (4). It is also likely that during the Gap Assessment you will find that you do not have sufficient information to know if you are meeting the standards or not (8). You therefore need to gather additional information through a preliminary survey (9).

Once the gaps have been identified, you can then develop an Action Plan to close the gaps and meet your goals (5). As the Action Plan is implemented (6), program leaders will need to keep a record of activities, and monitor the results to assess whether improvements were made (7). This information will then be used to periodically update the Gap Assessment, and re-evaluate how the program is performing against its goals. Once this information has been gathered, the Gap Assessment can be updated (2) and the cycle can be repeated. Periodically, program leaders should compare the initial and updated versions of the Gap Assessment to measure progress over time as you move towards your goals and you have fewer gaps (10).
2 Clarifying Goals

Developing a vision statement

Creating a vision statement is an important first step when developing a community agroforest program. A vision statement articulates what the community aims to achieve in the future. This statement will be used to guide program planning, and can build consensus within the group by defining common goals that everyone believes are important.

When developing a group vision statement, some good questions to discuss with stakeholders include:

- What do we want to achieve with this program?
- What are the current problems that we would like this program to address?
- What would success look like?
- What are we good at now?
- What can we be great at in the future?
- What do we want our program to achieve in the next five years, 10 years, 20 years?
- If a newspaper wrote about our program in five years, what would we want it to say?
When you begin to develop a vision statement, it is a good idea to include representative group members and partners in the discussion. Brainstorm with the group and create a list of different long-term goals. Then begin to narrow the list down to those things that most people agree are the most important things to accomplish. Identify a shared vision that will motivate stakeholders to be active in the group.

This vision statement will be useful when you begin to reach out to potential business partners and companies interested in purchasing wood and non-timber forest products (see Chapter 24).

Vision Statement: Luang Prabang Teak Program

The Luang Prabang Teak Program (LPTP) is a partnership between teak farmers in Luang Prabang Province and the Lao Government with technical support funded by the USAID funded Responsible Asia Forestry and Trade Program (RAFT). LPTP is supported by the Government of Laos under the Forest Strategy 2020 and the National Growth and Poverty Eradication Strategy, both policies promoting small-scale tree plantations for commercial production and an increase of forested areas. Since 2007, TFT has been providing technical support to the LPTP through the Lao Forest and Trade Platform.

The LPTP vision is to:

Ensure that LPTP provides a model example of how to maximize the socio-economic and environmental benefits of small-scale teak plantation growers in Lao PDR.

Contribute to Lao PDR efforts to both reduce poverty and increase social stability and economic development through improved teak management.

Ensure the protection of identified high conservation values within or surrounding the forest management units.
Defining management objectives

Once you have written a group vision statement, the next step is to determine management objectives. An objective is a more defined and explicit statement that answers the question “how will we reach our goals?”

Good objectives will be:

- Concise: no more than three or four sentences that describe your goals simply
- Feasible: define achievable targets given the available resources, energy, and time
- Measurable: include statements that enable you to measure progress

For groups of smallholder agroforest owners, defining management objectives is an important step, as it asks the group how they will prioritize limited time and resources. Review your management objectives about every five years, if not sooner. You should adapt your objectives as resources and circumstances change.

Involving stakeholders, either formally or informally, is necessary to this process. Mistakes can occur when there is a gap between the objectives of the stakeholders and what is actually possible. For any new program, there will be some uncertainty and risk. Many times there is a lack of information. It is a good idea to be as forthcoming and honest about these uncertainties at the start. This will help you to avoid disappointment later on, and focus your plans on what is achievable.

Stakeholder

Any individual or group whose interests are affected by the way a forest is managed.

www.fsc.org
3 Gap Assessment and Certification Action Planning

Now that you have a number of objectives for your community agroforest program, the next step is to conduct a Gap Assessment and develop an Action Plan. A Gap Assessment is an assessment of how your program is currently performing against your goals and objectives. The aim of a Gap Assessment is to identify any gaps between current performance and the goals of the program, especially the FSC certification standards that the program will eventually be critiqued against.

A “gap” is a specific area where current forest or business management is not yet meeting your program’s goals and objectives. For example, if you have set a goal to include ten villages in your program, but you currently only work with one, your gap would be nine villages and you would need to work with nine additional villages to close the gap.

It’s possible that some of your objectives do not yet have defined targets. In such cases you should facilitate the group to define targets together before performing the Gap Assessment. Such targets can always be changed over time as agreed by the group.

In addition to the specific requirements (principles, criteria and indicators) outlined by FSC for good forest management, you can develop your own key performance indicators for your program’s business and marketing objectives, as well as other community program goals and objectives that you have defined.

The results of your initial Gap Assessment can also provide a baseline, or record of your starting point, against which to measure progress over time. Using information from the Gap Assessment, program managers can then create an Action Plan to be implemented (see Table 2.3 for an example).
Gap Assessments can be carried out multiple times throughout a program as a tool to track progress as you close out gaps and meet your program goals. Each time, information gained through the Gap Assessment can be used to update the Action Plan as needed.

**How do you conduct a Gap Assessment?**

A Gap Assessment is like studying for an exam, with a copy of the test months or years in advance. During a Gap Assessment you will want to systematically go through each of the FSC standards that apply to your community forest program, noting where you believe your program currently meets the standard or where you still have work to do. One simple way to do a Gap Assessment is to create a table similar to Table 2.1, in which the left column lists all targets, indicators and standards that will apply to your community forest program.

**Gap Assessment for Business**

Gap Assessments can include other performance measures in addition to the FSC Principles and Criteria. For example, a market survey may identify buyer’s preference for specific quantity and quality of timber or non-timber forest products (NTFP). A Gap Assessment can be conducted to evaluate what your community forest program can currently supply to those customers, or if there are specific activities that will first need to be implemented to meet customers’ demands.
### Section 2: Getting Started

#### FSC Principles & Criteria (SLIMF)

| Requirement                                                                 | Currently meeting standard? | Comments                                                                 | Recommended Activities for Action Plan |
|----------------------------------------------------------------------------|[-----------------------------|-------------------------------------------------------------------------|----------------------------------------|
| P4 Forest management operations shall maintain or enhance the long-term social and economic well-being of forest workers and local communities. | No                          | see Criteria 4.2                                                         |                                         |
| C4.1. The communities within, or adjacent to, the forest management area should be given opportunities for employment, training, and other services. | Yes                         | all employees are local and training opportunities will be provided       | on-going training, develop a system to keep track of employee training gis          |
| C4.2. Forest management should meet or exceed all applicable laws and/or regulations covering health and safety of employees and their families. | No                          | don't know specific health and safety laws yet                           | research regulations on health & safety, update employee contracts as needed, develop health & safety guidelines. |

#### FSC Group Management

| Requirement                                                                 | Currently meeting standard? | Comments                                                                 | Recommended Activities for Action Plan |
|----------------------------------------------------------------------------|[-----------------------------|-------------------------------------------------------------------------|----------------------------------------|
| 3.2 The Group entity’s procedures shall be sufficient to establish an efficient internal control system ensuring that all members are fulfilling applicable requirements. | No                          | not all members have been monitored                                     | assess who still needs to be monitored and contact members for monitoring event   |
| 3.3 The Group entity shall define the personnel responsible for each procedure together with the qualifications or training measures required for its implementation. | Yes                         | all responsibilities for group management have been assigned            | on-going reporting to ensure responsibilities are being fulfilled                |

| Table 2.1: Example Gap Assessment Worksheet |
The latest version of these FSC indicators can be found on the FSC website (www.fsc.org) or by contacting the FSC national office in your country (if there is one) or a certification body (CB) that operates in your region. You will also want to check to see if there are specific national or regional FSC standards that apply to your program. There are currently 21 nations with one or more national (or regional) standards, but this number is expected to grow in the future (see Table 2.2). If there are no national standards, the CBs that operate in your region will have the relevant national indicators that they developed.

Table 2.2: FSC Approved Forest Stewardship Regional and National Standards (July 2010)

<table>
<thead>
<tr>
<th>Country</th>
<th>Standard Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolivia</td>
<td>Brazil nuts and general forest</td>
</tr>
<tr>
<td></td>
<td>management</td>
</tr>
<tr>
<td>Brazil</td>
<td>for SLIMF operations</td>
</tr>
<tr>
<td>Brazil</td>
<td>for Terra Firme forests</td>
</tr>
<tr>
<td>Cameroon</td>
<td>for community forests</td>
</tr>
<tr>
<td>Canada</td>
<td>for different regions</td>
</tr>
<tr>
<td>Chile</td>
<td>for plantations and for natural</td>
</tr>
<tr>
<td></td>
<td>forests</td>
</tr>
<tr>
<td>Columbia</td>
<td>for different non-timber forest</td>
</tr>
<tr>
<td></td>
<td>products and for forest management</td>
</tr>
<tr>
<td>Czech Republic</td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
<td></td>
</tr>
<tr>
<td>Finland</td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td></td>
</tr>
<tr>
<td>Luxembourg</td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td></td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td></td>
</tr>
<tr>
<td>Peru</td>
<td>for Brazil nuts and general forest</td>
</tr>
<tr>
<td></td>
<td>management</td>
</tr>
<tr>
<td>Russia</td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td></td>
</tr>
<tr>
<td>United Kingdom</td>
<td></td>
</tr>
<tr>
<td>United States</td>
<td></td>
</tr>
</tbody>
</table>
How do you create an Action Plan?

After you have completed a Gap Assessment, you will likely have a long list of activities that will need to be implemented. One way to organize planning activities is to create a table similar to Table 2.3. Activities can then be organized by topic, scope or other factors and tracked easily throughout the year. As we will discuss in more detail in Section 3, assigning roles and responsibilities is an important part of group management. The Action Plan can have a column for identifying who will be responsible, and can include another to define who will be following up to check when the action is completed. Program budgets can also be developed at this time to ensure that funding is reserved for implementing activities as planned (see Chapter 21).
### Table 2.3: Example Action Plan Worksheet

<table>
<thead>
<tr>
<th>Activity</th>
<th>Priority</th>
<th>Person Responsible (initials)</th>
<th>Action Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop annual working plan and budget</td>
<td>high</td>
<td>U.</td>
<td>yes</td>
</tr>
<tr>
<td>Training needs assessment</td>
<td>medium</td>
<td>A.</td>
<td>yes</td>
</tr>
<tr>
<td>Permanent sample plots monitoring</td>
<td>medium</td>
<td>M.</td>
<td>no</td>
</tr>
<tr>
<td>Forest inventory</td>
<td>medium</td>
<td>L.</td>
<td>yes</td>
</tr>
<tr>
<td>Growth and timber supply model</td>
<td>low</td>
<td>U.</td>
<td>no</td>
</tr>
<tr>
<td>Social survey</td>
<td>medium</td>
<td>A.</td>
<td>no</td>
</tr>
<tr>
<td>Worker safety procedures</td>
<td>medium</td>
<td>U.</td>
<td>no</td>
</tr>
<tr>
<td>Marketing plan and budget</td>
<td>high</td>
<td>U.</td>
<td>no</td>
</tr>
</tbody>
</table>

Schedule Year 1

<table>
<thead>
<tr>
<th>Activity</th>
<th>Dec</th>
<th>Nov</th>
<th>Oct</th>
<th>Sep</th>
<th>Aug</th>
<th>Jul</th>
<th>Jun</th>
<th>May</th>
<th>Apr</th>
<th>Mar</th>
<th>Feb</th>
<th>Jan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop annual working plan and budget</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Training needs assessment</td>
<td>yes</td>
<td>yes</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Permanent sample plots monitoring</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Forest inventory</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Growth and timber supply model</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Social survey</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Worker safety procedures</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Marketing plan and budget</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
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</tr>
</tbody>
</table>
Before you begin a community agroforest program, it is important to have an understanding of the context in which you are working. A preliminary survey can be used to help you understand what the current situation is, also known as your baseline, in regards to local forest practices, regulations, markets and institutions. This information can help you decide if FSC certification will be helpful in your context, and if it will help you achieve the vision and objectives you outlined for the program. The information will also help you develop a strategy for how to work toward FSC certification—where to begin, who to partner with, and what the key challenges will be along the way. While collecting information for the preliminary survey, you can also begin building relationships with local farmers, local leaders, local wood businesses, organizations and government officials that may lead to beneficial partnerships in the future.

At the end of the preliminary survey you should be able to answer the following questions:

- Should we engage in FSC certification of community forests in this region?
- If so, where should the program begin?
- Who should we work with?
During the preliminary survey you will need to collect information from a number of different sources. You can use techniques such as interviews in person, by phone or by email, field surveys and a review of secondary literature such as reports, websites, maps and books. Information should be collected on each of the communities or regions being considered for the program. The information you gather can feed into the development of your Gap Assessment and Certification Action Plan (Chapter 3), your Forest Management Plan (Section 4) and your business management (Section 5).
Key outputs of the preliminary survey are:

- Map of the region being considered for the community forest program, with general topography and administrative boundaries (like district boundaries) marked. It is also good to have roads and village locations on the map.

- General information about what tree species are grown in the area, the abundance of each species, and current forest management practices (both good and bad). You will also want to find out how each species is being used by farmers, i.e. what role it plays in local livelihood strategies.

- General information about what timber species are being sold in the region, approximate volumes being traded, supply chain maps with information on the buyers and local intermediaries like sawmills and wood traders in the region, along with current timber prices. Try to identify which species are sold to export markets, which are sold to domestic, and which are sold to both. You should find out how farmers sell trees and how prices are determined.

- List of local government forestry offices and the permits and regulations relevant to private forest management, legal harvest and transport of timber in the region. This should include information on how to obtain needed permits.

- Description of any problems related to illegal logging or encroachment onto protected areas. Description of any problems related to land tenure conflicts.

- List of relevant organizations that are active in the region, and relevant programs that may relate to the community forest program that you are planning.

- List of communities who have expressed interest in joining the community forest program, with an assessment of how likely they are to work well as a group.

- List of communities with large amounts of timber, and general estimates of standing stock in a community.
• Information on the local climate, tree growth rates, pests and diseases related to the trees, environmental concerns and areas of high social value.

• The role of trees and forest management in local livelihood strategies, and information on demographics such as population size, density, average annual income levels, average level of education, literacy rates, common occupations, ethnicity, etc.

• General information on current levels of infrastructure in the region, in terms of accessibility (by road or boat) and others such as access to electricity, running water, etc.

A preliminary survey may take several months to complete, depending on the size of the area being considered, the different cultures and political regions involved, and how familiar you already are with the above information. If you are completely new to an area, you will likely need to assemble a team of researchers with complementary sets of skills related to forest management, social and environmental issues. Hiring professionals who have experience working in the region is strongly recommended. You can also learn a great deal through working with local experts and leaders.
Textbox 2.1: Red Flags that a Community Forest Program may not be Appropriate

It is possible that after conducting the preliminary survey, a community agroforest program may not be appropriate for a particular community. Below is a list of possible red flags that can be early warning signs. While these are not barriers, program managers should be aware of the additional challenges and address them early.

- Community leaders and/or farmers are not interested in supporting a community forest program.
- Another program or agency is active in the community, but does not appear to be a good partner to collaborate with and does not want any other organizations to have programs there.
- Community leaders or farmers are not able to commit the time required to develop a community forest program.
- Community has a history of mistrust, in-fighting, and “scape-goating” of groups within the community.
- Community has a history of failed attempts at working together.
- There is no market-place demand for FSC wood, or for the species that the communities are growing.
- Volumes of standing stock in the community are very low.
- Community has never grown the trees of interest to your program.
- Community is currently pre-occupied with other more urgent issues.
- Community is not easily accessible in terms of wood transport.
- Government policies and regulations limit the ability of the community to legally organize and sell timber as part of a group.
1. Assessing environmental conditions

Information on the climate, topography, soils and ecology of the area will help you understand the growing conditions for timber and identify environmental limitations to a successful community agroforest program. For example, steep slopes, rocky outcrops, poor soil and no water sources may lead to slow growing trees. An area that experiences frequent insect outbreaks, forest fires, or flooding may also lead to valuable timber trees being frequently lost.

The following data should be collected to understand the environmental and growing conditions for trees in the region:

- Climate and rainfall patterns
- Types of forests present
- Rare and endangered plant and animal species present
- Topography
- Soil type, fertility and erodibility
- Hydrology map (of rivers and streams)
- List of common natural disasters
- List of common pests or diseases related to the forests or tree species grown
- Ecological history of the tree species of interest (native or introduced? If introduced, when?)
- Any problems with invasive plant species in the region
- Existing forest areas (reserve, riparian, secondary etc.)
How to get information:

Information on the general environmental factors can be gathered from a number of sources including the local or district government offices specializing in forest planning, city planning, or land/water management. There may also be a number of universities, NGOs or other organizations interested in forest conservation or natural resource management in the area that can be a good source of information. It is best to begin with a good map that has political boundaries, roads, water bodies and topography of the region. Soil maps are also commonly available in government forestry or agriculture offices. Site specific information can be collected though direct observation when you visit each community. Where reports are not available, information can be gathered through interviews with local experts, leaders and forest managers.

Environmental Conditions in Java

On the island of Java there are many different climates and rainfall patterns. Mahogany grows well in the southern portion of the island where there is higher rainfall. Teak grows well in the central and eastern portions of the island that are drier and have more marginal lands. Although farmers in each region may grow both teak and mahogany, the distribution of trees is influenced by what grows well in their climate.
2. Social and economic conditions

It is important to consider the social and economic conditions of an area when deciding whether or not a community forestry program can benefit the local people and be logistically possible to implement. Social and economic considerations also must be incorporated into the design and approach of your program. Key social and economic aspects that are important to consider are as follows:

**General demographic and political information**

It is helpful to obtain a political map of the region so that you can know where political boundaries occur, and where officially recognized villages or settlements are located. Such maps often depict roads and access routes for villages. This is important to know since wood will need to be transported out of a village to regional factories or ports, and poor or highly degraded access routes may make this difficult in some seasons.

Most regional governments will also have demographic information for the region you are interested in. Demographic information includes population size, density, average annual income levels, employment, average level of education or literacy rates, etc. It may also include contextual information on where schools or hospitals are located and what level of services, such as electricity and running water, are provided to different communities.

If this information is not available from the government, you can gather it yourself through direct observation when you are in the villages or by asking local leaders.

**Social aspects of tree management**

- Which trees do people commonly grow on their land and why?
- How are the trees used?
- What are the preferred timber tree species?
- Why do farmers prefer one species over another?
All of these questions are important to understanding the social and cultural issues surrounding tree management in private plots. By asking simple questions such as those above to households you interview, you will be able to understand where tree management practices are currently consistent and where they differ across households, villages or regions (depending on the scope of your project). You’ll be able to understand the local objectives and logic behind the tree management so that you can better explain new approaches and ensure that changes you are recommending do not have unintended consequences that undermine current livelihood strategies.

Livelihood strategy

What is the primary way that households provide for themselves? How do they get their main proteins, vitamins and carbohydrates? Do they buy food or grow it themselves? Do they rely on livestock?

Often livelihood strategies will also involve gender-specific or age-specific roles within a household. For example, the women may be expected to manage the agriculture while the men work outside the home for income and take care of the livestock. Or young adults may work in town for wages, while the older parents work the farm for food. It is important to understand what the current roles of these groups are so that you target the appropriate people in each household for the program.

Livelihood strategies may also be seasonal in nature. For example, if a village depends heavily on rice as their main staple food, then people may not be available to participate in community forest activities during the months of rice planting or harvest. The same may be true for corn or maize.

Similarly, if the people you work with are largely subsistence farmers, meaning they live primarily on what they grow themselves, then business management and planning may be especially new and difficult for them, so you should plan to spend a lot of time on this, or to provide expert support to them in this regard. However, if the community mostly grows cash crops and is very familiar with bargaining and markets, then they may be more adept at understanding the business aspects of forestry.
It is also important to understand what role the trees play in their livelihoods. Often different trees will be grown for different purposes, and some trees may be multi-purpose. For example, in Java mahogany is grown primarily for sale, but also to help reduce erosion on steep slopes. In India, sheesham (*Dalbergia* species) is grown primarily for sale, but also to mark land boundaries. Knowing the role that the trees play in land management will help you take social issues into consideration when doing your Environmental and Social Impact Assessment (Chapter 18) and developing the Forest Management Plan (Section 4). You should always try to develop management recommendations that compliment, not undermine, the current role that trees play in farmers’ livelihood strategies.

**Land tenure**

It is important to find out how land tenure is organized in the villages you are considering working with, and what legal proof of land tenure is available for the land on which the forests are located. Some good questions to investigate are:

- Do individual households manage one plot or multiple plots? If multiple, where are these different plots located and why? Are the different plots used for different purposes?
- Are there certain sections of the community dedicated to growing trees? If so, how are these areas managed?
- Are plots often bought and sold in a village, or primarily handed down through families?
- How are land transfers documented?
- Whose name is the land usually in?
- What types of land tenure conflicts or disagreements have occurred in the village? How were these dealt with?
- Do households have legal proof of land tenure? If not, are there customary proofs of land tenure that are used?
- Are there communal plots? If so, how are management decisions made for the plot? Who is involved and how does each person involved benefit?
- Do people have ownership over the land? Just the right to use the land? Or only the use of trees?
These questions can be answered through interviews with local leaders, government officials and households. Land tenure is a very important issue under FSC and it will be important to include in your group rules later on what proof of land tenure is acceptable, and how land tenure conflicts will be resolved. It makes sense to resolve land tenure conflicts in ways that are familiar and customary for the communities you are working with.

The Challenge of Providing Proof of Land Ownership

In some regions of the world, it is very difficult for farmers to prove they have user rights or ownership of the land where they have their small agroforests. This can be a challenge when developing a community forest program in a region, as FSC Principle 2 requires proof of land tenure. When TFT was supporting the cooperative KHJL (Koperasi Hutan Jaya Lestari) in Indonesia in 2004, the group tackled this challenge in a unique way. In Indonesia, the most official type of proof for land ownership for farmers is a letter of ownership (girik). To obtain a girik, farmers are required to pay a substantial fee, plus go through the bureaucratic process, often requiring a very long time to complete. Only the wealthy and well-connected were usually able to secure such a document for their land. Instead, most villagers rely on the property tax receipts from the property tax they pay to the district to show proof of ownership over time. Due to the commonly available property tax receipts, TFT and KHJL decided to make photocopies of this as their required “proof of land tenure” for each agroforest owner in the cooperative. The certification body in 2005 agreed that this was sufficient proof.
Gender and age specific roles

As mentioned above, it is important to understand if the community has any gender or age specific roles related to their tree and forest management. For example, in Kenya most women of certain tribes were responsible for managing fruit or decorative trees, usually planted near the home, while men managed the trees for firewood and sale, usually planted in the fields. Older couples tended to have more trees than younger ones, since trees involved less work than crops, but crops make more money for those who have the energy to grow them. Also in Kenya, men were responsible for taking care of grazing cattle, so they used to tend and over-harvest trees for fodder which used by women to produce fruits and/or firewood. With this information you can make informed decisions about who to include in focus groups, who to target for involvement in the program and how to avoid conflicts and strengthen ownership of all group members to support the program.

Education and communication

It is important to know the level of literacy and education in the communities where you work so that you can create appropriate trainings and training material. Perhaps in some areas people like to learn and get their news through meetings and radio, whereas in others they would prefer to have booklets or posters to read. You should also consider standard ways the community already has for communicating with one another and starting new programs. Perhaps they rely on the Head of Village to call meetings of all households for a new program, or perhaps it is more customary to attend a monthly village meeting. Perhaps they all attend the same mosque or church, and it is important to ask for help from religious leaders. As part of your survey, ask people how other programs have been initiated, and what they would advise you do in starting a community forestry program in their village.

Social structure (i.e. social capital)

You should try to find out what organizations are active in the area, and what social groups most people are part of. For example, in many countries almost everyone in a village will attend a certain church or mosque. Religious leaders may be important local leaders that you can reach out to for involvement. Sometimes there is another organization who is already doing a project related to forestry, the environment, health or infrastructure, and you could potentially partner with them. You can also learn if people like the way this program is organized, and then use their answers to plan how yours will be organized.
Try to stay away from organizations that are polarizing. For example, if there are rival political groups, religions or ethnic groups in a region, it is important that you don’t accidently be seen as favoring one over another. Make sure that you talk to a broad swath of people so that you are careful not to accidentally contribute to pre-existing conflicts with your program. That said, if you do identify local organizations that are working with the community in a positive way, you should reach out to them to discuss the program you are considering and get their perspective. These organizations can provide excellent insight into the social structure of the community, and what approaches may work best. Based on the goals and values of the local organizations, some of them may become important partners in the implementation of the community forest program.

**Case Study: KAM-KTI**

Koperasi Alas Mandiri (KAM) cooperative partnered with the private timber company PT Kutai Timber (KTI), forming KAM-KTI in 2002 with the mutual goal of supplying FSC certified Sendon and Balsa timber from community forest groups located in East Java. When the cooperative first began, they approached the religious leaders (khabib) living in the two districts of Krucil and Tiris to begin discussions about how a community forest program might work in the region. The managers of KAM-KTI worked closely with the khabib to decide what services the cooperative might provide, such as higher prices for wood, and access to short term loans to members. Even after the group organization structure was established, the khabib reminded active advisors.

**Religion**

Religion also plays a huge role in the structure and culture of a community. It is important that you are aware of what religions are present, major holidays and if tree management is at all related to religious practices. For example, in Indonesia many farmers will want to harvest their trees a month or two before the largest Muslim holiday, Eid ul Fitri, so that they have spending money to buy gifts for their family. In Vietnam, farmers do the same to prepare for Tet, the Vietnamese New Year celebration. Some cultures have months or seasons that they believe are best for marriage and tree harvests may go up at this time to provide money to pay for
the weddings. It is also important to note that different groups within a community may have different values to the same trees. For example, some trees might be perceived by one group of people as sacred trees or home to gods, but for other neighboring groups the tree is just used as fuel wood.

**Assessing interest**

Another important thing to assess is whether or not households in the communities are interested in the program you are proposing. You can assess this by briefly describing the broad vision and objectives of the program and getting their thoughts or feedback on whether these are important to them. Are they interested in working together to sell their wood to factories, possibly at a higher price? Are they interested in learning about forest management techniques that protect the environment? Are there certain questions they’ve always wondered about, or certain concerns related to forests that they always wished they could improve? As much as possible, you should conclude all of your interviews or group discussions by briefly explaining to them the program you are considering and asking for their frank and open feedback. You should also always ask them if they have any questions for you—the questions they ask you can provide as much insight as the questions you ask others.

Information on the social and economic factors will be useful later when the community is deciding on the group structure (Chapter 6), developing group rules and procedures (Chapter 7) and beginning forest management trainings (Section 4).

How to get social and economic information:

- Household interviews, formal and informal
- Walks through farmers’ land coupled with informal interviews with the owner
- Focus group discussions
- Open community meetings
- Local leader interviews
- Government official interviews
- Direct observation
• Participatory observation
• Reports from other programs in the same area
• Government maps or demographic surveys

Interviews or group discussions with village government and community leaders will likely give you the fastest picture of the socio-economic aspects of a community. These conversations should be held at many levels from sub-village, village, district, regency and even provincial level, and are also important for building relationships with officials and collecting information on the permitting and legality process for timber harvesting in the region (Chapter 21). Interviews with individual households are also recommended to cross-check information provided by government officials and village leaders.

When interviewing households, you should not interfere with their routine activities and always try to perform interviews in the native language of the local people, if possible.

Reviewing secondary literature on the social structure of the villages or meeting with local academics who have knowledge and experience conducting research in the region can strengthen the information collected through interviews with the community.
3. Current forestry practices

Understanding how farmers in each community are currently growing and managing their timber species is an important component when beginning a community agroforest program. It is also important to understand why farmers are growing the species that they grow, and using the forestry practices that they currently use. This information will give you an idea of what techniques are currently working for farmers in the region, and what their management goals are. This local knowledge can then be combined with research on best management practices and forest ecosystem management (silviculture) techniques from local universities or research institutes, to develop recommended best management practices for the communities in which you work.

When evaluating current forestry techniques, it is important to consider all aspects of forest management, including social, environmental and economic aspects before you make a judgment as to whether a current practice is good or needs improvement. FSC will be looking for justification as to why your group is allowing or encouraging certain practices, and by doing this research and evaluating what you learn, you will be prepared to answer any questions that FSC assessors may raise.

You will likely discover that there are some forestry practices that are widely used by most households, while there are others that are only sparsely used or vary greatly between households. Try to be flexible in allowing a variety of practices, as long as these all meet the FSC standard. Focus initially on changing practices that do not meet the FSC standard—and in such cases try to recommend alternative practices that are affordable, can be implemented, are socially acceptable and have been proven to work in that region.

In general, the best way to gather data on forest practices is by touring community agroforest plots with the people managing the plots, and asking them questions as you directly observe the stand. Households should be sampled as randomly as possible in the beginning, but you should also ask around to find out if there are any individuals or households that others go to for advice and guidance on forest management. If there are, be sure to include these informal leaders in your research.
Key questions and areas to investigate are as follows:

**Tree species growing and planting practices**

Through direct observation and interviews in forest stands, you can find out what species the farmer has growing in their plot and why. Find out if the species grew there naturally or if it was planted. You can also begin to get a feel for whether or not there are certain species that dominate the stand. Be sure to identify any invasive species in the stand, and also look for any endangered or threatened species.

**Planting practices and patterns**

Observe the layout, or planting pattern of the trees on the plot. Are they evenly spaced? Are they in straight lines? Are they grouped or in a pattern of some sort such as along the boundary of the plot? Why are they planted in that pattern?

Look to see if the patterns of trees are different near water bodies such as streams, rivers, springs, lakes or swamps. Also check to see if they are different along steep slopes. Both of these are areas that should be considered as sensitive and have special management to minimize soil erosion. Is the farmer aware of that, and do they do anything to try to minimize soil erosion in these areas? Is soil erosion or flooding a problem that has occurred on their land?

If the trees are planted, you should learn about the household’s planting practices. Some good questions to ask are:

- Do they plant seeds or seedlings?
- Did they buy seeds and start their own nurseries to produce seedlings?
- Where did they get the seeds or seedlings from?
- How much did it cost? How many did they plant and in which years?
- What season did they plant the trees in?
- Did they clear the plot before they planted the seedlings?
- How large was the hole they dug for the seedlings?
• Did they try to space the trees in any particular pattern?

• What was the mortality rate of the seedlings they planted?

• If many seedlings died, do they know why?

• Did they have to plant more seedlings the second year to replace the ones that died the first year?

Also, pay attention to whether or not the trees are regularly interplanted with any other crops. Sometimes trees may be planted as shade to certain understory crops, or to provide structure for vine crops. Some tree species may be better suited to interplanting than others.

Ask the farmer to explain in as much detail as possible how they planted the seedlings, what tools they used, how big the hole was, if they watered it or used any fertilizer, etc. Look for trends between households, and especially note if certain techniques appear to be working better than others. This information can help you document current practices and identify areas that can be improved.

Why are Teak Trees Grown Over There?

Trees may be planted in a group for a number of reasons. One reason may be that crops do not grow well under them, as is the case with teak. Another reason may be for convenience when planting.

Teak trees that are planted close together are less likely to have low branches, and will most likely have straighter trunks, which results in higher timber quality. However, as they get older thinning will have to take place so that the remaining trees can grow quickly to a harvestable size.

For teak trees that are along borders or spaced far apart, the opposite is true—more pruning will be necessary when they are young so that the trunks do not split and they don’t have too many low branches, but when they’re older less thinning will be necessary.
3. Tree maintenance or tending

It is also important to ask the farmers to explain how they maintain the trees they have planted or if they tend to any naturally occurring trees in their agroforests. Some good questions to ask are:

- Do the households give the trees any sort of weeding, pruning and thinning, or other form of maintenance?
- Do they use fertilizers? If so, what kind?
- Do they do anything to protect their trees from pests or diseases, such as pesticides or manual removal?
- Do they use fire in their forestry activities?
- Is fire control ever a problem? If so, what do they do to prevent fire?

If they do any of the activities above, find out how often they are performed and if possible ask them to demonstrate how they do the activity.

In general, healthy forests do not typically need pesticides and chemical fertilizers. The use of appropriate species and provenances to meet prevailing environmental conditions, coupled with good silviculture, is the key to a good forest management. Application of pesticides is usually expensive and threatens the users’ and environmental health. If the farmers are using chemicals, help them to find alternatives through Integrated Pest Management (see Chapter 17) striving to minimize the use of chemicals. If smallholders are using chemical fertilizers or pesticides be sure to note the name, quantity and frequency of their use on the plot. This is required by FSC. You can also make sure that you do not use those that are on the FSC list of banned chemicals (Appendix 11). If the farmers are not practicing a key treatment that is important for their stand, such as thinning or pruning, you should try to find out why. This will help you develop appropriate solutions to improve practices through your project.
4. Harvesting

Try to attend some examples of timber harvesting on farmers’ plots. You can usually arrange some visits through local wood buyers or sawmills. Pay

- Do the harvesters have a plan ahead of time regarding which trees they will harvest and in what order?
- How large are the trees that they are felling? Is there a minimum or maximum diameter that must be respected?
- How do they select the trees to fell?
- Do they practice directional felling? (If so, what do they do to control where the tree falls?)
- What tools are used to harvest trees (chainsaw, saw, axe or other?) Are they trained to use these tools?
- Do they wear safety gear such as helmet, boots, or high visibility vests?
- Do they clear the area of any unnecessary people, animals or plants (e.x. vines or other undergrowth near the stem) before harvest?
- Do they limit harvesting in buffer zones near water ways or on steep slopes? Are they aware of the related legal requirements?
- How high on the tree do they make the cut?
- Do they do anything to limit damage to surrounding trees or crops?
- Are any oil, gas or other hazardous chemicals spilled on the ground when they harvest?
- How do they mark the logs—are there any markings made that will help to identify which plot it came from later? This will be important for your Chain of Custody (CoC) system later on (see Chapter 20).
- How do they move the logs from the place that they fell to the road?
• How do they load the logs onto the truck or other forms of transport?

• Do they hire local people to carry out the harvest, or do they use people from another region?

You can probably think of many other questions on your own, but the above ones will get you started and help you to evaluate how closely current harvesting techniques match the FSC Standard.

At this time, you may also ask community leaders and households for permission to visit their agroforests to measure a sample of the commercial timber which we will describe in Chapter 13.

How to get current forestry practice information:

• Direct observation

• Interviews with households or organizations working on forestry issues

• Visits to forest plots combined with interviews of the plot owners or user groups

4. Volume of commercial timber

An estimate of the volume of commercial timber at the local, regional or global level is important to know in order to understand the potential amount of timber a community can produce sustainably. This estimate will tell you if a community or a number of communities have enough timber to establish a viable wood trading business. In other words, if there is not a high enough volume of harvestable wood to pay the operational costs of a wood trading business, then the business will
not succeed in the short term without additional funding (see Section 5). Information on the volumes of commercial timber in each village will help you to prioritize communities to work with, and will later be used to calculate a sustainable harvest level (Chapter 14). The information that is important to gather related to volumes of timber is as follows:

- Estimated standing volume per village or sub-village
- Estimated growth rates per species and per age class
- Distribution of tree species and tree age classes
- Estimated tree densities
- Number of harvestable trees by village and for the region

**How to get information on commercial timber:**

You should begin by reviewing any studies or reports on the amount of wood growing in your region of interest, since it is possible that a survey of the volume of timber in a region has already been done by others. You can find these reports by visiting local forestry offices, or by asking local academics, community leaders or wood-related businesses. Unfortunately, this data is often out of date or inaccurate, so don’t rely on it as your only source of information.

Another way to get information on volumes of commercial timber is to interview local wood traders or wood buyers. Try to find out from them how much they buy on average (per week, per month or per year) and which villages they buy from. Also try to find out if they regularly deplete a certain area and then move to a different area, or if they tend to always buy from the same areas. This will give you an idea as to whether current harvest rates in the region are sustainable or not.

The best way to estimate the amount of commercial timber growing in an area is to do your own direct sampling and inventory. This will require you to decide on a sampling method and collect information on the number, species, diameter and height of the trees in a community. It is also helpful if you can learn the age of each tree that you
inventory, so that you can calculate growth rates for different species. A sample inventory can be used to assess not just the quantity of marketable trees in farmer’s agroforests but also the quality of the trees, and provide you other important information on the impacts of current forestry practices. Appendix 7 includes a guide on how to measure trees. For guidance on how to conduct a forest inventory see Chapter 13.

It is very important that your sample is truly random (see Chapter 8) for an example on how to randomly select agroforest plots to sample. Often village leaders or wood traders will be excited to show you specific plots or spots that have a large number of trees on them. However, these spots may not be typical of the village or region as a whole, and could give the impression that there is more wood available than what is actually there. You can visit these plots out of respect for the village leaders, but if they’re not randomly chosen for sampling, data from these plots should not be entered into your inventory.

**Textbox 2.2: Sample Timber Inventory for KOSTAJASA**

There are a number of ways to conduct a preliminary inventory of commercial timber. For TFT’s KOSTAJASA project, a list of 114 sub-villages was stratified based on location, and 25 sub-villages were randomly chosen. The teams then began a full census of all the mahogany trees, the target species, with diameters 20 cm or greater for each of the chosen sub-villages. The diameter at breast height (DBH) and the commercial height (height to first major branch) for each tree was measured and recorded. This information was used to calculate each tree's volume. Trees in each of the selected sub-village were categorized into two size-classes: 1) trees with diameter 20-30 cm, 2) trees with diameters greater than 30 cm. This information was then used to estimate the total number of mahogany trees and their total commercial value for each of the 114 sub-villages. From this estimate, TFT staff were able to identify which villages had high volumes of timber ready to be harvested. This information was one of the considerations for deciding which communities should be part of the pilot group for the KOSTAJASA FSC certification program.
5. Current timber market

It is important to gather information on the current timber market so that you can learn the following:

- Is there a demand for FSC certified wood in your region?
- If so, which companies or types of industries are interested in buying this wood?
- How does current supply compare to current demand?
- Which timber species are currently in demand?
- Who is buying these species and where?
- What are the supply chain steps or nodes between the forest owners and the buyers of FSC wood?
- What form of wood is being sold at each node in the supply chain?
- What volumes of wood are being traded at each node in the supply chain?
- What prices are being paid for the wood at each node in the supply chain?
- How do households sell their wood?
- What issues are important to households when selling their wood?
This information is important to have when planning your marketing strategy (see Chapter 24) as well as the economic aspects of your program. With this information, you will be able to know who is buying what kind of wood, where the demand is, how big the demand is (in volumes) and what prices you can expect. It will give you insight into who your future competitors may be, as well as introduce you to local people that you might want to partner with. This process will also help you when making decisions about what form of wood (i.e. round logs or sawn timber) your program will sell, and what kind of capital you will need to invest in (such as trucks, land for log yards, sawmills, etc.). Throughout the supply chain mapping process you can also gather information on costs of doing business.

Be aware that some of the questions you may want to ask could be sensitive business information, and you may need to be creative in finding ways to get accurate answers. Also be aware that the wood traders or factories you interview may not give you accurate information if they think that you could be a potential supplier, customer or competitor in the future. For example, a wood buyer may quote prices as much lower than what they actually pay, if they hope to buy wood from you in the future. A wood trader may also exaggerate the volumes they trade in if they think you may want to buy from them in the future.

Be careful to explain that you are trying to get accurate numbers, and as much as possible ask for actual data related to a specific time period. Try to triangulate the data you receive by asking the same questions in many different ways to different parties. Most likely this will give you a range of numbers, as opposed to ever giving you one exact number. A range is more appropriate since all of this information will fluctuate somewhat over time.

As you do this research, you may find that volumes, costs and prices vary across regions. Try to find out the reasons these are varying, and take this into account when developing your program.

One very useful output of your research is a map of the supply chain. A supply chain map can be a useful tool for you to plan how and where to market your wood, and gain insight into the steps between farmers and export markets demanding FSC wood. This is important to know since FSC requires that each step has a system in place to track the wood, called Chain of Custody (Chapter 20). This map will show you how wood from community forests is processed as it is transformed from a tree in the forest, to a log or sawn timber, to a number of wood products such as paper, plywood, furniture or other products. The supply chain can be very long and complicated, and mapping the supply chain can often be the most challenging part of the preliminary assessment.
How to get information:

The information on the local timber supply chain and markets can be found from a variety of sources. Wood exporters and government officials may provide valuable information about the current supply chain and trends in the wood market. The best source of information however, is interviews with wood traders, sawmill and logyard owners, and farmers. If possible, you may be able to gather information from these sources by visiting their place of business and directly observing business activities. It is important to note that you do not need to visit every sawmill and timber buyer in the region, but it is a good idea to gather information from a broad sample of individuals at each step in the chain of production to cross reference data and have a good estimate of the timber volume capacity and market demand. If available, contact the national and the international FSC offices and ask for support for networking.

Questions to consider for likely supply chain nodes:

In the next few pages are examples of questions to ask during an interview or during participant observation. For each node in the supply chain that you interview, be sure to note their name and location, and be sure to check whether or not they are managing multiple locations or businesses related to wood. Having accurate records will be invaluable when you are developing a marketing strategy in the future.
Textbox 2.3: Questions for Sawmill Owners

Sawmills may be large or small in size. The example questions below are provided just to give you an idea of the types of questions to ask. You should always adapt them to your specific situation.

- Who do you sell to, and what types of products do you sell?
- Which timber species do you buy and sell?
- Which products or species are in the highest and lowest demand and why?
- Do you ever get requests for FSC certified products?
- Do you ever produce FSC certified products or are you FSC Chain of Custody certified?
  - o If yes, how much of your business is this?
- Is there currently any FSC wood available to you?
  - o If yes, where do you get the FSC wood from?
  - o If no, would you want to buy FSC wood if it was available? Why or why not?
- What machines do you use at this sawmill?
- How many people do you employ?
- Do you operate year-round?
- How much do you produce per month on average? (You can also ask this per species or per year, per day, etc.)
- How much do you buy per month on average? (You can also ask this per species)
- What is your recovery rate? (Note that you can also calculate this with answers from the above questions.)
- What form is the wood in when you buy it?
- Do you have any quality or size requirements for the wood you buy?
  - o If yes, what are they?
- Who do you buy the wood from?
  - o Do they deliver it to you, or do you pick it up?
  - o Are these permanent suppliers, or do they fluctuate?
  - o Where are they located? Could we visit them?
  - o Do you check the wood before you buy it? (Ask if you can accompany them on one of these buying activities).
- Is there a minimum and maximum diameter of trees the sawmill will process?
- What kind of legal permits or licenses do you need to run your sawmill?
- What is the administrative system for tracking timber at each sawmill?
Textbox 2.4: Questions to Ask Wood Traders

Often wood processing factories will be buying from either wood traders or sawmills. Below are some example questions for wood traders, which you should adapt to your situation as needed:

- Who are your main customers, or what types of buyers do you usually sell to?
- Do you ever get requests for FSC certified products?
- Do you ever produce FSC certified products or are you FSC Chain of Custody certified?
  - If yes, how much of your business is this?
- Is there currently any FSC wood available to you?
  - If yes, where do you get the FSC wood from?
  - If no, would you want to buy FSC wood if it was available? Why or why not?
- What wood species do you trade in?
  - Is there a difference in species bought by the export markets vs domestic?
  - On average, how much do you buy per species per month?
  - Where do you source these species from?
- In what form do you sell the wood?
- In what form do you buy the wood?
- Do you do any processing of the wood?
- What kind of capital or equipment is necessary to your work? (i.e. log yard land, warehouses, kiln facilities or other machinery, trucks, etc.)
- Who are your suppliers of wood (i.e. where do you get the wood from)?
  - Where are they located?
- Do you pick up the wood from anywhere?
- Do you deliver the wood to your customers, or do they come to you to pick it up?
- If you are transporting wood, what permits are necessary for this?
- How much does it cost to transport the wood (per truck or per certain volumes)?
- How many staff do you employ?
- What kinds of skills are necessary for your staff or workers?
- Do you have any system in your business for tracking the timber?
- What kind of information do you record on the timber that you buy and sell?
Textbox 2.5: Questions for Small Wood Traders and Loggers

When it comes to small wood traders and loggers there are a number of different ways the tasks of wood sales and harvesting may be carried out by different nodes in the supply chain. Small wood traders may operate independently, or they may be hired to work for a sawmill, larger wood trader, or factory. For timber harvesting some small wood traders have their own logging crew while, others will hire workers as needed after they have bought wood from a farmer or household. In other cases, the forest owners are responsible for hiring a logger or logging crew. It is important to understand as much as possible about who is responsible for each stage in the process, and how much this varies between wood traders or loggers. Examples of questions to ask include:

- Who do you sell to and what form is the wood in when you sell it?
- Who do you buy from and what form is the wood in when you buy it?
- How much do you usually sell the wood for?
  - How do each of the above factors affect the price?
- What species do you trade in?
- How much volume of each species do you usually buy per month?
- Do you operate year round? Are you permanent?
- How much do you usually pay for the wood? And what factors affect the price?
- Do you ever get requests for FSC certified products?
- Do you ever produce FSC certified products or are you FSC Chain of Custody certified? If yes, how much of your business is this?
- Is there currently any FSC wood available to you?
  - If yes, where do you get the FSC wood from?
  - If no, would you want to buy FSC wood if it was available? Why or why not?
- How do you find who you will buy the wood from? Do they contact you or do you contact them?
- Do you agree on a price before harvesting?
- Do you agree on the number of trees before harvesting?
- Are you responsible for paying for the harvesting, bringing the wood to the road and transport?
  - If so, how much do these activities usually cost?
- Where is your point of purchase and point of sale?
Textbox 2.6: Questions for Farmers and Households

The goal of your timber marketing research is always to be able to trace the supply chain back to the household that is growing and selling the trees. Some questions to ask are:

- Who do you usually sell your wood to?
- How do you negotiate price? What factors affect the price?
- Do you know what the current prices are for the tree species that you are growing?
  - If yes, what are they and how did you get this information?
- How do you decide when to sell?
  - Are there certain times of year that you are most likely to sell? If so, why?
- How do you decide which trees to sell?
  - Do the trees have to be a minimum size before you sell them?
  - Who in your household makes the decision to sell the wood?
  - Who makes the decision which trees to sell?
  - Who usually does the negotiating?
- Do you sell your wood as standing trees or logs?
- Do you negotiate price based on volume or tree size?
- Who is responsible for organizing the harvest and transport of the trees (the farmer or the buyer)?
- Do you know how much each of these activities cost?
- Which tree species do you usually sell?
- How often and how much do you usually sell at once?
- Are you usually approached by someone wanting to buy your wood, or do you need to approach them? Is it difficult to find someone to sell to?
- How long does it usually take between when you decide to sell, and when you actually receive the money? What about when the trees are actually harvested?
- Do you put any restrictions or requirements on how the trees are harvested?
  - If so, what are these?
- Do you need to get any sort of legal permits or licenses to sell your trees? Or permission from local government?
- Do you need to provide any proof to the buyer that the trees belong to you?
- Do you need to report your sale to anyone?
Mapping the supply chain

With the information gathered, you will be able to create a diagram map or flowchart of the supply chain, making notes on the relationships among supply chain nodes and the production capacity at each step in the chain.

A simplified supply chain diagram on the next page (Figure 2.3) shows how this information can be used to guide decision making for a community forest program. As you can see from the example, a supply chain diagram can illustrate dynamic relationships in both time and space. From the diagram we can see that Large Wood Trader ABC purchases sawnwood from 3 sawmills with varying capacities, and from Log Yard ABC that it owns located in City A. There are several small wood buyers, who sell to logyard or directly to sawmills. These small wood buyers purchase wood at different volumes from farmers in two different regions. A map of the supply chain can give community forest managers an idea of the capacity and current working relationships between farmers, wood traders, log yards, sawmills and big timber buyers. Information can be especially useful when combined with timber market information on the buying and selling prices of logs or wood at each step in the supply chain, and will be integral when you begin developing a market strategy for your community forest program (see Chapter 23).

The TFT Approach to Supply Chain Mapping

TFT works with leading global retailers and manufacturers to deliver products that respect the environment and improve people’s lives. TFT’s approach to supply chain mapping is to begin with a TFT member company, and then map their commodity supply chain back to its source. This top down method allows us to identify key social and environmental risks at each node in the supply chain and then work with businesses and communities to improve management and create a robust wood control system. Where smallholder agroforests are the main source of wood, we provide technical assistance to help community forest enterprises achieve FSC certification and become an economically viable business. In the end, it is a win-win situation in which businesses are linked to communities, each with the commitment and capacity to deliver responsible wood products.
Smallholder Agroforests (District A)
Logs 500 m3/month

Small Wood Buyer
Logs 170 m3/month

Log Yard X
City D
Logs 100 m3/month

Sawmill X
City A
3 machines
Sawnwood: 300 m3/month

Log Yard ABC
City A
Logs 800 m3/month

Sawmill Y
City B
8 machines
Sawnwood: 1,000 m3/month

Large Wood Trader ABC
City A
Sawnwood: 1,500 m3/month
Logs: 500 m3/month

Log Yard ABC
City A
Logs 100 m3/month

Small Wood Buyer
Logs 530 m3/month

Log Yard Y
City B
Logs 500 m3/month

Small Wood Buyer
Logs 520 m3/month

Log Yard Z
City D
Logs 300 m3/month

Small Wood Buyer
Logs 180 m3/month

Smallholder Agroforests (District B)
Logs 1,500 m3/month

Large Wood Buyer
Logs: 170 m3/month

Figure 2.3: Example of an agroforest timber supply chain map
6. Forest Legality

A key component of the preliminary survey is to gather information on the permits and regulations forest managers must follow to operate a community forest program in the region legally. This information will be useful to understand the requirements and costs for obtaining permits for harvesting and transporting timber in one region compared to another, and identify if there are local barriers or fines that would prevent a community forest program from being economically feasible. You can also find out about any environmental regulations related to land management, such as protection of water ways and slopes, regulations for rare plant or animal habitat, or protected areas in the region. Documenting that the community forest program has operated lawfully and has a system for remaining up to date on all new laws will be a requirement for FSC certification audit in the future (Chapter 25).

How to get information:

Information can be collected by interviewing individuals from the government offices that manage forests and wood trading in your region. In some areas, cities also have their own local forest policies and regulations. It is always best to ask several individuals from several government offices to ensure you have a thorough understanding of the permitting process before you begin harvesting timber.

Secondary information on local forestry policies can also be gathered from online sources or by asking local experts, like lawyers, academics or people who own wood businesses. Secondary information includes forest laws, policies or decrees. For example, there may be a local policy that restricts the harvest of specific tree species, or the government may say that only a legally registered business has the ability to sell timber.

Resources for Proving Timber Legality

TFT has developed legality checklists for European Timber Trade Federation for several countries:

- Brazil
- Cameroon
- China
- Gabon
- Indonesia
- Malaysia
- Republic of Congo-Brazzaville

Go to www.tft-forest.org for an updated list.

Several of the organizations that verify legality for FSC, such as the Rainforest Alliance, have their own wood legality standards for several countries online at www.rainforest-alliance.org
Some information can also be found by asking community members and local wood traders about the process they must go through to attain permits.

Questions to consider:

- What laws or regulations exist regarding land management as it relates to agroforests?
- What documents, permits or licenses are needed before you harvest and/or sell a tree?
- What documents, permits or licenses are needed to transport logs?
- Do you need additional documents, permits or licenses to transport sawn timber?
- Do you need additional documents, permits or licenses to transport wood to another region?
- Do you need additional documents, permits or licenses to transport wood to another country?
- What government offices are responsible for giving these permits or licenses?
- What is the process and costs of attaining these permits or licenses?
- What are the kinds of problems faced by forest managers in terms of legality?

On the next page is a table comparing the laws and licenses pertaining to wood production in three hypothetical regions. When deciding where to first begin a community forest program, the survey of the laws and license requirements can be used to decide where it may be easiest and most cost effective to establish a community forest program.
### Table 2.4: Laws and Licenses Pertaining to the Production of Community Forest Wood in Three Hypothetical Regions

<table>
<thead>
<tr>
<th>PROCESS</th>
<th>DISTRICT A</th>
<th>DISTRICT B</th>
<th>DISTRICT C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvesting Wood</td>
<td>Recommendation for tree harvesting</td>
<td>Harvesting License Letter</td>
<td>Wood Harvesting License Letter</td>
</tr>
<tr>
<td>Name of license</td>
<td>Head of Forestry and Farms Office</td>
<td>Sub-district Head Forestry Office</td>
<td>Head of Forestry and Farms Office</td>
</tr>
<tr>
<td>License publisher/regulator</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedure for issuing license</td>
<td>Involves three Institutions: • Village Head • Head of Sub-district Forestry Office • Head of Agriculture and Forestry Department</td>
<td>Involves three Institutions: • Head of Sub-district Forestry Office • Representative of Forestry and Farms Department • Wood Forestry Commission Team</td>
<td>Involves two Institutions: • Head of Sub-district Forestry Office • Representative of Forestry and Farms Department</td>
</tr>
<tr>
<td>Transporting Wood</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within the district</td>
<td>Requires tree cutting recommendation</td>
<td>Use village confirmation letter</td>
<td>Use local wood transport letter</td>
</tr>
<tr>
<td>Between districts</td>
<td>Use Wood Transport License</td>
<td>Use Timber Transport License</td>
<td>Use Wood Transport License</td>
</tr>
<tr>
<td>License publisher/regulator</td>
<td>Department of Forestry and Farms District A</td>
<td>Department of Forestry and Farms District B</td>
<td>Department of Forestry and Farms District C</td>
</tr>
<tr>
<td>Obligations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obligation for replanting</td>
<td>Must replant twice the number of trees cut</td>
<td>No specific rule, must replant</td>
<td>Must replant more than harvested</td>
</tr>
<tr>
<td>Official fees</td>
<td>None</td>
<td>Fee of $40/m³</td>
<td>Wood Harvesting License fee $100 Local transport letter fee $50</td>
</tr>
</tbody>
</table>

Using the information collected during the preliminary survey, you can easily complete this table to compare the licensing process, and costs of operating a community forest program in 3 different regions. For example, this table tells you that any community forest program in ‘District A’ will require documents from 3 offices, but will not require substantial fees, while a community forest program in ‘District C’ will only require documents from 2 office, but will require high fees for attaining a permit.
Legality checklists for international trade

For community forest programs that will be selling timber on international markets the preliminary survey should also include a survey of international trade laws. In recent years, the U.S. and the E.U. have strengthened trade policies to avoid importing illegally harvested wood. Even as this guide is being written, the government of Australia is also working to pass legislation to limit imports of illegal timber. While it is still uncertain how community forest programs will be affected, achieving FSC certification is seen by many as a good way to demonstrate that community forest programs are taking legality seriously.

Summary of current legislations:

- The U.S. Lacy Act was amended in 2008 to prohibit the trade, and transport, of plants or plant products, including timber, that are illegally sourced from any U.S. state or foreign country. This new amendment requires importers to verify the origin and species name of all wood in their products.

- The E.U. Forest Law Enforcement, Governance and Trade (FLEGT) licensing system prohibits the sale of timber logged illegally under the rules of the country of origin. In addition, the companies importing timber into the E.U. must follow ‘due diligence’ systems to minimize the risk of importing illegal timber into the E.U. The E.U. is entering into voluntary partnership agreements with several timber exporting countries to define what legal timber is, ensuring that forest law requirements are applicable, consistent, understandable and enforceable and reflect a combination of the social, economic and environmental objectives of the partner country. The partnership will develop a legality assurance system for the exporting country, which will award a “FLEGT” license to each consignment that is verified as legal. Once this has been established the E.U. will only accept FLEGT licensed timber from that country. The legislation will begin operation in March 2013.

For importers of community forest timber products, this can mean an increase in the paperwork to verify at every step in the supply chain that timber came from known legal sources, and no additional wood from potentially illegal sources entered the supply chain. All of this legislation is new and is expected to be developed more in the future. It is always recommended to confirm with the respective buyer what their acceptable proof for legality is.
Section 3: Group Management

A Practical Guide to FSC Group Certification for Smallholder Agroforests
Introduction

Smallholder agroforest groups often face challenges that large single owner forests or forest concessions don’t have. The small size of forest and multiple uses for agricultural crops and timber means that there is only a small volume of timber being produced by each individual smallholder in a region. Often local management practices already being used have sound rationality from an economic, environmental and social perspective, but there may be improved silviculture techniques that smallholders could benefit from. Such techniques may not be known to them yet due to a lack of access to the information or individuals who could work with them to make the most of their forest resources. In addition, complicated supply chains with multiple middlemen acting as log traders have evolved in many regions, resulting in timber from smallholders going through many different hands before it reaches the factories that will use the logs. As a result, smallholders often receive very low prices for their high-value wood, and often do not know how their wood is measured or valued by the market.

By working as a group, smallholders can pool their resources, share information and operational costs, and sell their wood collectively at a higher price directly to the factories that will use the wood. Smallholders may then be able to gain access to markets demanding wood from known, legal, sustainable sources by applying for FSC certification as a group of Small and Low Intensity Managed Forests (SLIMF), further increasing the value of their forest resources and improving their livelihoods (see Chapters 24 and 25).

To achieve FSC group certification, the smallholders must form a group which has a clear management structure. The FSC group standards require that a group entity, also known as a group manager, is established to act as a bridge between FSC and all members of the group. The main responsibility of the group manager is to be the representative of the group, and to ensure that all members meet the FSC requirements (see Table 3.1). The group manager will also hold the FSC certificate on behalf of its members once it is obtained. Members of the group can be individuals or communities who agree to join the group and put into practice all forest management and other procedures in order to meet FSC certification requirements.
### Table 3.1: Overview of Group Manager and Group Member Roles According to FSC

<table>
<thead>
<tr>
<th><strong>Group manager</strong></th>
<th><strong>Group member</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>The group manager applies for group certification and holds the forest management certificate.</td>
<td>Group members are responsible for implementing any requirements of group membership.</td>
</tr>
<tr>
<td>The group manager is responsible to the certification body for ensuring that the requirements of the FSC Principles and Criteria for forest stewardship are met in all forest properties participating in the group.</td>
<td>Group members do not hold individual FSC certificates, but as long as they comply with all of the requirements of group membership, their forest properties are covered by the forest management certificate issued to the group entity.</td>
</tr>
</tbody>
</table>

*Note the term group manager is used in place of group entity in FSC-STD-30-005 (V1-0)
There are many ways for organizers of a community forest program to develop a group that meets FSC criteria. We would like to emphasize that there are no ideal group structures or rules. In this section of the handbook, we will provide advice and lessons learned from our programs in South-east Asia, as well as direct you to other organizations who have developed excellent resources for group management (see Appendix 2).

This section of the CF Handbook is organized into five chapters that follow the initial processes of group development:

- Chapter 5: Group Manager
- Chapter 6: Group Organizational Structure
- Chapter 7: Group Rules and Procedures
- Chapter 8: Group Monitoring
- Chapter 9: Group Records and Communication

Recommended Resources:

Proforest and the Rainforest Alliance each have developed helpful guides for FSC group certification.


See Appendix 4 for more recommended readings.
Group Manager

FSC group standards require that the group manager\(^2\) be a legal entity that will have a contract with the certification body, and hold the group certificate. There are several types of legal entities that the group manager can be, such as:

- An individual resource manager
- Private business
- Incorporated business
- Cooperative
- Association
- Nongovernmental organization
- Government agency

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\(^2\) In this handbook we use the term “group manager” to be equivalent to the term “group entity” referred to in the FSC Standard for Group Entities in Forest Management Groups FSC-STD-30-005 (V1-0) EN.

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**FSC General Requirements for Group Managers**

1.1 The group manager shall be an independent legal entity or an individual acting as a legal entity.

1.2 The group manager shall comply with relevant legal obligations, such as registration and payment of applicable fees and taxes.

1.3 The group manager shall have a written public policy of commitment to the FSC Principles and Criteria.

1.4 The group manager shall define training needs and implement training activities and/or communication strategies relevant to the implementation of the applicable FSC standards.

FSC standard FSC-STD—30-005 (V1-0)
What type of legal entity should our group manager be?

In general, there is no single type of legal entity that works best for small-holder agroforest groups. Often, working with a local business or organization which already has strong ties with local communities is preferable to building a new group entity. An established local business may already have a good business network and relationship with stakeholders within communities, government or nongovernmental associations. They will also have an understanding of how local wood markets work. There are, however, risks and considerations that you should think about.

When deciding whether or not to allow a pre-existing group entity to become your group manager, you should consider the following questions:

- **Does this entity share your values and vision for the community forestry group?** Any entity that you work with should be strongly committed to improving the lives of the group members, improving forest management and meeting FSC Principles and Criteria. They should also be committed to working in a legal, transparent and ideally participative manner. Many entities have the skills and connections that are needed to be a good group manager, but if they do not share your vision or values, then there is a high risk that they will not be willing to do all the work required to implement the program.

- **How close are the entity’s current operations to those that will be required as a group manager?** Observe the entity’s current operations, and check to see if they are currently operating in a manner that demonstrates that they share your values (i.e. legal, focused on sustainable forest management, etc) and have the skills to successfully implement rules. Do the entity’s operations follow its own rules? If there is a big gap between what they say and what they do, then there is a risk that this will only grow larger if you push them to do more.

- **Do you trust the entity?** It is important to find out from local community members what they know about the entity, and how comfortable they would be allowing the entity to manage their FSC certificate group. Any entity you decide to work with should be held in high regard by local forest managers, and community members will need to fully trust that it is being honest with them and operating in their best interest.
• **Are there any potential conflicts of interests with the entity?** It is important to consider if there are other motivations for a potential group manager that may lead to problems with the group. For example, if the group manager is a timber trader and part of the agreement is that the group manager market the timber, then they may have an economic interest in paying less for the timber to the group members to increase their own revenue. Such concerns may be addressed with agreements at the beginning about how prices to members will be determined, but these will only be useful if there is good trust between the entity and the members, as mentioned above.

If your program does not currently have an appropriate legal entity to serve as the group manager, you will need to establish and register a new legal entity. There are several things to consider when deciding on which type of legal entity to choose, such as:

• **What are the licensing, permitting, taxes and fees associated with different legal entity types?** As the main representative of the group, the group manager must comply will all relevant laws and legal obligations (this includes paying fees and taxes). There can be a huge difference in these costs for different types of legal entities. Before you decide on which legal entity to register as, be sure to research the costs for registering, as well as any other ongoing fees or legal obligations. It is a good idea to contact a lawyer in the country you are in if you have any questions.

• **What is the reputation of different types of group entities in your region?** It may be that there are certain entity types that appeal or repel potential new group members or customers. For example, the term “cooperative” in one region of the world may conjure images of a positive community-owned business, while in another region they are associated with corruption or compulsory working conditions. Having some information about the reputation of different types of legal entities will help you to avoid confusion.

• **What funding mechanisms are there for different legal types?** In many regions of the world, private banks are hesitant to give associations or cooperatives loans because of a perceived lack of business experience, and the fact that these legal entities are less likely to have land or equipment as collateral. On the other hand, there may be funding sources from government agencies or
nonprofits that are specifically designated for cooperatives or associations. It is a good idea to research several different ways to fund your community forest program, especially for start-up expenses (Chapter 22).

- **Are there any political barriers for different types of legal entities?** In some countries, only specific types of legal entities may sell timber or non-timber forest products. For example, in 2006 TFT began partnering with a local non-governmental organization called Dipantara in Central Java, Indonesia. Dipantara was initially registered as an association, but changed their legal status to a business when they realized that selling wood on behalf of the community would be one of their major roles. They had to establish a business entity to meet all Indonesian laws for selling timber in the region.

- **Which legal entity best represents your vision for the group that will be formed?** Different legal entities may have different requirements in terms of organizational structure and purpose. It is important that you choose an entity that will allow your group to be structured in the way that makes the most sense for its members. For example, if members would like to have an active role in group management decisions, and be partial owners of the group business, then a cooperative or business with multiple shareholders may be most appropriate. However, if the members prefer to focus only on their forest management and would rather have a small professional staff managing the group, a small private business might be the best option.
Textbox 3.1: Building Strong Partnerships

The Nature Conservancy (TNC) has developed an online toolkit that details their approach to partnerships (http://www.conservationpartnerships.org/). The website contains an online training, advice, template and other resources that aim to provide the skills and tools for managers to make decisions about whether and how to partner, how to manage partnerships effectively and how to avoid known problem areas.

Some tips from the TNC conservation partnership center are:

• To build stronger partnerships, it is important to be aware of values, attitudes and skills that help build relationships on a foundation of trust and mutual respect.

• Partnerships are most effective, from the beginning, when you are clear of your goals, you know why you need to work with partners, and your organization is prepared to fulfill its side of the partnership relationship.

• Establishing norms and rules of conduct, and managing meeting for open communications and shared decision making will go a long way to getting the work plan and full project on track.

• Define assumptions about how your partnership will help reach your intended results.

• Remember to take time to assess whether your partnership has had the outcomes and impacts you intended it to have.

• Communicate findings and share results to continue to improve the partnership.
There is a wide range of possible organizational structures for smallholder agroforest groups that meet FSC requirements. Your community agroforest program may be in the initial stages of development in which there are only a small number of group members. A simple organizational structure will be sufficient to meet the needs of the group while also meeting the requirements for FSC group certification, however as the size of your program grows, a more complex structure may be needed.

In this chapter we present three broad categories of organizational structures (see Figure 3.1):

- Simple organizational structure
- Semi-complex organizational structure
- Complex organizational structure

**Simple organizational structure**

In its simplest form, a group can be composed of an individual who takes on the role of group manager with two or more group members who each own or manage a single forest plot, also known as a Forest Management Unit (FMU). The responsibilities of meeting FSC certification and operating the forestry business may be distributed between group manager and group members in different ways. For example the group manager may develop Forest Management Plans for each group member, and conduct
all monitoring and administrative tasks, while each group member is in charge of implementing silviculture treatments and negotiating timber sales. While this group structure is simple to organize, the group members do not benefit from economy of scale, and the group manager may become overwhelmed if the FSC certified group grows quickly.

Semi-complex organizational structure

A semi-complex organization structure may be composed of a group management team in which a number of individuals take on a different responsibility of group management. As we note in Chapter 5, the group may be a legal entity such as a private business, nongovernmental organization, association, cooperative or government agency. The responsibilities may be divided so that the group manager provides forest management services, sales and marketing, and timber administration for each group member. The members may be responsible for implementing forest management activities within their agroforest plots and then communicating with different staff within the group management team. This organizational structure allows the group management team to have more specialized staff and provide increased benefits to group members, but coordination can be a challenge if the FSC certified group is very large.

Textbox 3.2: Example of a Group Organizational Structure

The Sociedad de Productores Forestales de Ejidales de Quintana Roo (SPFEQR) is a formal association of professionally trained foresters who work with communities known as ejidos, a common property regime in Mexico. The SPFEQR foresters carry out forest inventories, assist the ejidos with management plans and obtain annual harvest permits, in addition to acting as the FSC group manager. Each of the organizational structures for the individual ejido are slightly different in terms of village government and responsibilities, but their main role and responsibility is to market the communities’ wood, and ensure all timber harvesting in the communally-managed natural forest meet FSC standards.
Complex organizational structure

A complex group organizational structure may be needed when the number of smallholders in the FSC certified group is very large. Like the semi-complex organizational structure, a group management team may be composed of individuals who take on different responsibilities of group management. For example, there may be a number of staff who are part of a forestry team, or a sales team. The FSC certified group may also be composed of several individual group members organized into a sub-groups based on village location or some other common characteristics. To facilitate communication with the forestry and sales teams, representatives from each of the villages may be elected or appointed to join the group management team where they can represent the members of that village in group management decision making.

Village representatives at the group manager level may take on a number of responsibilities such as organizing group meetings, collecting complaints, questions and suggestions from members and ensuring group members who are not meeting the requirements are suspended or expelled from the group. With this complex organizational structure, new group members can join as a member of an existing village group and new villages may be added.

For the more complex organizational structures, it is a good idea to create an organizational chart that identifies all of the people involved in the community forest program (see Figure 3.1). Define as much as possible the different roles and obligations each one may have.
Figure 3.1: Organizational structure of Koperasi Taman Wijaya Rasa, known as KOSTAJASA, which is comprised of a central management team and group of small landholdings of 14 farmer group units in Kebumen District, Java. The monitoring and control body, the Badan Pengawas (BP), is a legal requirement for cooperatives in Indonesia.
Figure 3.2: Group organization structures of varying complexity

**Simple Organization**
- Group Manager
- Group Members

**GROUP MANAGER**
Individual responsible for:
- Technical forestry assistance
- Record keeping
- Timber administration
- Monitoring group members
- Addressing complaints
- New group member recruitment

**GROUP MEMBERS**
Group members responsible for:
- Complying with membership rules
- Implementing recommended forestry practices
- Allowing group manager and FSC auditors to assess management practices
- Marketing wood and negotiating prices

**Semi-Complex Organization**
- Forester
- Administrator
- Salesman
- Group Management
- Group Members

**GROUP MANAGEMENT**
Forester responsible for:
- Technical forestry assistance
- Monitoring group members
Salesman responsible for:
- Marketing wood and negotiating prices
- Distributing income from wood sales
Administrator responsible for:
- Record keeping
- Timber administration
- Addressing complaints
- New group member recruitment

**GROUP MEMBERS**
Group members responsible for:
- Complying with membership rules
- Implementing recommended forestry practices
- Allowing group manager and FSC auditors to assess management practices
- Contacting group management in advance of harvesting

**Complex Organization Structure**
- Village A
- Village B
- Village C
- Village representatives
- Sales team

**GROUP MANAGEMENT**
Forestry team responsible for:
- Technical forestry assistance
- Record keeping
- Timber administration
Sales team responsible for:
- Marketing wood and negotiating prices
- Distributing income from wood sales
Village representatives are responsible for:
- Monitoring group members
- Addressing complaints
- New group member recruitment
- Communication between group members and sales team

**GROUP MEMBERS**
Group Members responsible for:
- Complying with membership rules
- Implementing recommended forestry practices
- Allowing group managers and FSC auditors to assess management practices
- Contacting group management in advance of harvesting
Documenting obligations and responsibilities

Once the group has decided on a structure and the responsibilities of the different entities within the group, a formal document should be written that clearly defines the roles and responsibilities of everyone involved. FSC requires that group members be given sufficient information relating to the responsibilities of the group managers and their own responsibilities, before agreeing to be part of the group.

Training needs assessment

Training new group members and managers will likely be an important activity for the group, especially in the first three to five years of your community agroforest program. It is a good idea to assess what training is needed together with the community, and decide which will need to be addressed first. A training needs assessment can be done periodically, to help prioritize your training plan. If the smallholder group is continually growing, you will likely need to create a library of training material and begin to “train other trainers” within villages to effectively share knowledge and empower community members.

It is a good idea to assess if your trainings are presented in a way that is appropriate to the group. A brief questionnaire or simply asking a few individuals after a training session to describe some of the things they learned that day will tell you if your trainings are effective.

You will also need to document all training events both for your own records and to show FSC auditors. It is important to collect signatures of participants. In some cases participants may not know how to write, or don’t have a signature. A good alternative is to use finger prints. During an assessment FSC auditors will want to review these documents and may also interview group managers and members to see if they have sufficient knowledge and training to implement the Forest Management Plans they have created. They may ask staff, contractors or members questions about the group’s rules and procedures to check if individuals have sufficient knowledge in regard to their roles (Chapter 25).

In addition, training of key staff on important financial planning procedures will of course be important for any individual involved in the financial decisions of the group. As we have noted in Chapter 23, there are a number of basic financial management reports that can help groups of smallholders to understand the financial health of their organization.
FSC Group Manager Obligations for Training

Criteria 1.4: The Group manager shall define training needs and implement training activities and/or communication strategies relevant to the implementation of the applicable FSC standards.

Criteria 3.3: The Group manager shall define the personnel responsible for each procedure together with the qualifications or training measures required for its implementation.

Criteria 5.1: The group manager shall maintain complete and up-to-date records covering all applicable requirements of this standard. These shall include:

ii. Any records of training provided to staff or group members, relevant to the implementation of this standard or the applicable Forest Stewardship Standard;

FSC standard FSC-STD-30-005(V1-0)
Creating effective group rules and procedures is essential for a smooth running, long-term community agroforest program. Good group rules should reflect the unique social, economic and environmental conditions of your community and be developed with active participation from group members.

For FSC group certification, the auditors will want to see specific written procedures for several group rules. During an assessment, an auditor will likely talk with members of the group management as well as a sample of the group members to see if everyone understands these rules and procedures. All of this is to check that the group has a sufficient internal control system that ensures that all group members are fulfilling each of the applicable FSC requirements.

The group rules and procedures should define:

- Who will be eligible for membership in the group?
- What are the procedures for adding new group members?
- How will members leave the group?
- How will members be expelled from the group?
- How will complaints and grievances be handled?

**Recommended Resources:**

Textbox 3.3: Factors that Increase Cooperation

How a community agroforest group decides to work together will be unique to the social and environmental conditions. There are no ideal models, but social scientists that study different types of common pool resource groups have found that there are some factors that appear to increase cooperation. These factors are:

- Ongoing face to face communication among participants, so they may judge the trustworthiness of others involved.
- Reputation of key participants is known.
- Each participant understands how their own contribution will increase the per capita return for themselves and the group, and can explain it to others.
- All members understand their rights to enter and exit the group freely, if their cooperation is not reciprocated.
- The group has long-term goals and participants can anticipate that more can be earned through cooperation over a long time period versus a short time period.
- Participants agree on sanctioning rules and procedures. External sanctions or imposed sanctioning systems may reduce cooperation.

The central core of these findings is that individuals are more likely to cooperate when factors such as these have been established, resulting in an increased likelihood of gaining trust that others will reciprocate, especially when individuals are faced with a social dilemma related to common pool resource use.

Who will be eligible for voluntary membership in the group?

For all groups, it is important to define who will be eligible to join. This rule will likely depend on several factors such as location, type of ownership and type of forest. For example, location is an important factor for a group, as it can be very difficult to monitor and provide services to group members that are located far from others. Forest type and management goals are also important things to consider, as group managers and members will need to develop strategies that address the specific challenges forest owners face. If there are several different forest types (different tree species, age classes or rotation periods) then it will be more complicated to develop several different types of silviculture treatments and trainings, and it may be difficult to market the wood as a group. It is easiest to market large volumes of the same species.

It is likely that your group will continue to expand and add members over time. There is no size restriction for group certificates in terms of numbers of smallholders, but groups may want to limit the total number of members or the total size of the forest area under the group certificate. As we have mentioned, working as a group has the benefits of shared management, however there is a point in which the group management will not be able to coordinate and monitor a large number of members effectively. Adding new staff or community leaders to the group management team may be one way to grow the group membership, without the risk of having the FSC group certificate suspended or revoked because of ineffective management or control.

For the FSC, the maximum size of the group that can be supported by the current management system, as well as the human and technical capacities, will need to be specified in the group rules. In addition, certification cost will increase when the total size of forest area is larger than 10,000 hectares, as the sampling that assessors will need to do will also increase. Going above this threshold may reduce the cost effectiveness of certifying as a group and reduce members’ motivations for staying in the group.
Member ID and Plot ID

Tracking membership in community agroforest programs can be challenging, especially if membership is large and spread out geographically. It is a good idea to develop a recordkeeping system that gives each member a unique form of identification. If members commonly have multiple forest plots registered with the group, you may also want to give each forest plot a unique identification number. There are several ways to create a member ID and plot ID, but it is important to create a system that will make recordkeeping simple, yet robust so there will be less confusion later.

Tracking membership may also help with predicting harvest volumes and thereby negotiating group wood sales contracts, as well as providing important data on the group to potential investors or supporting organizations.

Textbox 3.4: Can Our Group be Composed of Members from Different Geographical Regions or Countries?

Because there may be different regional or national FSC requirements, FSC stipulates that all group members must all be covered by the same FSC standards. This means that if your group is using specific regional or national FSC standards, all members must be in that region. For example there are three regional standards in Canada for the maritime forests, national boreal forest, and British Columbia. A group cannot be composed of members from two of these regions.

At the same time, many countries do not have specific FSC requirements, and use the general FSC Principles and Criteria. Because of this, FSC may allow two or more members from different countries with similar conditions to form a group. The group manager will need to send a formal petition to FSC for permission to do this, though.

FSC Group Certification Requirements for Multinational Groups:

Criteria 7.1 Group schemes shall only be applied to national groups which are covered by the same Forest Stewardship Standard.

Criteria 7.2 In cases where homogeneous conditions between countries/regions may allow an effective and credible cross-border or multi-regional monitoring system, the group entity shall request formal approval by FSC through their accredited certification body to allow certification of such a group scheme.

FSC standard FSC-STD-30-005(V1-0)
What are the procedures for adding new group members?

The group will need to create a simple process so that new members can join their group. Typically, this includes a membership application process, and then a pre-entry evaluation. You should create a process that will be easy to implement and effective in educating the new member, while ensuring that group rules can be met by the potential member.

**Application process**

New members should be given information about the group’s rules, member responsibilities and benefits of joining. This should also include a description of what certification is, what the FSC is, and the general FSC Principles and Criteria as they apply. This can be in written, pictorial or oral forms, based on what is most appropriate in your context. You may want to develop a series of pamphlets, posters or other materials that can be created in the local language, or have a checklist of information to be communicated in a visit with the potential member. A copy of the informed consent member registration document should be included, as well as the organization structure for the group (Chapter 6).

**Pre-entry evaluation**

The group manager should conduct an assessment of the applicant to ensure that the new member will be able to meet FSC and group standards once they are accepted into the group. A simple checklist can be created to check basic compliance with the standards. For example, the checklist may include questions regarding legal land title, no natural forest conversion after 1994, no land conflicts, etc. Health and safety issues may also be part of the checklist. These questions will help group managers to identify red flags that may prevent FSC auditors from awarding the group a certificate. Many groups also use the pre-entry evaluation visit as an opportunity to map the group members land and inventory their trees, or perform other initial services that the group will provide to the member. Information about current forestry practices and social and economic conditions should also be collected during the pre-entry evaluation and used to assess training needs and services the group manager may need to provide.
How will members leave the group?

The rules and procedures for leaving the group should be created by the group members and managers, and documented so that new members know their rights and these procedures. FSC certification is a voluntary certification scheme, therefore group members should be reminded that they can freely join and leave the group. If a member decides to leave, the whole process should be formally documented so that other members and the group management team will know the member has left. The group manager will need to tell the former member that they will no longer have the right to market products as certified, or make any public claims related to being certified. The group member’s record will still need to be kept for five years. Other records will need to be updated, such as the group member registry, annual allowable cut levels and the monitoring schedule.

How will members be expelled from the group?

The group will need to have a procedure for expelling a group member who is not following the group rules. In general, it is a good idea to have group members define what the sanctions will be before a member is expelled. Typically, a verbal warning for small non-compliance is the first step, followed by official letters. The process should be gradual, and allow the member to contest any decisions for expulsion with a committee of group members.

For FSC group certification, the auditors will want to see that group rules have been created for Corrective Action Requests (CAR), which we will describe in more detail in the next chapter in group monitoring. Throughout the process, each of the warnings and conversations with the group member should be documented and kept in the member’s file.

Typical reasons for expulsion:

- Does not follow group rules
- Fails to address a CAR
- Does not allow access to group manager or FSC auditors
- Sells wood from protected areas illegally
• Makes false claims or misuses FSC logo
• Damages property of neighbors and does not sufficiently compensate
• Fails to pay membership fees
• Fails to participate in agreed trainings

How will complaints and grievances be handled?

There must be a procedure in place to ensure that the group is open to receiving complaints and has a system in place to address the complaints in a timely and appropriate way. These complaints may come from group members or from outside stakeholders. The target of the complaints may be group members or the group management entity.

The procedures should define how complaints will be investigated, including a timeframe, and who will be responsible for responding, and then following up to ensure the response was satisfactory. Members should feel like the process is easy to access and works to resolve issues. It is a good idea to have a tiered approach when addressing complaints against group members, in which the first step may be for the group managers or community leaders to act as mediators between individual(s) who registered the complaint and the target of the complaint.

The procedure should include how complaints will be documented at each step. Typically, complaints are kept with similar group member and management documents. If the complaint was against a member, the complaint file can be kept in the member’s folder. FSC auditors will want to review any history of complaints during audits, and will also ask outside stakeholders to check if there are any current complaints or grievances against the group.

Like all group rules, it is a good idea to have group members be part of the decision on how complaints and grievances should be addressed, and at what point individuals who have major grievances against them should appeal the decision.
Deciding on group rules and procedures

As we will discuss in more detail in Section 4, the group will need to develop rules and standard operating procedures (SOPs), for a number of activities such as harvesting, forest management, monitoring and Chain of Custody (CoC) timber tracking. Rules and procedures for each of these activities will need to be developed to meet both the FSC requirements and the goals and objectives of the group.

What is the Difference Between a Rule and a Standard Operating Procedure (SOP)?

A rule defines what members or the group manager must do. It is a required minimum code of practice. An example of a rule is as follows:

“Group members must replant trees to replace trees that have been harvested.”

A Standard Operating Procedure (SOP) defines how this rule should be implemented. For example, an SOP on replanting trees after harvest may define how many seedlings will need to be planted after a tree has been harvested, and how the mortality or viability of the seedlings will be monitored to ensure that enough trees grow to replace what was harvested.

SOPs may be written as requirements or recommendations of best practices, depending on the language used. However, a rule is always a requirement.

The process of decision making will vary for different community agroforest programs. For example, when TFT began working with the cooperative Koperasi Hutan Jaya Lestari (KHJL), the group management team established new group procedures by first drafting them with leaders from various villages, then testing the procedures for their appropriateness with a small group of pilot villages before making them official and requiring that they be implemented in all villages. The process illustrated in Figure 3.3 shows how each of the draft rules for individual teak management, organizational rules and management protocol were created using a circular process.
Figure 3.3: Process of developing group rules and procedures for Koperasi Hutan Jaya Lestari (KHJL)
General recommendations for developing group rules:

- In general, it is best to create group rules that capture existing practices, or are simply a small change of existing practices, instead of coming up with new elaborate procedures. Many communities dependent on agroforestry have very traditional and well developed systems that meet many FSC requirements already, and describing these in the group rules is best, rather than trying to create new ones.

- It is important to test out new rules that are a change from prevailing practices, before making them a rule for the entire group since they will be the most challenging for members to implement, and likely require the most monitoring and additional cost to implement.

- It is a good idea to have those individuals who are most impacted by a rule be actively involved in its development to ensure the rule will be written in a way that is familiar and easy for them to implement.
Group Monitoring

Group monitoring is an important responsibility of the group manager. FSC requires that the group manager have an effective monitoring system to ensure that all group members meet the requirements for FSC certification. Monitoring methods do not need to be complicated, but they do need to be effective. In Section 4 we will describe how different aspects of forest management can be monitored, and in Section 5 we will provide several financial monitoring tools for your community forest enterprise.

While not all group members will be monitored every year, the FSC requires specific elements of the monitoring system to be clearly defined. These include:

- Monitoring criteria (i.e. what will be checked on a monitoring visit)
- Minimum sample size to be monitored annually
- Selection process for members to be monitored
- Process to issue Corrective Action Requests (CARs) for non-compliance

**Monitoring criteria**

Monitoring criteria are the items that must be checked when the group manager does a monitoring visit to a group member. Monitoring criteria should include forest management aspects that are vital to being in compliance with the FSC Principles and Criteria and are most at risk for not being followed. This list may be similar to the pre-entry evaluation described in Chapter 5. Before the monitoring begins, the group manager should also review the member’s files and review any outstanding complaints registered with the group.
FSC Group Monitoring and Control System Requirements

8.1 The group manager shall implement a documented monitoring and control system that includes at least the following:

i. Written description of the monitoring and control system;
ii. Regular (at least annual) monitoring visits to a sample of group members to confirm continued compliance with all the requirements of the applicable Forest Stewardship Standard, and with any additional requirements for membership of the group.

8.2 The group manager shall define criteria to be monitored at each internal audit and according to the group characteristics, risk factors and local circumstances.

8.3 The minimum sample to be visited annually for internal monitoring shall be determined as follows:

a) Type I groups with mixed responsibilities (typical for smallholder agroforest) Groups or sub-groups with mixed responsibilities shall apply a minimum sampling of $X = \sqrt{y}$ for ‘normal’ FMUs and $X = 0.6 \times \sqrt{y}$ for FMUs < 1,000 ha. Sampling shall be increased if HCVs are threatened or land tenure or use right disputes are pending.

b) Type II Resource Manager Groups. Group entities who also operate as resource managers may define the required internal sampling intensity at their own discretion for the forest properties they are managing, independent of their size and ownership (the minimum number as defined above do not apply here).

NOTE: for the purpose of sampling, Forest Management Units (FMUs) < 1,000 ha and managed by the same managerial body may be combined into a ‘resource management unit’ (RMU) according to the proposal made in FSC-STD-20-007 Annex 1.

8.4 For monitoring purposes the group manager should use the same stratification into sets of ‘like’ FMUs as defined by the certification body in their evaluation.

8.5 The group manager should visit different members in their annual monitoring than the ones selected for evaluation by the CB, unless pending corrective actions, complaints or risk factors are requiring a revisit of the same units.

8.6 In the selection process of members to be visited, the group manager should include random selection techniques.

8.7 The group manager shall issue CARs to address non-compliances identified during their visits and monitor their implementation.

8.8 Additional monitoring visits shall be scheduled when potential problems arise or the group manager receives information from stakeholders about alleged violations of the FSC requirements by group members.

FSC standard FSC-STD-30-005(V1-0)
Minimum sample size to be monitored annually

While the specific monitoring methods will be different for each group member, FSC requires that there be a minimum number of agroforest plots monitored annually. This minimum number is determined by first categorizing all smallholder agroforests plots into sets of ‘like’ Forest Management Units (FMUs).

For example, you may categorize group member’s FMUs by:

- Forest type (natural vs. plantation)
- Size of FMU area (<100 ha, 100-1000 ha, 1000-10,000 ha)
- Longer vs shorter rotation periods
- Dominant species
- Region

Once the FMUs have been categorized, FSC group certification standards requires minimum number of FMUs in each category is determined using the equation \( X = 0.6 \times \sqrt{y} \), where \( y \) is the total number of FMUs and \( X \) is the number to be sampled (see Figure 3.4).

It is important to note that this is a minimum number of FMUs to monitor annually. It is likely that the total number of FMUs monitored each year will be larger, as additional monitoring will be needed when there are complaints, Corrective Action Requests (CARs), or other landscape level criteria such as High Conservation Values (HCVs) to be monitored. The CB will want to review the monitoring records, and will assess if the monitoring being done meets the conditions of the group.
### Total number of ‘like’ FMUs (y) | Number of FMUs to monitor \(X = 0.6 \sqrt{y}\)
---|---
1-12 | 2
13-25 | 3
26-45 | 4
46-70 | 5
71-100 | 6
101-136 | 7
137-178 | 8
179-225 | 9
226-278 | 10
500 | 14
1000 | 19
10,000 | 60

\[
x = 0.6 \sqrt{y}
\]

\(y = \text{total number of ‘like’ FMUs}\)

\(X = \text{number of FMUs to monitor}\)

For example, if your group has 57 FMUs in the group certificate, you should monitor:

\[
x = 0.6 \sqrt{53}
\]

\(x = 4.37\)

\(x = 5 \text{ FMU to monitor annually}\)

*Note the number of FMU to monitor is always rounded up to the next whole number.*
Selection process for members to be monitored

All members land will need to be selected and monitored at least once every five years. There are several ways the group may decide when and who to monitor. If it is likely that each member will harvest trees within the five year period, monitoring can be done during a pre-harvest and/or post-harvest survey (see Appendix 9).

If however, there is a large number of smallholders who are members but will not be harvesting any timber within a five year period, the group manager will need to decide on a way to monitor group members using a selection process that is random and non-repeating. The simplest way to do this is to assign a number to each smallholder’s FMU. Then write all of the numbers on a piece of paper and put them into a hat or bowl. Next, draw numbers from a hat, and the FMUs will then be monitored in the order in which they were drawn.

To create a random number in Excel 2007, create a new spreadsheet with all of the FMUs in a column. In the next column you can write in the formula =RAND() into the cell. This formula will give you a random number between 0 and 1. Do this again for each cell next to the group member’s FMU. Next sort both columns by the random number (Figure 3.5). The FMUs will then be monitored in this order.
Addressing non-compliances

The group will need to develop a process to address when a member is not meeting the group rules. For the FSC auditors, this will be an important component to review, because they will want to check that there are effective systems in place to ensure that rules and procedures relating to the FSC Principles and Criteria are being followed (see Chapter 25).

Each community agroforest program should determine how to address non-compliance with the group. It is a good idea to adapt a local sanctioning system to fit the needs of the community agroforest group. Like everything else, this system should be as similar as possible to systems that the communities are already familiar with.

The group manager will need to keep a record of the non-compliances and issue a Corrective Action Request (CAR) that defines what a group member must do to address the problem. It is a good idea for the group manager and member to discuss what needs to be done and both agree on a clear timeline for the CAR to be closed out (see Textbox 3.5).

It is important that the group manager follows up on checking CARs that are issued, and records their follow-up visit findings in the member's file. If a CAR is not closed in the agreed time frame, appropriate next steps in line with warnings and possible member expulsion should be taken according to the agreed group rules and procedures. All follow up visits and next steps must be recorded so that the FSC auditors can review them.

Creating Your Own Community Forest Handbook

Once your community agroforest program begins to formalize rules and procedures it is a good idea to create your own handbook. This handbook can be a simple guide for agroforest smallholders that can be an easy to use reference. The introduction to the handbook can include the communities’ vision statement and the forest management goals. The chapters can have easy to understand diagrams and explanations on how the community will implement forest management activities such as harvesting, inventory, pruning, thinning and fire prevention, as well as environmental and social protection plans. This handbook can be given to new group members and be part of training activities.
Textbox 3.5: Addressing Non-Compliance with Community Agroforest Groups

Below is a very simple procedure for dealing with non-compliances, as well as an example of the procedure being implemented.

Example procedure for dealing with non-compliances:

1. When the non-compliance is first observed, note it in the members’ file and visit them to discuss it within the month. Agree upon corrective actions and a timeline, then also note this in the file. The member should sign the written description of the corrective action to show that they know about it and understand.

2. Review whether or not the corrective action was closed by the deadline by visiting the member to observe directly. If it is not closed, issue a formal warning with a written corrective action request and timeline.

3. Check that the corrective action was addressed by the deadline. If not suspend the member through a written letter until the corrective action is adequately addressed.

Harvesting trees within a buffer zone: an example of a non-compliance

One day a group manager that was visiting members’ land found that one of the members had cut all the trees and plants growing along the edge of a stream that was an important source of water for the surrounding community. The group had previously decided to make a rule to not harvest any trees within a 10-meter buffer zone of the stream. Streams and other water ways are also protected by FSC standards in order to limit erosion and other negative environmental impacts.

When the group manager identified the non-compliance, he talked with the owner to find out why the trees were cut. The owner explained that they did not know about the rule, and did not realize it applied to this stream.

Once the reason was determined, the group manager worked with the owner to decide on the best way to address the problem and prevent it from happening again. They decided that the member should replant the area that was cut with local tree species within six months time. The group manager then documented this discussion in the form of a Corrective Action Request (CAR) that stated the agreed upon plan and timeline, in addition to the owners agreement to be sure in the future to protect the buffer zone from harvesting. The group manager and the member both signed the written CAR and it was filed by the group manager.

The group manager then scheduled a time to check six months later that the area was replanted. When the group manager returned however, he found the area was not replanted, and that more trees were cleared. This time, he wrote up his findings and issued a written warning to the member that if they did not replant the area in one month’s time, the member will be expelled from the group. He also asked the leader of the village to be present when he discussed this with the member.

When one month later the member had still not complied with the CAR, the group manager wrote the member a formal letter alerting him that his membership was suspended until the CAR had been implemented, and he could no longer be considered part of the FSC certificate group. A copy of the written letter was kept in the members’ file, and the group manager’s records were updated to note that the member was no longer part of the FSC group certificate.
FSC has several requirements that specify the documents and records the group manager will need to keep. These records will be presented as evidence, in addition to interviews, and field checks to see if the agroforest is really meeting all applicable FSC requirements. Good record keeping is also good practice for group managers. New information should be used to update the management plan, and help the group make informed decisions. If there is misinformation, or if there is a lag between when information is collected and when it is reported, the group may make bad decisions or miss an opportunity to further improve the community forest program.

FSC requires the group manager to maintain up-to-date records for all group members. These records should include:

- Name
- Contact information (address, phone number)
- Record of consent to join the group
- Forest Management Units (FMUs) registered with the group
- Map or document describing the location of the FMUs
- Forest management recommended practices

Recommended Resources:


See Appendix 5 for a sample monitoring template for group managers.
• Training received for relevant forest management practices
• Records of harvests and sales
• Records from internal monitoring, including any CARs issued, and actions taken to close CARs
• Record of leaving or expulsion, if applicable
• Records of complaints, and record of dispute resolution

In addition, records on the overall group will need to be maintained by the group manager. In many cases, the group manager’s records can be cross-referenced with the group member’s files. These records include:

• Group commitment to FSC Principles and Criteria
• Forest Management Plan
• Group management rules and procedures
• Records of training events held (including date and names of attendees)
• Records of group meetings held (including date and names of attendees)
• Records of internal monitoring
• Forest production records
• Sales invoices
• Annual budget
• Example of FSC logo use in marketing

All of these records should be retained for a minimum of five years. It is a good idea to have paper copies of these records stored in a central place such as the group management office, and to have electronic files stored in two locations to ensure important files are not lost in the case of computer failure, theft or natural disaster.
It is important to note that FSC does not want the group manager to issue individual FSC certificates that may be confused with an FSC group certificate, which is held by the group manager.

FSC Requirements for Group Records

1.3 The group entity shall have a written public policy of commitment to the FSC Principles and Criteria.

5.1 The group entity shall maintain complete and up-to-date records covering all applicable requirements of this standard. These shall include:

List of names and contact details of group members, together with dates of entering and leaving the group scheme, reason for leaving and the type of forest ownership per member;

i. Any records of training provided to staff or group members, relevant to the implementation of this standard or the applicable Forest Stewardship Standard;

ii. A map or supporting documentation describing or showing the location of the member's forest properties;

iii. Evidence of consent of all group members;

iv. Documentation and records regarding recommended practices for forest management (i.e. silvicultural systems);

v. Records demonstrating the implementation of any internal control or monitoring systems. Such records shall include records of internal inspections, non-compliances identified in such inspections, actions taken to correct any such non-compliance;

vi. Records of the estimated annual overall FSC production and annual FSC sales of the group.

NOTE: The amount of data that is maintained centrally by the group entity may vary from case to case. In order to reduce costs of evaluation by the certification body, and subsequent monitoring by FSC, data should be stored centrally wherever possible.

5.2 Group records shall be retained for at least five years.

5.3 Group entities shall not issue any kind of certificates or declarations to their group members that could be confused with FSC certificates. Group member certificates may however be requested from the certification body.

FSC standard FSC-STD-30-005(V1-0)
Introduction

Collectively managing many small privately owned agroforests can be a great challenge. The group may grow from just a few smallholders to be several hundreds or even thousands of members. Having a group Forest Management Plan provides the framework for forest managers and can help you to focus limited time and resources on activities that will enable you to set realistic, attainable goals, while ensuring that the forests are sustainably managed.

What is a Forest Management Plan?

A Forest Management Plan is a document that states specific objectives you have for the group’s forests, and the management activities you plan to implement to achieve those objectives. The plan is a blue-print that details how you plan to manage the forests over a specific period of time, typically five or ten years.

FSC Principle 7 requires that the forest management plan should be appropriate to the scale and intensity of forest activities. The amount of documentation and level of detail of the management planning should be comprehensive enough to show how decisions are made by both group members, and interested stakeholders. Certification Bodies (CB) will want to check if the management plan is effectively communicated and implemented, but documentation should not be more than is necessary.

Find Examples of Forest Management Plans

Certification bodies (CB) will have their own checklist or evaluation criteria when reviewing the Forest Management Plans. Be sure to contact certification bodies early to find out what they require, or if they could provide you with an example forest management plan or template. You can also see examples by going to the FSC website (www.fsc.org) and downloading the forest management plan for any of the current FSC forest management certificates.
In general, for Small and Low Intensity Managed Forests (SLIMF) the CBs will likely require a management plan that includes the following:

- Duration of the plan
- A description of the forest (ecosystem, geography and climate, soils/water, infrastructure, dominant trees species and age classes, presence and management of rare, endangered and threatened species, etc)
- Overview of the local social and economic conditions and stakeholder groups
- Maps of the forest showing land ownership or tenure rights, protected areas and planned management activities
- Brief description of adjacent lands, or a landscape level map with adjacent lands labeled
- The mid- and long-term objectives of management
- How the management objectives will be met (i.e. harvesting methods and silviculture prescriptions), and the rational for choosing these activities
- Sustainable harvest levels for each timber species, and non-timber forest product, and how these will be adhered to
- Environmental and social impacts of the planned management activities, and safeguards to limit negative impacts
- Conservation of rare, threatened and endangered species and any High Conservation Values (HCV) identified, and safeguards to protect them
- Any major social or environmental issues or conflicts in the area, and any program activities to address them
- Pest and weed control measures and fire management plans
- Program activities regarding worker’s rights, occupational health and safety, gender equity, local social and economic development objectives
- Information to show the overall economic viability of the community agroforest enterprise

1 This list is based on Guidance on the Interpretation of FSC Principles and Criteria to Take Account of Small Scale and Low Intensity FSC-GUI-60-001 V1-0 EN, and FSC Principles and Criteria for Forest Stewardship Supplemented by Explanatory Notes and Rational FSC-STD-01-001 V5 D5-0 EN. Retrieved from www.fsc.org
• Monitoring system in place, both environment and social aspects, and how the information will be used to adapt the management plan

Note that ongoing monitoring of how you are performing against your management plan is essential to knowing if you are making progress towards achieving your goals, and will help you to identify areas where changes should be made to the Forest Management Plan. Chapter 8 of the handbook provided some guidance on how to do group monitoring and Chapter 23 provides guidance on how to create simple financial monitoring system. The specific monitoring methods you use do not need to be complicated, but should be effective. Monitoring is just another word for checking how you and your group members are doing in regard to a specific activity or goal. In this section, we will provide some examples of how to monitor social and environmental aspects of your forest management activities.

**Should separate Forest Management Plans be written for each member? Or can we have just one Forest Management Plan for the Group?**

Determining which scale or level a Forest Management Plan should be written for a group of SLIMFs can be very challenging. When a group contains thousands of members, each with very small plots, writing full individual forest management plans for each may be a daunting task. At the same time, writing a single management plan for thousands to follow in detail may also seem unrealistic.

TFT has addressed this problem by developing a two-tier approach to forest management planning for the agroforest groups we work with. At the member level, we use a simple template (often less than five pages in length) that can be filled out with basic forest plot information. The group manager also clarifies management requirements and recommendations for the plot with the member in this form.

At the group level a larger, more general and all-encompassing Forest Management Plan is developed to guide overall group activities related to forest management. As we mentioned in Section 3, for smallholder agroforest groups it is important to recognize that each smallholder manages their own land freely, and timber harvesting may be just one component of their livelihood strategies. This should be recognized in this overall group Forest Management Plan, as this plan will have to meet the needs and circumstances of the local community members, while also meeting the FSC Principles and Criteria.
Establishing Rules for Sustainable Harvest at the Group vs. Member Level

The community agroforest program will need to determine a sustainable harvest level for the group. A sustainable harvest level is typically determined by calculating the Annual Allowable Cut (AAC), which is an estimate of the amount of timber that can be harvested during a given year to maintain a sustained production of wood (Chapter 14). When deciding on how the AAC will be implemented for a smallholder agroforest group, it is important to consider the impacts of harvesting at different levels. For example, if a group member harvests all of their trees above a minimum diameter on a small plot at once, the negative environmental impact will not be very large on the landscape. Thus, a sustainable harvest at the member level may simply mean that new trees are planted to replace the ones harvested. However, at the group level if everyone harvested all of their trees at the same time, this would have a very negative effect on the local environment. Therefore, the group may want to set an AAC at the village, district, watershed or another level that you choose, while keeping flexibility in terms of which members harvest up to the AAC limits.
How do you create a Forest Management Plan?

Developing a Forest Management Plan for the smallholder agroforest group will take time and require you to think systematically about forest management. You will need to gather information about many different components of forest management from primary and secondary resources. If a community agroforest group is just starting out, this will likely require many community meetings and discussions with local leaders. To develop effective management activities, you may also need to consult with forestry professionals as well as stakeholders in government, local research institutes and universities, and users of the forest within the community that are not group members.

The basic process for developing a group Forest Management Plan is:

Step 1: Collect all relevant information relating to past and present forestry practices (see Ch 4 – Preliminary Survey)

Step 2: Discuss the group’s long-term vision and goals for forest management (see Chapter 2).

Step 3: Develop a list of management objectives for the group that can be achieved given the available resources and budget (see Chapter 3 and Chapter 22).

Step 4: Prioritize which objectives will be the focus of the management plan for the next five to ten years.

Step 5: For each objective, define what will be done, who will be responsible, and where and when activities will take place (this will make up the annual work plans), and allow for some flexibility. Also be sure to define which activities are required and which are recommended.

Step 6: Provide a public summary of the Forest Management Plan and communicate future plans to all group members and interested stakeholders, while being open for feedback and criticism.

Step 7: Keep track of what activities occur throughout the year, and adjust the plan as you learn new information (for example forest monitoring results, harvesting monitoring, new tools or techniques, feedback from stakeholders and changes in market conditions).
Remember to keep in mind as you develop your Forest Management Plan the scale at which different activities will need to be done. You should periodically ask yourself the following questions:

- For this activity, what is required at the member / agroforest plot level?
- What is required for the group as a whole?
- Is this activity best accomplished at the group level or the member level? Or do both levels need to play a role, and if so, what is the responsibility of each level? (These roles can be clarified in your group Forest Management Plan).

**Textbox 4.1: Group Requirements vs. Recommendations**

For internal group management, it is important to differentiate which forest management practices are required for group members and which are recommended.

- Group requirements are defined as group rules that must be followed. If they are not followed there is generally a consequence for non-compliance. For example, the rule may be that no member may harvest timber within 10 meters of a waterway. Another common group rule may state that group members are not allowed to use chemicals prohibited by FSC.

- Group recommendations are a little bit more general in their application and do not have sanctions for non-compliance. For example, the recommendation may be that trees are planted at a spacing of 3 x 3 meters. Another common recommendation is that group members thin their forest stand at ages five, ten, and fifteen years. Group members are not in violation of the group rules if they do not follow the recommendations.
When do I need to write a Forest Management Plan?

If your community agroforest program is in the initial stages of development, it is a good idea to write your management plan in stages as group rules and procedures are being decided. You may then set aside time to compile all of the components that will make up the Forest Management Plan.

In some regions of the world, a Forest Management Plan will need to be reviewed and approved by one or more government forestry departments before any timber harvesting is allowed. It is important to contact local forestry offices to find out what are the legal requirements for timber harvest permits, transporting, etc, early in the process (see Chapter 4). If a Forest Management Plan is required, you should find out exactly what will need to be included in the document, and how long it will take to process the request so that you can plan accordingly.

Why is it important to have a Forest Management Plan for FSC certification?

A group Forest Management Plan is essential to prove that the forest is being managed to the relevant FSC standard. Auditors will conduct a desk audit in which they will review the Forest Management Plan, checking to see that it meets all FSC standards (see Chapter 24). The auditors will also conduct a field audit, where they may randomly choose group members to check to see that what is happening on the ground matches the management plan. It is a good idea to carefully consider in the Forest Management Plan what is a group requirement verses a recommendation (Textbox 4.1). When your group attains FSC certification, each of the components from Criteria 7.1 will be made public on the FSC website.

Rules Recommended Readings


See Appendix 4 for more recommended readings
What is included in this section of the handbook?

To help you to develop a group Forest Management Plan that meets FSC’s requirements this section is divided into twelve chapters:

- Chapter 10: Defining Forest Management Objectives
- Chapter 11: Describing the Forest Resources
- Chapter 12: Developing a Silviculture and Management System
- Chapter 13: Forest Inventory and Mapping
- Chapter 14: Determining Sustainable Harvest
- Chapter 15: Harvest Planning
- Chapter 16: Forest Regeneration
- Chapter 17: Forest Protections from Pests, Diseases and Fire
- Chapter 18: Environmental and Social Impact Assessment
- Chapter 19: High Conservation Value Forest Assessment
- Chapter 20: Chain of Custody
- Chapter 21: Legality
FSC Principle 7

A management plan appropriate to the scale and intensity of the operations shall be written, implemented, and kept up to date. The long-term objectives of management, and the means of achieving them, shall be clearly stated.

There are several criteria that define what should be included in the Forest Management Plan, and how it should be updated. These are:

7.1 The management plan and supporting documents shall provide:
   a) Management objectives.
   b) Description of the forest resources to be managed, environmental limitations, land use and ownership status, socio-economic conditions and a profile of adjacent lands.
   c) Description of silvicultural and/or other management system, based on the ecology of the forest in question and information gathered through resource inventories.
   d) Rationale for rate of annual harvest and species selection.
   e) Provisions for monitoring of forest growth and dynamics.
   f) Environmental safeguards based on environmental assessments.
   g) Plans for the identification and protection of rare, threatened and endangered species.
   h) Maps describing the forest resource base including protected areas, planned management activities and land ownership.
   i) Description and justification of harvesting techniques and equipment to be used.

7.2 The management plan shall be periodically revised to incorporate the results of monitoring or new scientific and technical information, as well as to respond to changing environmental, social and economic circumstances.

7.3 Forest workers shall receive adequate training and supervision to ensure proper implementation of the management plan.

7.4 While respecting the confidentiality of information, forest managers shall make publicly available a summary of the primary elements of the management plan, including those listed in Criterion 7.1.

FSC requirement for the Forest Management Plan are also described in the following criteria:

4.4 Management planning and operations shall incorporate the results of evaluations of social impact. Consultations shall be maintained with people and groups (both men and women) directly affected by management operations.

8.4 The results of monitoring shall be incorporated into the implementation and revision of the management plan.

9.3 The management plan shall include and implement specific measures that ensure the maintenance and/or enhancement of the applicable conservation attributes consistent with the precautionary approach. These measures shall be specifically included in the publicly available management plan summary.

10.1 The management objectives of the plantation, including natural forest conservation and restoration objectives, shall be explicitly stated in the management plan, and clearly demonstrated in the implementation of the plan.

FSC standard FSC STD 01 001 V4 EN
10 Defining Forest Management Objectives

The beginning section of all Forest Management Plans will include a few sentences that define the forest management objectives. Typically, these objectives are simple statements or even bullet points that clearly define the group’s intentions.

The forest management objectives are not the same as a vision statement of the community agroforest program. As we described in Chapter 3, a vision statement illustrates the future in a way that motivates stakeholders. The group will likely have many objectives, but you only need to include those relating to forestry activities for the Forest Management Plan.

Like all group management objectives, developing concise, feasible and measurable objectives will take some time. It is a good idea to develop general objectives in the beginning, and work to refine them with the group.

For FSC certification, the forest management objectives should include a statement that the group will follow the FSC standards, in addition to acknowledging the social objectives of the Forest Management Plan. The objectives can also include the different uses the forest will be managed for such as: timber, non-timber forest products (NTFP), firewood, ecotourism, habitat for wildlife, cultural or spiritual use, payment for ecosystem services, etc. SeeTextbox 4.2 for an example of forest management objectives.
Textbox 4.2: Forest Management Objectives of Koperasi Hutan Jaya Lestari (KHJL)

Koperasi Hutan Jaya Lestari (KHJL) is a local cooperative in Southeast Sulawesi made up of smallholder farmers who manage their agroforests sustainably and achieved FSC Certification in 2005. The community agroforest is of mixed vegetation, predominantly teak (*Tectona grandis*). The other timber species are jabon (*Anthocephalus cadamba*), gmelina/jati belanda (*Gmelina arboreae*), sengon (*Paraserianthes falcataria*), kemiri (*Aleurites mollucana*), jambu mete (*Anacardium occidentale*), and mangga (*Mangifera indica*). The agricultural crops which are commonly grown on KHJL members’ land are: coffee (*Coffee arabica*), cacao (*Theobroma cacao*), pepper (*Piper nigrum*), as well as others.

KHJL uses selective logging, with continuous forest cover as their main harvesting (silviculture) practice. The main objectives of forest management are:

- Provide income from harvesting and sales of roundwood
- Protect biodiversity and increase natural values of the agroforest
- Conserve the forest resources as an investment to increase the value of their forests
All Forest Management Plans should include a general description of the forest resources to be managed and relevant information on the environment, land use and socio-economic conditions of the community agroforest program and group members. This description should also include pertinent information on the adjacent lands. This summary is meant to put into context the forest management plans of the group, and will indicate to group members, as well as FSC auditors and interested stakeholders that your management plans and objectives are founded on a good understanding of these factors. The description you write does not need to be detailed, it can be just a few paragraphs and should focus on those points that you believe are most important to consider when developing management recommendations.

Typically, the following information is presented as simple paragraphs:

- Forest resources to be managed
- Environmental conditions
- Land use and ownership status
- Social and economic conditions
- Profile of adjacent lands
Textbox 4.3: Describing the Forest Resources: Case Study of Xylo Indah Pratama

For the FSC certified group Xylo Indah Pratama (XIP), in Indonesia, the land tenure is a mix of privately held lands with group members, as well as community lands that were previously managed for rubber plantations. The target timber species of pulai (*Alstonia scolaris* and *Alstonia angustiloba*) and labu (*Endospermum* species) grow naturally in these rubber plantations, and were previously regarded as weeds. Now these areas are community lands and members of XIP plant pulai trees under a joint management agreement stating their shared rights and responsibilities.

Forest resources to be managed

The forest resources to be managed will likely be a brief summary of the information you found during the forest inventory (Chapter 13) of individual group member’s lands. For smallholder agroforest you will want to describe which species are typically growing on the members’ forest plots, noting if the target timber species are grown separately, mixed with other timber species or mixed with agricultural crops. This description may also include information about the most common age of the stands, or note if most stands have trees that are all the same age (even-aged) or a mixture of ages (uneven-aged). Other relevant information about common agriculture crops or fruit trees may be listed. Remember that each member will manage their agroforest differently, but this paragraph is a general description highlighting common management strategies used by many members of the group.

The size or range of sizes of the Forest Management Units (FMU) should be described or presented in a table. Usually a single FMU is one members’ registered plot. However, if the villages you work with have many plots that are next to each other and managed together, this can also form your FMU.

You should also provide a simple description of the region in which the members’ plots are located, and include a description of the political boundaries (district, province, state, city, village, etc.) If possible, landscape level maps can be used that clearly illustrate the size and locations of the smallholder agroforest lands in the landscape.
Environmental conditions

Information collected during the preliminary survey (Chapter 4) and the forest inventory (Chapter 13) will also help you to identify some of the environmental conditions that are important for your forest management goals. Site conditions such as soils, drainage, steep slopes, rocky outcrops, gravel deposits, or the presence of protected areas with high conservation values (Chapter 19) will inform your management decisions, and impact the type, quantity or quality of timber or non-timber forest products able to be grown within the group’s agroforest plots. Other environmental factors may increase productivity for some timber species. You should include a short summary of this information, and describe briefly how these environmental conditions influence your management goals.

Land use and ownership status

For many forest management plans, the statement of land use and ownership status will be a single sentence that states the FMUs are privately, publicly, or communally managed forests. However, as we have noted in Chapter 4, in many regions of the world the land use and ownership status may be complex. The regional history of land tenure and ownership may be described, especially if there is a long history of logging or agroforest plantations of specific species or using specific methods that will influence your management decisions.

Forest Management Unit (FMU)

According to FSC, a FMU is a clearly defined forest area with mapped boundaries, managed by a single managerial body to a set of explicit objectives which are expressed in a self-contained multi-year management plan. In the case of smallholder agroforests the FMU can be defined as the individual plot, or if there are multiple plots of land owned by the same smallholder, the FMU may be defined as all of the property owned or managed by an individual.

Excluded FMUs

It is important to notes that all members of the community agroforest group will need to disclose other forested lands they are responsible for managing. These forested lands don’t necessarily have to be included in the group certificate, in which case they will need to be listed as excluded FMUs, and the forest management plan will need to include a description of controls that are in place to prevent confusion between which forest and forest products are certified and which are not.
Social and economic conditions

A description of the social and economic conditions should be summarized briefly. This information may have been researched during the Preliminary Survey (Chapter 4), the social field survey for identifying High Conservation Values (HCV) (Chapter 19), and collected through group member registrations (Chapter 7). The summary should include a short history of the population in the region, or socio-political changes that may have impacted where people have decided to live or common livelihood strategies in the region, and indications if there is a history of complaints over related issues. Demographic information on population size and density, along with geographical information such as roads or access routes for villages may be presented on maps to further illustrate the social and economic conditions in the region.

General information on how the community agroforest program is impacting the local economy and the people in the region should also be described. A summary of partner organizations or stakeholder involvement is also recommended. If there have been complaints or conflicts that have been mitigated, these could be summarized here if they impacted the forest management plans substantially. The number of people who are employed or contracted by the group manager and members should also be briefly described or presented in a table.

Profile of adjacent lands

A short paragraph describing the adjacent lands, or the matrix of land use around group member’s FMUs should be included in this section of the Forest Management Plan. This brief narrative describes the landscape of the region, if possible, accompanied by a landscape level map that clearly illustrates the location of the FMUs in relation to other areas such as state or national parks, conservation areas, or areas where the adjacent land use may affect forest management decisions. A brief narrative should describe if adjacent lands are affecting your management plans. For example, an area near some FMUs may be prone to illegal timber harvesting, so it may be necessary for forest managers to increase measures to protect their land in this area. This narrative and map may also be very useful if there are areas in the region with known land conflicts, or other regions where the certification body (CB) may be concerned about land tenure or legality.
Textbox 4.4: Mapping

Maps are a valuable tool for forest managers, group members and stakeholders to see where the boundaries of the Forest Management Unit (FMU) are in relation to:

- Legal property boundaries of all group members
- Planned activities (timber harvest, planting)
- Roads and transportation infrastructure
- Steep slopes or rough terrain
- Rivers, lakes and other waterways
- Special areas identified during the HCV assessment
- Conservation areas or other areas legally protected in the region

For small agroforests, high quality maps are not necessarily required to obtain FSC certification. Most small agroforests are evaluated using the Small and Low Intensity Forest Management (SLIMF) procedures and mapping requirements for FSC calls for a level of detail which is generally greater than many small or low intensity operations will need (see Appendix 8 on how to create a sketch map). However, maps can be very useful for forest managers and group members. Here are a list of free online mapping tools and software.

**Geographical Information System (GIS)** is a system that combines cartography, statistics analysis and database management technology. There are several free GIS software applications available online that may be useful for your group to create maps and analyze spatial and temporal information. Training in GIS technology as well as a computer that has the capacity to use the software is needed, especially if you are using high resolution digital terrain and aerial imagery. ArcGIS Explorer Desktop is a free GIS viewer available online at the ESRI website at [http://www.esri.com/software/arcgis/explorer/index.html](http://www.esri.com/software/arcgis/explorer/index.html) ESRI also offers free web tutorials on how to use several of their programs and common applications.

**Google Earth** is a free geographical information program available online that displays a virtual globe created using a mixture of satellite images, aerial photos and GIS information. Users are able to search using an address or coordinates, or search for a location using a mouse. There is varying resolution depending on the region of the world, and the imagery used is often from a mix of different time periods. The Google Earth website also offers free tutorials. [http://www.google.com/earth/](http://www.google.com/earth/)

**Global Positioning System (GPS)** is a navigation and location system that uses satellites that orbit the Earth. Individuals with a portable GPS receiver are able to receive highly accurate information on their latitude, longitude and altitude. The information can later be uploaded to a computer and used to create maps. GPS receivers are small handheld devices that have become widely available in many regions of the world and are relatively inexpensive. Many GPS receivers are integrated with GIS or Google Earth software.
One of the basic components of the Forest Management Plan is a description of the silviculture and management system that will be implemented. Silviculture is a forestry term that is used to describe all activities that are done to manipulate the forest to achieve the owner’s management objectives. Planting, pruning, weeding, thinning and timber harvest can all be classified as ‘silviculture treatments or prescriptions’.

Which silviculture treatments you use will depend on your forest management objectives and a number of factors specific to your forest, such as:

- Social and economic needs of community
- Site quality and stand characteristics
- The ecology and growing habit of the tree species
- Current forestry practices of the community
- How the trees will be used by the community members
- Market conditions and buyer preference
- Results of the Environmental and Social Impact Assessment (ESIA) and High Conservation Value (HCV) Assessment

**Silviculture:** The art of producing and tending a forest by manipulating its establishment, composition and growth to best fulfill the objectives of the owner. This may or may not include timber production.
As we note in Chapter 7, it is best to create group silviculture procedures (as well as monitoring methods) that are reflective of current practices, or where necessary are simply a small change of existing practices, instead of coming up with new elaborate procedures. Many communities dependent on agroforestry have very traditional and well developed silviculture systems that meet many of the FSC requirements already, and may require only minor changes to meet all the FSC requirements. In such cases, you should try not to change current practices too much, just describe them in your Forest Management Plan. See Chapter 4 for a list of questions to ask when meeting with community members. It is always good idea to have those individuals who will most likely be implementing any new silviculture techniques be involved in their development so that the procedures will be written in a way that is familiar and easy for them to implement.

Ecology and growth habits of the tree species

Each tree species has an ecological history that has determined its growth habits or habitat preferences. For several high value timber species, such as teak and mahogany, the optimal growing conditions have been researched and tested for decades. To find out what is currently known about the optimal growing conditions for the specific trees in your Forest Management Plan, you may need to do some research of primary and secondary sources. Forestry or horticulture books found at the library, bookstore or online are a good place to start. You will also want to contact your local forestry offices, research institutes and universities to find information that is more specific to your growing region. Local forestry professionals or extension agents may also be a good source of information or lead workshops on the recommended practices for tree maintenance of different species in the region.

Recommended Resources:

There are several international research institutions researching community agroforestry and agroforestry management, each with a number of resources available on their websites:

- Agriculture Research for Development (CIRAD) www.cirad.fr/en
- Australian Centre for International Agriculture Research (ACIAR) http://aciar.gov.au/
- Center for International Forestry Research (CIFOR) www.cifor.org
- The Center for People and Forests (RECOFT) http://www.recoftc.org
- World Agroforest Centre (ICRAF) www.icraf.org
### Table 4.1: Ecology and Growth Habits of Teak and Mahogany in Agroforest Systems in Indonesia

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<thead>
<tr>
<th></th>
<th>Teak</th>
<th>Mahogany</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Climate</strong></td>
<td>Dry climates</td>
<td>Moist climates</td>
</tr>
<tr>
<td><strong>Soils</strong></td>
<td>Does well in degraded and poor soils</td>
<td>Grows best in fertile soils</td>
</tr>
<tr>
<td><strong>Light</strong></td>
<td>Needs direct sun light to grow</td>
<td>Grows well in partial shade</td>
</tr>
<tr>
<td><strong>Growth rate</strong></td>
<td>Slow growing</td>
<td>Slow growing, but faster than teak</td>
</tr>
<tr>
<td><strong>Recommended planting pattern</strong></td>
<td>Best if planted in a cluster, or border trees</td>
<td>Best if planted between crops, slopes, and next to water bodies</td>
</tr>
<tr>
<td><strong>Plant community</strong></td>
<td>Agriculture crops can be grown between seedlings for the first three to five years, after this time the leaves block sunlight to other crops and fallen leaves may create a barrier over the soil</td>
<td>Agriculture crops can be inter-planted between mahogany trees. The large feathery leaves allow sunlight to reach crops in the understory. Leave can be used to enrich the soil or fed to cattle</td>
</tr>
</tbody>
</table>
Market conditions and buyer preference

If one of your goals is to increase the revenue from timber sales, you should also consider the market conditions for each timber species when developing your silviculture treatments. As we mention in Chapter 4, and Chapter 24, a survey of the market conditions will tell you who the main buyers are and their timber preferences. It is a good idea to aim to produce the wood to the specific size and quality that the buyer will want.

For example, one of your target buyers may be a furniture factory that prefers to buy large teak logs that are 20 cm in diameter, have a straight bole, are four meters long and have few knots. To produce logs of this size and quality, you will likely need to prune the lower branches of young teak trees for several years. You may instead decide to plant the teak seedlings close together so that the lower branches shade one another and the trees are less likely to grow as many low branches. To produce a teak tree of this size quickly, you will need to thin the stands to release the remaining trees from competition, which will improve their growth rate. The tree harvesting methods may also be developed so that the lengths of the logs are four meters or longer. All of the silviculture treatments will increase the amount of timber that can be sold to this particular buyer.

Environmental and Social Impact Assessment and High Conservation Value Assessment

The silviculture treatments you choose will also depend on the results from the Environmental and Social Impact Assessment (ESIA) (Chapter 18), and the High Conservation Value (HCV) Assessment (Chapter 19) of the group. The ESIA will help you to identify likely environmental and social impacts from your forestry operations, including your silviculture treatments. The HCV survey will tell you if there are special areas within the forest that will need to be protected from unnecessary negative impacts. The results from both of these surveys will need to be integrated into the process of deciding on which silviculture treatments to use.
Textbox 4.5: Common Silviculture Treatments

**Thinning:** The goal of thinning is to reduce the density of trees in an area, so that the remaining trees can have more space and access to sunlight, water and soil nutrients, and thus grow faster. Thinning results in higher growth rates, quality and quantity of timber volume for the remaining trees.

**Pruning:** The goal of pruning is to remove the lower branches of trees so that knot-free wood will grow over the cut stub. Pruning results in higher quality of wood when your market does not like knots.

**Weeding or Cleaning:** The goal of weeding or cleaning is to clear away other plants around newly planted timber species, to reduce competition with the tree seedling. Weeding or cleaning results in higher survival and improved growth rates for seedlings.

There are several different methods and best practices for each of these common silviculture prescriptions. What may be good for one tree type may not be good for another. It is important to research the recommended silviculture treatments for each of the tree species in your Forest Management Plan or create experimental plots to test different treatments.
Central to all forest management plans is information collected during a forest inventory. The forest inventory is essentially a survey of the trees within the agroforest plot and an assessment of the condition of the forest. The forest inventory procedures do not need to be complicated, but some thought is needed when developing methods and training the field crew so that the information collected is accurate. The forest manager will use this information to calculate the number of trees and volume of wood that will be available to harvest, when the harvesting is scheduled to take place in the near future, as well as calculating the sustainable harvest levels and Annual Allowable Cut (Chapter 14).

As you do an inventory, the information you collect should be based on your forest management goals for different species. For example, species that you are planning to harvest for sale may require detailed information regarding their current size and age, so that the age when they can be harvested and the volume of wood they will provide can be estimated. On the other hand, trees that are grown purely for fruit, firewood or aesthetics will not need as detailed information. For these a general age and number can be roughly estimated and exact measurements of volume are not necessary.
How do you conduct a forest inventory?

For conventional natural forests and plantations, forest inventory methods are designed to collect information about the forests as a whole, based on measurements from a representative sample of trees. This is because it takes too much time and resources to measure every tree in a large forest. For smallholder agroforests that may be as small as 1/10 hectare in size, this is generally not the case. Small plots of forest may not contain a large number of trees, so it makes more sense to measure each tree above a certain minimum diameter and have a more precise estimate of volume for each individual smallholder. If however, smallholder agroforest plots are large or are densely planted it may be more practical to measure a sample of trees, like every 10th or 20th tree. Choose a number that is manageable given your time and resources.

The forest inventory is typically conducted by a team. One individual records information as one or more other individuals count and measure the trees. For merchantable timber, it is common to measure the diameter (or circumference) and the height of each tree. Merchantable height (see Figures 4.2 and 4.3) may also be estimated for trees that will be harvested within the next year. For tree species that are not merchantable, you may want to just count them, or sample a smaller number for size measurements.
Good Forest Inventory Will Define:

- Which tree species to measure (those that are to be sold = merchantable)
- If you are to measure all of the trees in the plot, or a representative sample
- If you are to measure all sizes of the trees, or just those larger than a minimum size
  (ex. > 10 cm diameter, or >1.5 m tall)
- At what height the diameter will be measured
  (diameter at breast height (DBH) can be 1.3, 1.4, or 1.5 m)
- How to measure diameter and height if the tree is on a slope
- How to measure diameter if the tree is branched, has a growth or has been knocked down
- If total height is to be measured and/or merchantable height is to be measured
- Key site characteristics that should be noted
- How to make a map and what aspects of the site to note on the map
- What tools to use for the different activities

See Appendix 7: Guidance on How to Measure Tree Diameter
The forest inventory team should also create a hand drawn sketch map of the agroforest plot that defines key site conditions (see Appendix 8). These conditions may include roads, waterways, steep slopes, buildings or other key items. The inventory team may also classify the adjacent land use types, note who owns the neighbouring plots, and note if the plot is next to a conservation area or a High Conservation Value area (see Chapter 19). Notes about the management issues on the site should also be included, such as any evidence of fires, erosion, tree pests or diseases, and other concerns. If there are obvious groups of merchantable trees that appear to be the same age, they should be defined as a block, and the age of the block can be noted.

The forest inventory may also give you an idea of the current forestry practices and silvicultural techniques used by farmers. For example the forest management team may note if the owner prunes or thins the target tree species. Noting specific management practices used for each site will also be useful as baseline data when you return to the site to check if any new forest management practices have been implemented based on group rules or recommendations.

You may also decide to create site classes or indices that are bases on common stand conditions, such as average height of forest canopy, percent closed canopy, slope, aspect, soils, mix of species or associated vegetation. Creating a checklist of site classes can greatly speed up the assessment, while still getting a good idea of the site potential.

Consistency and accuracy is very important when developing forest inventory methods. Creating forms for the forest inventory process, such as the sample sketch map and inventory data form in Appendix 8, can help the teams to be systematic in their data collection. The aim is to collect the relevant information in the same way every time so that the information from each smallholder forest can be combined into a single group Forest Management Plan.
Common tools that can be used for the forest inventory

Tools to measure tree diameter:

- Diameter tape: a small flexible tape measure that can wrap around the truck of a tree; may measure the diameter or circumference
- Caliper: a tool that measures the diameter of a small tree trunk
- Fixed reference pole with the DBH marked

Tools to measure tree height:

- Clinometers: a tool that requires the forester to stand a fixed distance from a tree and measure the angle from the bottom of the tree to the top
- Christen altimeter: a tool that require one forester to stand next to the tree with a fixed reference (4 meter pole). The observer then fits the visual parts of the tree between the upper and lower ends of the tool.

Tools to map the site:

- Compass
- Paper map of the region, preferable with topography
- Stakes to mark boundaries
- Tape measure or hip chain that measures distances between 50 – 100 meters
- GPS receiver: a handheld device that can record the longitude and latitude of a position using global satellites
- Graph paper

Material to record measurements in the field:

- Note pad or tally book
- Inventory data sheets, customized to forest inventory methods
- Data logger
Tools to mark trees

- Permanent paint or ink
- Plastic or metal labels
- Flagging materials

Guides and tools to identify plants and animal species

- Photos and description of important plants and animals to look for (rare, threatened, endangered, locally protected species, and exotic species to be controlled)
- Photos and description of rare ecosystems
14 Determining Sustainable Harvest Levels

A key component of a sustainable community agroforest program is to establish a level of timber harvest that is not more than the growth and regeneration of the forest over time. This harvest level is called sustainable yield, and is fundamental to sustainable forest management.

The term sustainable yield can be defined several different ways, and many academics continue to debate what this concept should include. For FSC, the term sustainable yield is not used in any of the standards but it is implied in Criterion 5.6 (see Textbox 4.6). For a region dominated by agroforests, sustainable yield means that the total volume of timber harvested from a forest is being replaced by the new seedlings that are planted or grow naturally after harvest.

Calculating sustainable yield levels can be accomplished using several different methods (ex. Gerhardt Method, Cotta Method, Von Mantel Method). There are also several statistical models that have been developed by research institutions for calculating sustainable yield (ex. SIRENA, DIPSIM, MERLYN, FORMIX). The majority of these methods and models were developed for large forests, and the choice to use one of these methods depends on the forest characteristics, group manager capacity and the silvicultural goals.

Typically for a community of small agroforest owners, estimating a sustainable harvest level can be done by setting an Annual Allowable Cut (AAC) using information collected during the forest inventory (Chapter 13), and then if possible further improved with more precise information collected from permanent monitoring plots on the member’s land over time. For natural forests, the AAC can be calculated by dividing the total forest area up into annual cutting blocks, or based on growth. But as we will describe in more detail in the next sub-chapter, for community agroforests the decision of which trees to harvest during the year needs to include the social and economic needs of individual farmers.

Textbox 4.6: FSC Principles and Criteria Review: Briefing Paper on Sustainability

Criterion 5.6 “The rate of harvest of forest products shall not exceed levels which can be permanently sustained.”

In 2010, members of the FSC Principles and Criteria Review Working Group published a briefing paper to clarify the FSC requirements and minimize the different interpretations of Criterion 5.6. Many stakeholders wished to change the wording to include the phrase ‘sustainable yield’; however the word sustainable seldom appears in FSC documents because there are many different definitions used in forestry. The Working Group concluded that:

1. FSC does not insist on “sustained yields” in the sense that the quantity or specific product harvested in any year or period must always equal another quantity calculated from current, past or future growth rates.

2. FSC does not rule against selective harvesting, except in extreme forms such as “creaming” [harvesting only the best trees with the detrimental effects of local extinction of timber species, increased populations of genetically inferior forms or growth rates, and/or economic failure of forest management].

3. FSC does not rule against temporary or long-term changes in the yield or standing volumes of any specific forest product arising from management activities, provided that:

4. Ecosystem functions, environmental services (as defined) and the continued existence of viable populations of native species are not impaired by management activities or by the changes they produce.

5. The expected changes in yields and volumes are explained in the approved management planning documents, to a level of detail appropriate for the scale and intensity and risks of those changes.

6. The changes in yields or standing volumes of any specific forest product do not impair achieving the long-term objectives described in the approved management documents.

7. Changes in yields or volumes of products do not impair the long term security of workers and local communities, and/or that compensation is provided for negative effects according to legal requirements.

How do you calculate sustainable harvest levels?

To calculate sustainable harvest levels, forest managers must have reliable information from each of the group members’ inventories. Information from the forest inventory (Chapter 13) will include:

- Number of commercial timber trees in various size ranges (such as diameter 0-5, 6-10, 11-15, 16-20, etc)
- Diameter and height for each tree of the commercial timber species above a certain minimum diameter in size
- Area of each farmer’s agroforest to be included in the forest plan

This information can be compiled into a spreadsheet so that forest managers can calculate the:

- Total number of commercially marketable trees
- Total volume of commercial timber
- Total area of forest production in the community agroforest program
- Density of timber per member or village for each tree species (meters$^3$/ha)

Textbox 4.7: Estimating Volume Based on DBH and Height

Trees are essentially cylinders that taper at the top. The species and growing conditions of each tree will influence how much the tree stem tapers. Trees grown in shade typically taper much less than those grown in full sun. To account for this the forest manager can use a measuring tape to measure height of a tree after it has been harvested, along with the diameter at breast height (DBH), to establish a DBH to total height relationship that can be used to estimate volume. This information may also be useful for estimating carbon stock based on number of trees in each diameter class.
Creating a stand table

Using this information, forest managers can create a stand table by grouping tree types based on common characteristics such as species, growth or commercial value, and then organizing individual trees into categories based on diameter classes (see Figure 4.5). A stand table is useful because it enables the managers to see the amount of commercial timber that is of marketable size, now and in the future.

The stand table can then be combined with information about the growth rates and mortality rates of the trees to predict how many trees will move from one diameter class to the next each year. For example, if the growth rate for a tree in the diameter class of 0–9 cm is 1 cm/year, then it would take 10 years for all the trees in this class to reach the next diameter class of 10-19 cm. If you want an estimate of how many trees will enter the 10-19 cm diameter class each year, just divide the number of trees in the 0-9 cm class by 10. If you also know that the mortality rate for small trees is 10 percent, then you should subtract 10 percent from the overall number of trees in the 0-9 cm diameter class before you divide...
it by the growth rate 10. You can do this for each diameter class, and get a good estimate of how quickly trees will grow into your ‘merchantable size’ or above the minimum diameter for harvest each year.

Estimating tree growth and mortality rates

By adding information on the growth and mortality rates for each individual species, forest managers can then estimate a sustainable harvest level and calculate AAC. For timber trees, the growth rate is usually described in increments of average diameter growth per year. This information can be found by contacting a regional forestry office, university, NGO or forestry research institution in your region. For many tropical tree species, the average growth rates may not be known. It is also very probable that the growth rates for a timber species will not be a precise estimate of the growth rates in the region for the community agroforest program. As most

Textbox 4.8: Stages of Tree Growth

All plants grow at different rates throughout their lifespan. If you measured the size of a tree every year of its lifetime you would notice a pattern similar to the graph below. When a tree is a young seedling the growth is very small and gradual, as the seedling is developing in structure but not gaining in size. Then in the juvenile stage the tree’s growth rate shoot up very quickly. In general, trees grow first in height then in diameter. Once the tree reaches its full maturity, it will generally produce the largest amount of seeds or fruit, but grow very little in size. The exact rates and age of each stage of growth depends on the tree species, and can be affected by a number of factors such as:

- Spacing of trees
- Site conditions
- Climate conditions
- Silvicultural treatments
- Genetics
farmers will tell you, plants grow at different rates depending on the spe-
cific site conditions, such as the availability of water, light, and soil nutri-
ents, in addition to the local climate conditions, and how the land is used
for other purposes (Textbox 4.8).

For agroforests, the growth rate of tree species in the region can be found
by recording the general site characteristics of each plot during the inven-
tory and simply asking farmers when they planted specific trees. You can
divide the diameter of trees by the number of years they have been grow-
ing to get a growth rate estimate. This will give a good estimate of growth
rate, but it is important to note that trees grow at different rates according
to their age, with the greatest increase in size occurring when the tree is
juvenile. Thus, this method works best if you are dealing with large, mature
trees. At what age a tree has reached its full maturity depends on factors
such as site conditions, spacing of trees to one another, climate conditions,
silviculture treatments and genetics.

Mortality rates, or the rates at which trees die, are also important to con-
sider in your stand table and sustainable yield calculations. Usually mor-
tality rates are highest among young tree seedlings, but they may also
be significant for juvenile or old trees in areas that are prone to natural
disturbances such as floods, fires, hurricanes or landslides. Lightening can
also regularly kill mature trees. You can get an idea of local mortality rates
among your members by interviewing members who have planted trees
in the last five years. Ask them how many they planted, and how many of
those survived to the next year, or survived until the present. Most farmers
will be able to give you a pretty good estimate of this. It is more difficult if
you are dealing with tree species that naturally regenerate since the mem-
ber likely has put less effort into monitoring each seedling’s success.

**Monitoring permanent sample plots**

Establishing a series of permanent sample plots will enables you to learn
the mature height, diameter and preferred growing conditions for each
species. This information will also be useful when the community be-
gins developing best practices for growing and maintaining trees (Chapter
12).

A permanent sample plot is an area within a forest or agroforest that will
be monitored periodically. The area should be a typical or representative
sample of the forest stands in the region. The monitoring methods do not
need to be complex, but should aim to identify major changes in the forest
ecosystem, especially growth and mortality of target species, and impacts
of forest management on any HCV or environmentally sensitive areas.
Once you have gathered data for each permanent sampling plot, you can calculate the average for all the stands. These averages can then be used to predict growth rates and mortality rates in your stand table. However, be careful that your averages are not skewed by permanent sample plots located in areas that are not very common in your members’ land. Try to only establish the plots in typical forest types or conditions that are very common among your group.

Growing conditions for trees can be affected by different site characteristic such as soil, rainfall or sun exposure. If there are big differences between the local site conditions of different agroforests, then it may be better to set up additional permanent sample plots that correspond to other representative forest stands.

When setting up a permanent sample plot, it is important to define the data collection methods so that monitoring is consistent and replicable. It is also a good idea to define whose responsibility it is to conduct the monitoring and how the results will be reported to the group.

Steps to setting up a forest management monitoring plot:

1. Find a representative areas for the permanent sample plot
2. Mark the boundaries so that the area will be easy to locate each year
3. Create simple monitoring methods that help you to identify how the forest is changing over time
4. Create a data form or template so that monitoring information can be easily compared year after year
5. Follow a schedule in which monitoring is conducted at the same time every year
6. Define how results will be evaluated
7. Define when results will be reported to the group

While the permanent sample plots do not need to be highly scientific, it may be useful to ask if a local research institute or university is interested in conducting monitoring and presenting the results to the group.
Calculating Annual Allowable Cut

The Annual Allowable Cut (AAC) is the number of trees, set area or volume of timber that may be harvested during a given year to maintain a sustained production of wood. There are many different ways to calculate AAC’s. If possible, try to use methods that are familiar to the communities you work with and easy to calculate. You may also want to consult with local forestry experts for help.
Here is a list of common ways to calculate AAC:

- **AAC by area**: Take the total area (hectares or acres) of all the FMUs in your group and divide it by the number of years it takes for the species you are calculating the AAC for to grow to its minimum harvest diameter. The result is the area that you can harvest each year, or your AAC. Although this is an easy way to calculate AAC, be aware that for agroforests some plots may have very different densities of trees, thus it will be difficult to predict your merchantable timber volume from year to year if you use this method.

- **AAC by minimum diameter**: Choose a minimum diameter for the trees that you can harvest for sale each year (this does not include trees harvested as part of thinning or controlling pests or fire). Ensure that your members only harvest trees above that minimum diameter. This is the easiest way to calculate AAC, and is nice because you can harvest the amount you need to fulfill orders. However, you risk over-harvesting some years, and then needing to wait until more trees grow above the minimum diameter to begin harvesting again. You will need to closely check your inventory and stand table to ensure that you do not deplete all the large trees in the members’ plots before the younger trees have a chance to grow. The next option for calculating AAC is more conservative, but helps prevent that problem.

- **AAC by number of trees above minimum diameter**: Divide the total number of trees above a minimum diameter by the number of years it takes to reach that minimum diameter size. For example, if you have 10,000 trees above a minimum diameter of 30 cm, and on average it takes the trees 10 years to reach 30 cm diameter, your AAC could be 10,000 / 10 = 1,000 trees per year. This will ensure you have at least 10 years to replace the trees that you harvest in your first management year, before running out of trees above the minimum diameter. As long as you replant enough trees after harvest to replace those that are cut, then you will always have an AAC of 1,000 or more trees. You can adjust the number of years that you divide by if you want. For example, many agroforest programs will divide by the number of years it takes the diameter class trees just below the minimum harvest diameter to reach the minimum harvest diameter.

- **AAC by volume**: Rather than defining the number of trees you can cut each year, you can define the volume to be cut. To do this, calculate the total merchantable volume of trees above the minimum diameter and then divide it by the number of years it takes a tree to reach that minimum diameter (from a selected diameter class or from when it is planted). This allows you to be sure to be able to sell the same amount of volume to customers from year to year. To do this, calculate the total merchantable volume of trees above a minimum diameter and then divide it by the number of years it takes a tree to reach that minimum diameter (see Textbox 4.10).
Textbox 4.10: Example Calculation of Annual Allowable Cut (AAC) by Volume

In this example we are using information on the volume, growth rates and forest production area to calculate the AAC by volume for a hypothetical group in which members are organized into village groups. The table below is some imaginary data collected during a timber inventory. In this example, all of the teak trees above 10 cm diameter on members’ land in Village A were marked with a unique tree identification number (tree I.D. #) and the species, height and diameter were recorded. For simplification, this example only includes one tree species (teak), but a typical timber inventory will include all timber species that the community agroforest program plans to sell.

Table 1: Example Village A Timber Inventory

<table>
<thead>
<tr>
<th>Tree I.D. #</th>
<th>Tree Species</th>
<th>Height (m)</th>
<th>Diameter (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 - 0001</td>
<td>Teak</td>
<td>17</td>
<td>0.29</td>
</tr>
<tr>
<td>A1 - 0002</td>
<td>Teak</td>
<td>20</td>
<td>0.34</td>
</tr>
<tr>
<td>A1 - 0003</td>
<td>Teak</td>
<td>6</td>
<td>0.18</td>
</tr>
<tr>
<td>A1 - 0004</td>
<td>Teak</td>
<td>18</td>
<td>0.52</td>
</tr>
<tr>
<td>A2 - 0001</td>
<td>Teak</td>
<td>16</td>
<td>0.29</td>
</tr>
<tr>
<td>A2 - 0002</td>
<td>Teak</td>
<td>10</td>
<td>0.44</td>
</tr>
<tr>
<td>A3 - 0001</td>
<td>Teak</td>
<td>8</td>
<td>0.19</td>
</tr>
</tbody>
</table>

Step 1: calculate the volume of each commercially valuable teak trees for Village A.\(^3\)

Remember that the equation for the volume of a cylinder is:

\[
\text{volume} = \pi \times \text{radius}^2 \times \text{height} \times \text{taper coefficient} (0.42)
\]

Note that there are several taper coefficients to account for the taper of trees (see Textbox 4.7). The factor 0.42 can be used when the exact taper for a region and species is not known. Local forestry department may have their own recommended equation or a stand table.

You will need to calculate radius by simply dividing diameter in half

\[
\text{radius} = \text{diameter} / 2
\]

Continued on next page

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\(^3\) Remember to convert forest inventory data in the same type of measurement (i.e. into meters or centimeters)
Table 2: Forest Inventory Data with Volume

<table>
<thead>
<tr>
<th>Tree I.D. #</th>
<th>Tree Species</th>
<th>Height (m)</th>
<th>Diameter (m)</th>
<th>Radius (m)</th>
<th>Volume (m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 - 0001</td>
<td>Teak</td>
<td>17</td>
<td>0.29</td>
<td>0.145</td>
<td>3.252</td>
</tr>
<tr>
<td>A1 - 0002</td>
<td>Teak</td>
<td>20</td>
<td>0.34</td>
<td>0.17</td>
<td>4.486</td>
</tr>
<tr>
<td>A1 - 0003</td>
<td>Teak</td>
<td>6</td>
<td>0.18</td>
<td>0.09</td>
<td>0.713</td>
</tr>
<tr>
<td>A1 - 0004</td>
<td>Teak</td>
<td>18</td>
<td>0.52</td>
<td>0.26</td>
<td>6.175</td>
</tr>
<tr>
<td>A2 - 0001</td>
<td>Teak</td>
<td>16</td>
<td>0.29</td>
<td>0.145</td>
<td>3.061</td>
</tr>
<tr>
<td>A2 - 0002</td>
<td>Teak</td>
<td>10</td>
<td>0.44</td>
<td>0.22</td>
<td>2.903</td>
</tr>
<tr>
<td>A3 - 0001</td>
<td>Teak</td>
<td>8</td>
<td>0.19</td>
<td>0.095</td>
<td>1.003</td>
</tr>
</tbody>
</table>

**Step 2:** Sort the data by the diameter and categorize each tree into one of three size classes (note that you can decide how many size classes you want to use).

- small = 10–19 cm
- medium = 20–29 cm
- large = 30 cm or higher

Table 3: Forest Inventory Data with Size Classes

<table>
<thead>
<tr>
<th>Tree I.D. #</th>
<th>Tree Species</th>
<th>Height (m)</th>
<th>Diameter (m)</th>
<th>Radius (m)</th>
<th>Volume (m³)</th>
<th>Size Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 - 0001</td>
<td>Teak</td>
<td>17</td>
<td>0.29</td>
<td>0.145</td>
<td>3.252</td>
<td>20-29 cm</td>
</tr>
<tr>
<td>A1 - 0002</td>
<td>Teak</td>
<td>20</td>
<td>0.34</td>
<td>0.17</td>
<td>4.486</td>
<td>30 cm +</td>
</tr>
<tr>
<td>A1 - 0003</td>
<td>Teak</td>
<td>6</td>
<td>0.18</td>
<td>0.09</td>
<td>0.713</td>
<td>10-19 cm</td>
</tr>
<tr>
<td>A1 - 0004</td>
<td>Teak</td>
<td>18</td>
<td>0.52</td>
<td>0.26</td>
<td>6.175</td>
<td>30 cm +</td>
</tr>
<tr>
<td>A2 - 0001</td>
<td>Teak</td>
<td>16</td>
<td>0.29</td>
<td>0.145</td>
<td>3.061</td>
<td>20-29 cm</td>
</tr>
<tr>
<td>A2 - 0002</td>
<td>Teak</td>
<td>10</td>
<td>0.44</td>
<td>0.22</td>
<td>2.903</td>
<td>30 cm +</td>
</tr>
<tr>
<td>A3 - 0001</td>
<td>Teak</td>
<td>8</td>
<td>0.19</td>
<td>0.095</td>
<td>1.003</td>
<td>10-19 cm</td>
</tr>
</tbody>
</table>

**Step 3:** Sum the volumes and number of trees for each diameter size class for teak trees in Village A

*Continued on next page*
Step 4: Repeat steps 1-3 for each village and compile that data for all villages in the community agroforest program.

### Table 4: Example Total Volume for Size Classes

<table>
<thead>
<tr>
<th>Size Class</th>
<th>Total # Trees</th>
<th>Total Volume (m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small (10-19 cm)</td>
<td>2</td>
<td>1.715</td>
</tr>
<tr>
<td>Medium (20-29 cm)</td>
<td>2</td>
<td>6.314</td>
</tr>
<tr>
<td>Large (30 cm +)</td>
<td>3</td>
<td>13.564</td>
</tr>
</tbody>
</table>

Step 5: Calculate the number of years it will take for a medium tree to grow into a large tree given that the difference between the size classes is 10 cm, and the estimated growth rate for teak in the region is 1.5 cm per year.

\[
\frac{10 \text{ cm}}{1.5 \text{ cm per year}} = 6.7 \text{ years}
\]

Step 6: Calculate the Annual Allowable Cut by dividing the total volume of the large trees by the number of years it will take for a medium sized tree to grow into a large tree.

\[
\frac{2760 \text{ m}^3}{6.7 \text{ years}} = 412 \text{ m}^3 \text{ per year}
\]
Textbox 4.11: Standing Volume vs. Merchantable Volume

The actual standing volume of a tree, as estimated by the forest inventory, may differ from the volume of wood that you can sell from that tree (merchantable volume). This may be due to many different reasons. For example, the harvester may cut higher on the tree than you expect, thus leaving some volume unharvested at the base. There may be unexpected rotting or blemishes in the wood that will need to be cut off. During the grading process the low quality wood may be unwanted by the buyer. It is also possible that your inventory measurements were not accurate.

To account for these variables, forest managers often calculate the merchantable volume to determine the recovery rate for their forest operations.

\[
\text{merchantable volume} = \text{merchantable height} \times \text{diameter}^2 \times \text{recovery rate}
\]

To estimate the recovery rate, compare the estimated volume for a tree based on the inventory data, to the actual volume of the tree once it has been harvested, graded and bucked, then sold to the factory using the following equation:

\[
\text{recovery rate} = \frac{\text{merchantable volume}}{\text{estimated volume before harvest and grading}}
\]

For example, if the inventory volume estimate for a tree is 3 m³ and the actual merchantable volume after harvesting, grading, bucking is 2.25 m³, then the recovery rate is calculated by:

\[
\text{recovery rate} = \frac{2.25 \text{ m}^3}{3 \text{ m}^3} = 0.75 \text{ or } 75\%
\]

\[
\text{merchantable volume} = \text{inventoried volume} \times 0.75
\]

This recovery rate should be figured into your AAC calculations and used when estimating how much you can sell in a given year. As the quality of timber improves with silvicultural best practices, the recovery rate will increase. To calculate your recovery rate, you should compare merchantable and inventory volumes for as many harvested trees as possible.
Revising the AAC based on new information and new members

The AAC will need to be revised periodically based on new information from the permanent forest plots. For example, the permanent forest plots may show that the growth rates for a specific species are actually much lower than what was first estimated. The community agroforest program risks over-harvesting the timber unless the AAC is reduced to account for these new growth rates. It is also possible that permanent monitoring plots will find that certain silviculture treatments increase tree growth rates. Once the new methods are implemented by the community, the estimated growth rates for the AAC can be increased.

For most community agroforest programs, the AAC will also need to be recalculated periodically as new members join and others leave. This will be especially true in the first few years of the program, when membership is expected to grow quickly. Forest managers will need to keep excellent records of new members and enter the results of the new member forest inventories into their AAC calculations as quickly as possible (see Chapter 8). It is also important to remember that when farmers join the community agroforest program they agree to follow a sustainable harvest level, but the procedure on how the community decides which trees will be harvested will need to be developed by the group (see Chapter 7).
Harvest planning is an important activity for community agroforest programs. Not only is it important to protect the ecological functions of forests by limiting the negative impacts of timber harvesting on soils and other vegetation, but careful harvest planning can also reduce dangerous logging accidents, and reduce the amount of valuable timber lost due to accidental breakage.

Over the past few decades a series of reduced impact logging (RIL) techniques have been developed for natural tropical forest conditions. For smallholder agroforest many of these techniques can be used to plan an effective and safe timber harvest. FSC also requires that special areas identified during the Environmental and Social Impact Assessment (Chapter 18) and all High Conservation Value (HCV) Assessment (Chapter 19) have special management considerations written into the Forest Management Plan to ensure that they are protected from the negative effect of timber harvesting activities.

In this chapter we will discuss why RIL techniques are recommended, and give you an overview of some of the key considerations when developing harvesting procedures for agroforests in the tropics. We will also discuss why the decision on which trees to harvest is a challenge with smallholder agroforests, and why having a flexible system is important.

Recommended Resources:

Why is reduced impact logging important?

Some timber harvesting procedures can leave forests in a highly degraded state. The felling, skidding, bucking and loading of logs onto trucks usually cause negative impacts to the surrounding environment. During the cutting of the trees, adjacent trees can be pulled down if their canopies are connected by vines or if the tree falls on top of other trees or plants. The skidding can cause a lot of damage as the cut tree is dragged against the remaining trees, removing bark and lower branches. Skid trails can leave deep furrows that alter how water runs off an area and may increase soil erosion. The bucking of cut trees typically requires that the trees and brush of an area within the forest be cleared for a landing. The areas where the slash is piled up and left on site can create a barrier for other plants to grow, invite insect outbreaks, and increase the risk of a fire in dry areas. The use of heavy trucks and machinery in the forest can damage the remaining plants in addition to compacting the soil. RIL guidelines have been developed to address many of the possible negative impacts of logging.

For agroforests, RIL guidelines may include additional considerations. Timber extraction can damage crops or non-timber forest products that are important to the smallholder livelihoods. Timber harvest operations in areas where agroforests are very small (0.5 - 2 ha) or densely populated will need to include additional safety precautions to ensure trees do not fall on neighbouring people, houses or livestock. Water bodies in densely populated agroforest

Timber Harvesting Terms:
- **Felling**: cutting down of select trees
- **Skidding**: dragging of cut trees
- **Bucking**: on site processing of cut trees into merchantable logs of specific lengths
- **Landing**: area where the cut trees are stacked and sometimes bucked, before being loaded onto truck
- **Slash**: the branches and top of bucked trees, and other vegetation cleared during timber harvesting
regions may be especially important to protect if they are an important source of freshwater used by many people. Finally, it is much more important with smallholders than large logging concessions to maximize the amount of the tree that is to be sold.

Protecting Soil and Water Resources

In many countries there are specific laws protecting soil and water bodies. Forest managers should contact appropriate government agencies to find out what existing guidance is available and ensure that timber harvesting operations are complying with all policies before they harvest any trees.

What is reduced impact logging?

Reduced impact logging (RIL) is a concept of properly planned and implemented forest management including a set of timber harvesting methods designed to reduce the environmental damage caused by timber harvesting. There are different practices developed for different forest conditions worldwide. For tropical forests, the FAO has identified several key requirements that should be considered when developing RIL procedures (see Textbox 4.12). The RIL methods will be unique to every group, as they are developed with the specific environmental, social and economic conditions of the group forest management in mind and reflect the tools and technology available. In general, RIL methods can be categorized into three basic operations: pre-harvest planning, harvest supervision and post-harvest monitoring.

Pre-harvest planning

During pre-harvest planning the harvest supervisor will map out and plan out each step in the timber harvesting process. Pre-harvest planning typically occurs after a pre-harvest inventory has been completed (Chapter 13) in which all of the trees to be harvested have been marked and measured. If any timber permits were required, they have been received so that timber can be harvested and transported legally.

The supervisor will use a map of the agroforest that includes the location of any waterways, steep slopes and any HCV areas to be avoided during harvesting and extraction (Chapter 19). For example, if there is a HCV area which contains rare bird habitat, the Forest Management Plan may require a 50 meter buffer zone be marked around the nesting trees during the bird breeding season. The logging

crew will then mark the trees in this buffer zone to be excluded. The same may be true for buffer zones around waterways or steep slopes, or the Forest Management Plan may require that only a limited number of trees can be harvested in these sensitive areas. The specific protection actions will need to be developed in advance.

In general, reduced impact logging requires that the forest manager try to limit how large of an opening the landing will be. For many agroforests, there are already open areas that can easily be used for landings and a new area does not need to be made. The forest manager must also determine the distance each tree will be skidded. The paths in which the trees are skidded may be planned out to avoid other trees, as well as avoid causing damage to any other vegetation. The timing of the logging may also be planned when soils are dry, or when important crops have already been harvested.

Textbox 4.12: Reduced Impact Logging (RIL)

RIL is the intensively planned and carefully controlled implementation of timber harvesting operations, which include a series of logging techniques to reduce the negative environmental impacts of timber harvesting and improve worker safety. The specific techniques vary, depending on local conditions.

RIL techniques aim to reduce or eliminate:

- Unnecessary roads and skid trails
- Unnecessary landings that are too large
- Substantial large tree canopy openings
- Unnecessary damage to the remaining trees and other plants
- Unnecessary machinery use
- Injury among forest workers
- Unnecessary impact to any HCV

Because smallholder agroforests are a mix of forest and agriculture, additional precautions need to be included in RIL techniques to reduce or eliminate:

- Unnecessary damage to adjacent crops
- Injury to livestock or other wildlife
- Injury to neighbours and their property
Harvest supervision

Once the planning has been completed, the supervisor may need to first inform all of the adjacent property owners that they are doing timber harvesting and that people should avoid the area, in order to limit any accidents. Safety procedures and equipment should always be used.

The team will likely use directional felling to minimize waste and accidental breakage of the tree (see Textbox 4.13 for example procedure for directional felling within agroforests). Directional felling is also an important method because it limits the risk of damaging the remaining trees, or injuring members of the logging crew or neighbours. Before each tree is felled, all vines should be cut that may connect the crowns of adjacent trees. Some of the branches of the tree may also be cut in advance to limit the chance the stems of the tree will break when it falls, or the branches will damage crops or property when they fall. Ropes can be used to pull the harvested branches and tree in a certain direction, once again avoiding damage to nearby areas.

Next, the crew will need to process the tree by cutting off the branches and the top areas that are too small to be sold. The slash should be disposed of in a way as to limit its falling into water bodies and blocking flow. If pests or fires are an issue, slash should be broken down even more. This wood may be useful as firewood, small artisanal woodworking or can be broken down into sawdust or wood chips and spread evenly across the land as mulch. Leaves can sometimes be fed to livestock or used as mulch. Some slash may also provide valuable ground cover or mulch to the agricultural areas of the agroforest.

The tree may need to be moved from the place it fell when it was harvested, to a landing or roadside where it can be processed or bucked. If it is possible to buck it in the location that it fell, this is best since smaller logs are easier to move. The movement of the logs from one site to another (skidding) can be done manually using men who lift the logs as a group and carry them to the road, truck or landing, by using animal labor or mechanically with tractors or bulldozers. You should plan your skidding path before you move the logs to be a track that has the shortest possible distance and does not harm any sensitive areas or areas that are valuable to the landowner and their neighbours.

The trees should be bucked based on what the buyer wants. For example, the buyer may not want logs with too many knots, or that have too many bends. They may also want a specific length of the logs. It is always best
to know specifically what the buyer wants in advance or risk having a large portion of the trees you sell returned because they were not accepted by the buyer (Chapter 23). If it is possible you may ask the factory that is buying the wood to come to the agroforest to train the logging crew and supervisor on how they measure and grade the logs so there are no surprises.

Textbox 4.13: Example Procedure for Directional Felling within Agroforests

1. Select the felling direction

2. Cut the scarf (undercut) in the felling direction at a 45° angle, about one-quarter to one-third into the tree. The base of the scarf is made first and the oblique cut must neatly meet it in a straight line.

3. The back-cut must be horizontal and about “two fingers” above the base of the scarf for trees around 30 cm in diameter. If the tree is bigger, the distance has to be between 3-4 fingers.

   If the saw’s guide bar is sufficiently long, it is placed close to the hinge and the back-cut is carried out in one continuous movement. Special care must be taken, however, to leave the hinge sufficiently strong because otherwise control over the felling direction is lost. If the length of the guide bar is smaller than the diameter of the tree, the position of the saw must be shifted several times when performing the back-cut.

   Once the back-cut has been done and the tree begins to fall:
   • Remove saw from cut and switch off
   • Move into the planned escape route
   • Watch for falling material
   • Watch for the tree kicking back or bouncing as it hits the ground

   Stump height should be as low as practical (<10 cm is preferable) to maximize merchantable volume and simplify site preparation.

LPTL Standard Operating Procedures 2010 (unpublished)
The final step is loading the trees from the ground onto the truck or tractor or other vehicle that will transport them. This process is usually low impact on the environment, but may carry with it many risks to workers’ safety. It is very important that people are out of the way of any machines doing loading. If the loading is done manually, it is important that the people involved are trained on how to safely lift heavy loads together.

Post harvest monitoring

After the harvest, you should have someone assigned to go back through the area to see that every tree that was marked for harvest was cut and collected, and to make sure that areas and trees that needed to be protected were indeed still undamaged. The tree stump may need to be marked if this is part of your Chain of Custody (CoC) tracking system (Chapter 20). The post harvest survey is also important to check that all precautions were implemented, and is a good opportunity to see if any garbage or oil from chainsaws or other machinery was left behind. If the person doing the post harvest monitoring finds any non-compliance he may need to issue a Corrective Action Requests (CAR) (see Chapter 8). It is important to keep these records as the certification body (CB) will look at these post harvest monitoring documents when they go through the FSC audit to see if everyone in the group is following the harvesting guidelines (Chapter 25).

Trained Harvesting Staff

Since harvesting crews should be trained in RIL techniques, it is a good idea for your group to have a training program focused on this. If your group will be harvesting often, you may want to have your own harvest team who is fully trained on safety and minimizing environmental impact to keep on staff. If your group will only be harvesting sporadically or seasonally, you can work with local contractors to ensure that they are trained according to your group rules. You should always keep a record of who has been trained and when, and then note which staff were working in the harvest report.
Textbox 4.14: Deciding Which Trees To Harvest with Community Agroforest Programs

Deciding which trees to harvest in a community agroforest program can be a challenge. In a natural forest with a single owner, the decision of which trees to harvest is determined by considering the density of timber in different regions of the forest, and the access foresters have based on roads and other transportation infrastructure. Most of the trees in the forest production area above the minimum diameter are then harvested until the sustainable harvest limit (or AAC) is reached. In general, some of the largest trees are un-harvested and left as seed trees. HCV areas around streams and on top of steep slopes may also be off limits from timber harvesting (see Chapter 19).

For a community of agroforest owners, all of these things need to be considered in addition to the social and economic needs of individual farmers. As we have mentioned elsewhere in this guide, trees in agroforests serve a number of different roles for farmers. For agroforest owners, the sale of all of the large trees on their land will bring a large sum of money all at once. This can be unwanted for some farmers, if they do not have an immediate use for this large amount of money, and no access to banks or savings accounts in which to keep it. In fact, some farmers view their trees as a savings account. Farmers typically wait to harvest a tree until they need the funds to send a child to school, celebrate a wedding, or pay for a medical emergency. It can be unrealistic to expect farmers to anticipate even a year in advance when they will need money. In order to maintain a steady supply of timber to maintain the community agroforest program, a number of different strategies can be developed.

For example, in the Koperasi Hutan Jaya Lestari (KHJL) community agroforest program in Indonesia, a highly communicative process was established to determine which farmers would harvest their teak each month (or 3-4 months). First, KHJL management would send each village forest group lists of the members in each village that had teak trees over 30 cm ready to harvest, and an estimate of the amount of teak that could be harvested in that village, while staying within the AAC. Local community agroforest leaders for each village would then call a meeting to find out if any members would like to harvest their teak. Based on the meeting, the local leaders would send a list of farmers willing to sell their timber back to KHJL, with an estimate of how much each member wanted to sell. The KHJL Management would then review the lists from each village and select which farmer’s teak would be harvested that month. Using this system, flexibility in the harvest timing for villages was retained, while KHJL was guaranteed to stay within the allowable harvest level.
Forest regeneration is an essential component of any sustainable Forest Management Plan. Not only is it important to replace the trees removed during harvest to ensure a long-term source of timber, but it is important to maintain and enhance the structural diversity and ecosystem function of the forest.

During an assessment FSC auditors will want to see that forest managers have a plan which ensures that forest regeneration is taking place. This could involve allowing natural regeneration, relying on planting, or both. If you are going to be planting, you should note the recommended sources of the seeds planted in the Forest Management Plan, as well as the recommended planting techniques, and monitor results on the survivability and growth of trees.

FSC auditors will likely check that forest managers are trying to maintain the ecological function and values of the forest by planting and allowing natural regeneration of trees of different types that will increase the species and structural diversity of the agroforest plot. They will also want to see that new trees are regenerating after a harvest, and that the new trees will become healthy merchantable stands of diverse timber species. Not only is this good for maintaining ecological function, but it will ensure the forest enterprise is not solely focused on a single tree species.
If you are going to rely on natural regeneration, then before you harvest, you should make sure that the trees species you are interested in maintaining have adequate numbers of seedlings sprouting below them. If not, you should plan to leave behind large seed trees, sometimes called ‘mother trees’, which produce high quality seeds. In both cases, you should find out if the tree species you are managing for grow best in full sunlight, shade or partial shade, and harvest in such a way that an ideal growing condition for seedlings is left after the harvest.

Agroforest owners will need to check if the species being planted will cause significant negative impacts on the ecosystem. For example, there are some fast growing trees that need large amounts of water and nutrients. Planting a large number of these trees may result in less water being available for other plants, and local water sources drying up. To prevent this, it is recommended that forest managers follow a precautionary approach, and monitor the region for negative impacts (see Chapter 14).

Exotic trees species that are new to the region should be treated with special caution, as there is a risk these tree species may invade other areas, and require control in the future. It is a good idea to check with your local forestry departments to see if there is a list of known exotic and invasive species that require control.

**Invasive Species**: plant or animal species that are not indigenous to a geographic region, and have a potentially negative impact on native species or ecosystems. These organisms have not co-evolved with other species in the region. Invasive species are a problem when there is limited defence or natural biological controls by native species, leading to a rapid expanse. Not all invasive species are damaging; a precautionary approach is recommended.
Developing a tree nursery

Building a community managed nursery is a good way to produce new seedlings, and can be essential in areas where there is limited natural regeneration or unaffordable sources of good tree seedlings for the target tree species. Tree nurseries can be easily established and managed, and the community can have control of the quality and quantity of seedlings produced. This may also be a good way to distribute the benefits of timber production in the community and engage women especially.

When developing a tree nursery there are several things to consider. Below is a list of questions we have found useful. Forest managers should learn about the local techniques and tools during group meetings and when visiting agroforests. In many cases, it will take some trial and error to come up with successful methods to produce healthy forest stands.

Questions to consider when developing a tree nursery:

**Propagation**

- How will we select a good seed tree?
- How can we collect seeds without damaging trees?
- Is there any special known treatment to help seeds germinate and grow?
- Are there other ways to propagate a tree species (for example, planting a tree stem, leaf or piece of the root)?

**Germination beds**

- What materials do we have to construct simple planting beds that allow water drainage?
- What type of soil is best to grow seedlings in that also allows them to be easily transplanted when they are bigger?
- Where should the planting beds be built considering people’s needs and the plant’s need for sunlight, shade and water?
- What fertilizers can be used that are not prohibited by law, or on FSC’s list of hazardous chemicals? (such as organic compost)
Pest and disease control

- How can we protect the nursery from animals and other pests that might eat or trample the seeds?
- What should be done to control unwanted plants in the nursery? (ex. cutting, pulling, burning weeds)
- What can be done to prevent outbreaks of insect pest and disease? (ex. promote beneficial natural control agents such as predators of potential insect pests)
- What should be done if there is an outbreak of an insect pest or disease?
- What integrated pest management methods can be used?
- If pesticides are used, are they on the list of prohibited by law or on FSC’s list of hazardous chemicals (see Appendix 11)? Is there an alternative that is not prohibited?
- What are the procedures for handling and cleaning up chemicals?

Monitoring and improving procedures

- How will the seedling survivability be monitored?
- Will there be some experiments to improve propagation success?
- How will the results be communicated? (ex. training, demonstration plot)

Nursery management

- Who will manage the nursery, and what different roles will be assigned to different people?
- Will the people working on it be compensated?
- How will seedlings be distributed between the members?

Developing procedures for planting
Once a number of healthy seedlings have been grown in the nursery or purchased from a reliable source, the next step is to develop some simple procedures to ensure they will grow successfully following the forest management objectives.

Questions to consider when developing planting procedures:

**Site selection**
- What is the best location to plant considering the hours of sunlight (ex. in partially shady area, or plant trees in a east-west line)?
- In what soils do the trees grow best?
- Will the seedlings grow well on slopes?
- Will they grow well near water sources or dry areas?

**Planting methods**
- What is the best way to plant a tree given the commonly available tools?
- What should be the recommended way to plant to ensure limited root damage?
- How far apart should trees be planted to minimize competition with other plants?
- Should trees be planted in a monoculture or inter-planted with other plants?
- How far apart should trees be planted to ensure good form?
- When planting, should fertilizers be used? And if so, what fertilizers are recommended, available and cost effective?
- Are there any associated crops that can be planted also?
Seedling maintenance

- How frequently should weeds be removed?
- What is the best way to weed to reduce any damage to the stem of the trees?
- How will new plants be protected from wildlife or livestock?

Monitoring and improving procedures

- How will the number of seedlings planted be monitored?
- Will there be some experiments to improve planting success?
- How will the results be analyzed and communicated? (ex. training, demonstration plot)

You do not need to have one required way of planting. Rather, your procedures should be in the form of recommendations that summarize best known practices for the variety of ways that members of your group may want to plant. For example, if your group members use a variety of planting patterns, such as set-aside monoculture blocks, intercropping, mixed blocks, border lines or others, you can have recommended planting techniques for each. Similarly, you do not need to have one single way of monitoring regeneration. Most agroforest managers pay close attention to how many of their planted seedlings survive, and make an effort to replace those that do not, or to plant extra in the beginning to account for some likely losses. If you know that the farmers you work with are doing this, simply explain it in your management plan and interview farmers who have planted that year to gather data on survivability. However, if seedling survival is a major problem in your group, you may need to monitor this more actively.

Two Different Ways to Plant Teak

Monoculture planting: Some farmers in Indonesia plant teak very close together in a monoculture pattern in a set aside portion of the agroforest. Due to the limited light from closely planted trees, the teak seedlings will grow tall and straight with little branching. Once they reach 5-10 years old, the agroforest owner will thin the stand, removing the weaker trees so the remaining trees have more space and resources to grow large quickly.

Inter-planting with crops: In Laos, some farmers plant rice, corn, sesame and pineapple around teak seedlings because they help to control weeds and are a good use of the land while the trees are small. The teak trees will grow quickly and branch out in full sun. Farmers will then prune the lower branches of the teak seedlings to improve the wood.
Forest Protections from Pests, Diseases and Fire

Integrated Pest Management (IPM) and Integrated Fire Management (IFM) are important parts of the Forest Management Plan. By developing methods that improve the health of the forest, group managers and members can actively protect timber from pests, diseases and fire.

Integrated Pest Management

IPM describes the activities aimed at both preventing and controlling pest outbreaks. In general, healthy trees are able to resist insect attack through their own natural defences. Thinning, pruning and other silviculture methods that encourage tree growth help to prevent insects and plant diseases from affecting the tree.

If an outbreak occurs, there are several different methods to control pests rather than the use of highly dangerous pesticides. When a tree is attacked, you can remove the sections that are affected, or cut down the whole tree so that the pest does not reach other trees, and try to salvage the wood. Another option is to enhance the habitat and encourage the growth of a natural enemy of the pest, such as planting flowers or other food sources of the natural enemy. You may also see if there is something else in the environment that is reducing the population of the natural enemy of the pest. For example, bats are known to eat thousands of insects in the night, but if local hunting or pesticides are reducing the bat population, insect populations may increase. So you would need to reduce local hunting of bats and use of pesticides to address an insect problem. IPM is a system that considers the whole ecological system governing the pests.
Chemical pesticides

FSC discourages the use of chemical pesticides since they can be hazardous to a wide variety of insects and animals, not just the ones you are trying to target. They can also pose risks to human health. As such, they have created a list of prohibited chemical pesticides which includes chemicals that have been identified by the World Health Organization to be extremely hazardous (Class 1A) or highly hazardous (Class 1B) to human health. Also on the list are chlorinated hydrocarbon pesticides (such as DDT) that can be persistent in the environment and accumulate in the tissue of animals. Appendix 11 is a list of FSCs highly dangerous pesticides. Make sure to check with your certification body (CB) for an up-to-date list.

Only under special circumstances will FSC allow the use of listed restricted chemical pesticides. Organic pesticides, however, may be useful for controlling pest and disease outbreaks when they occur. Contact your local forestry or agricultural department to see if there are any recommended organic pesticides for the common pests in your area.

FSC Criteria Related to Forest Protection

Criteria 10.7: Measures shall be taken to prevent and minimize outbreaks of pests, diseases, fire and invasive plant introduction. Integrated Pest Management (IPM) shall form an essential part of the management plan, with primary reliance on prevention and biological control methods rather than chemical pesticides and fertilizers, including their use in nurseries.

Criteria 6.6: Management systems shall promote the development and adoption of environmentally friendly non-chemical methods of pest management and strive to avoid the use of chemical pesticides. World Health Organization Type 1A and 1B and chlorinated hydrocarbon pesticides; pesticides that are persistent, toxic or whose derivatives remain biologically active and accumulate in the food chain beyond their intended use, as well as any pesticides banned by international agreement, shall be prohibited. If chemicals are used, proper equipment and training shall be provided to minimize health and environmental risks.

FSC standard FSC STD 01 001 V4 EN
Forest managers need to keep good records of any pesticides or fertilizers group members use on their agroforest plots and tree nursery areas. Failure to keep good records is a red flag for FSC auditors, and the use of one of the prohibited chemicals is a reason to reject or suspend a FSC certificate. FSC does have a process to allow for some exemptions to the rule for a short period of time, but only if there is no viable alternative to control the pest or disease, and this must be approved by the FSC directors.

### Integrated Fire Management

Careful IFM is an essential component of the Forest Management Plan in areas with a risk of forest fire, or those forest areas that naturally had regular forest fires. In many regions of the world, small scale forest fires are common and cause little damage to the majority of forest plant and animal species. In fact, there are some plant species specifically adapted to frequent small fires. However large amounts of slash from logging operations, as well as other dry organic materials, can increase the frequency and intensity of fires, resulting in catastrophic damage. Plantations and agroforests in the tropics can also be highly susceptible to fire, especially in areas where slash and burn agriculture is commonly used to clear vegetation.

As a first step, you should discuss with the communities you work with whether fire is common in their forests, and how often and to what intensity the fires usually burn. Find out if there are certain seasons when the risk for fire is higher, and if they do anything to prevent fires. In areas where fire is not a problem, your Forest Management Plan can explain this. However, in areas where fire is a risk, your group should have an integrated plan with procedures on how to prevent a dangerous fire, and what to do if an uncontrolled fire does occur.

Like pest management, an IFM plan can help to reduce the risk of forest fires by combining prevention and control methods. When developing a fire management plan, it is important for forest managers to consider several factors such as: the forest types and management activities, risk and sources of fire, access and terrain, climatic conditions, adjoining land uses, social and economic factors and the fire management capabilities of the community.

**Recommended Reading**


In addition to gathering local information from the groups you work with, general information on fire conditions may be found at regional forestry offices, universities or research institutions. These agencies may also know if a national or regional firefighting plan exists or if there are fire training programs available for small agroforest owners or forest managers. Local fire history and fire management capabilities can be found out during group meetings and field visits with smallholder agroforest owners.

Key questions to ask are:

- How frequent are forest fires in this area?
- What time of year do they typically occur?
- Are the fires specifically burning in one region?
- What are the typical causes of the fires?
- How are fires controlled?
- Who are the fire fighters?
- Is there any training on how to fight fires or prevent uncontrolled fires?
- What equipment and activities are used to control fires?
- Is there anything done to reduce the chance of fires?
  - Do you remove highly flammable materials along roads?
  - Do you plant specific trees that are known to not burn easily?

With this information a Forest Management Plan can be developed with some of the following recommended measures4:

- Fire training for fire fighters and fire crew leaders
- Community participation, including volunteer fire brigades
- Fire prevention methods (fire breaks, fuel management)
- Prescribed burning (fuel reduction, slash burning)

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Textbox 4.15: Example Fire Protection Procedures for LPTP

For the Lauang Prabang Teak Program in Laos, TFT worked with group managers and members to develop a fire protection standard operating procedure (SOP). To reduce forest fires, an education program on fire risk and safe use of fire was developed with the community. Fire suppression methods include a system of green fire breaks where evergreen trees with thick leaves that are difficult to ignite are planted in a line. Road firebreaks are also maintained during the dry season and require all of the flammable ground vegetation to be removed frequently. The villages also developed a clear fire management system with a fire fighting team composed of the village forester and farmers. This team is responsible for monitoring fire conditions and reporting them to the management committee. Resources were allocated to purchase and maintain fire fighting equipment such as water tankers, hand suppression equipment and heavy machinery. Lastly, a system was developed in which farmers may be fined if a field burning activity leads to a forest fire.

- Fire suppression with trained fire fighters and good fire fighting equipment
- Law enforcement and incentive systems
- Fire danger forecast, and early warning communication systems
An Environmental and Social Impact Assessment (ESIA) is a process in which you try to anticipate what the impact, or affect, of your activities will be on the social and environmental aspects of your community forest program, and then develop solutions to proactively prevent negative impacts, while increasing positive impacts. In forestry, an ESIA is essential for a Forest Management Plan. As a secondary benefit, the ESIA may also identify areas where the efficiency of forest management operations can be improved and costs reduced.

The basic process of ESIA is as follows:

- List new planned forest management activities
- Discuss potential impacts with local experts and stakeholders
- Discuss potential impacts with the group members
- Developing solutions to avoid or limit negative impacts and maximize positive impacts
- Monitor impacts and incorporate results

Recommended Resources

The non-profit OneWorldStandards has developed a toolkit for community forest managers called Environmental Risk Assessment (ERA). The toolkit can help to identify which actions or activities are likely to be the most important in relation to environmental outcomes. ERA techniques have been developed for FSC certification in the Selva Maya. The generic ERA system uses a series of checklists that can be adapted to any region of the world with relatively minor adaptations based on local expertise. To download the toolkit or for more information go to www.oneworldstandards.com/ERA.html
Step 1: List new planned forest management activities

The first step is to take some time to note all the new forest management activities that you will be introducing. You should also note if certain activities that were being done previously will now be done at a greater intensity or frequency, a different time of year or by new people. To help you with this process, it may be helpful to begin with a table that compares the previous or current forest management practices with the changes the group members will be implementing (ex. changes to planting, tending, harvesting, etc).

For smallholder agroforests, general information on previous or current timber management activities may have already been collected during the preliminary survey (Chapter 4). Specific information on how each smallholder already manages their forest may also have been collected during the forest inventory (Chapter 13). New best practices recommended for forest management should already be drafted with the group at this point.
Step 2. Discuss potential impacts with local experts and stakeholders

Once you have a list of new forest management activities, it is important to conduct a public consultation to discuss what the environmental and social impacts of these new activities could be with local experts and stakeholders.

For environmental aspects, local experts may include people who community members often turn to for advice on a topic, or other resource people like teachers or professors in areas such as ecology, forestry, environmental management or engineering. You can also ask local professionals, business owners and government staff who deal with these matters. Finally, it is important that you also discuss this with local environmental organizations, like those focused on water or natural area conservation.

When considering the potential social impacts, it may be helpful to begin by creating a list of stakeholders, or people who may be impacted by changes to the Forest Management Plan or group management. Group members will of course be included on this list, in addition to forest workers, neighbors and other people within the community. Major stakeholders (i.e. those people most directly affected by a change) should definitely be consulted for their perspective on what impacts might be. If your community agroforest program is small this may be a relatively short list of individuals and institutions working in the region. If your group is larger, you can also reach out to local community leaders in government, religious institutions, schools, business associations or other organizations that have been identified. Importantly, you should take the time to identify people who may be considered vulnerable in society to discuss with, such as the elderly, poorer families, landless people, women and under-represented ethnic groups. These groups can be consulted through group discussions or individual interviews.

It is a good idea to involve group members in the consultation process. You should also be sure to keep good records of who was consulted, and what impacts they identified. As you discuss, you can also ask them for ideas on how to minimize negative impacts while maximizing positive ones. Be sure to also ask your local experts or resource people how they would recommend monitoring the impacts over time.

During an FSC assessment, auditors will want to see that different members of the community have been consulted. It is important to have records of community meetings or communications with different stakeholders. The CB may also ask to interview stakeholders within the community randomly (see Chapter 25).
Step 3. Discuss potential impacts with the group members

First ask the group members to brainstorm the potential impacts based on their own experiences and information, and then ask them to evaluate the information on impacts that came from the consultations with local experts and resource people. Think about impacts that are both direct and indirect. For the negative impacts you are essentially thinking about the worst case scenarios or thinking about all of the things that can go wrong. For positive impacts you are thinking about all the potential benefits of doing things in a new way. Work to agree as a group on what the major impacts for each activity will be. Try to focus on major impacts as opposed to getting distracted by the myriad of small impacts that may occur.

Things to consider:

- **Scale:** You should think about the impacts both at the local scale where one activity might take place, as well as at the landscape scale where many of these activities will take place in individual members’ land across the landscape.

- **Short and long-term time frames:** It is also important to think about the short term and long term impacts of different activities. For example, planting teak on fallow agricultural land may reduce pressure to clear natural forests to establish plantations; however, in the long term there may be less land for agriculture. This could result in forests being cleared for agriculture instead of tree plantations, but they are still being cleared, so the negative impact would be the same.

- **Environment:** For environmental impacts, you should especially consider potential negative impacts to the soil, water, air and surrounding plants and animals. Be sure to include wild plants and animals as well as domestic (see Chapter 15).
• **Social:** For social impacts, you should consider the impacts on peoples’ time, relationships, culture, things that they value and livelihoods. Social impacts should also include consideration of impacts on the local economy. An important thing to consider is whether or not local infrastructure such as roads and water systems will be impacted as a result of new activities. Another important issue to consider is if any planned activities will restrict access for some communities to collection of firewood, food, medicinal plants, materials for construction etc. It is important to identify local values and issues more broadly than simply the impact of forest management. (See Chapter 4)

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**Specific Environmental Impact Considerations**

**Soil fertility and structure:** Site disturbing activities such as harvesting, road building, site preparation and planting should have limited negative impact on soil fertility and structure.

**Special habitats:** Special habitats such as wetlands, riparian areas, steep slopes, rocky outcrops and High Conservation Value (HCV) areas should be protected from the negative impacts of site-disturbing activities.

**Toxic chemicals:** Toxic chemicals and their containers should be disposed of offsite according to applicable legal requirements, avoiding negative environmental impacts.

**Invasive species:** The use of exotic or invasive species should be carefully controlled and actively monitored to avoid negative environmental impacts.

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**Step 4: Developing solutions to avoid or limit negative impacts and maximize positive impacts**

Now that you have a list of the potential negative and positive impacts, the next step is to decide what can be done to avoid or limit the negative impacts, while maximizing the positive impacts.
It is a good idea to start with a list of key negative impacts that were found in your impact evaluation, and discuss with members of the group some practical ways to avoid or minimize them, while also discussing recommendations that came from your stakeholder interviews. For example, in the environmental impact assessment, you may decide that there is a risk that children could be hurt by tree harvesting. To minimize this risk you may want to create a rule that harvesting cannot take place near schools during the week. Or you may develop a procedure that involves roping off the ‘danger’ area during harvesting and strictly not allowing any children to enter it. In some cases it may be beneficial to have public meetings to discuss practical ideas for minimizing negative impacts with local stakeholders. As each community agroforest program is unique, so too will be the specific solutions you develop.

For FSC, it is important to document these meetings and all stakeholder involvement in the process. FSC auditors will be checking to see that different stakeholders have had a chance to voice their concerns, and that forest managers are modifying their forest management operations where possible to address them (Chapter 8). It is also important to have a record of what actions will be done to limit impacts, in addition to whose responsibility it will be to implement the actions (Chapter 3).

**Step 5: Monitor impacts and incorporate results into future plans**

Now that you have a plan to avoid or limit negative impacts and maximize positive impacts, you should think about how you can monitor the actual impacts over time to see if your predictions were correct, and to know what impacts your new procedures are having.

For each major impact identified, think about what indicators can be easily monitored over time.

- For example, if safety was a major potential negative impact identified, you could include a section on your post-harvest report where any injuries, accidents or near-misses (i.e. accidents that almost happened) can be noted. Then you should have someone who is responsible for reviewing all of these reports look for trends and make suggestions on how things can improve to avoid accidents and near-misses in the future.

- If soil erosion is a major impact you identified, you can have teams at the village level check recently planted or harvested plots for evidence of small landslides, exposed tree roots or new water gullies that have formed after a rainfall. Their findings can be noted and used to improve soil erosion prevention.
It is important to ensure that monitoring is kept simple enough to be implemented and evaluated. Don’t make things too complicated, try to focus on the major impacts that you identified. Be sure to document the results of your monitoring, and how these results are used to change the forest management plans or procedures. Often, you can find that simple, regular activities like post-harvest monitoring reports or keeping a record book of complaints raised by stakeholders can provide indicators for multiple potential impacts (see Chapter 8). Other times, you may need to schedule specific dates or regular time intervals to check impacts that may change over time. In all cases, the monitoring plan must be appropriate to the size, potential impact and capacity of your group organization.

As is true in all activities, developing monitoring indicators and procedures should be a participatory activity involving group members, stakeholders and local experts or resource people. The more everyone understands the reason for a particular monitoring activity, the more likely they are to actually do it.

Incorporating monitoring results into the Forest Management Plan is essential. FSC wants to see that concerns are being addressed, and changes are being made in the management procedures and plans as new information becomes available. This is the key to success for ongoing forest management improvement. Like other monitoring, it is important to define the monitoring responsibilities, and state when results will be made available to the group so that forest managers and agroforest smallholders can adapt the site level forest management plans as needed.

Once you have finalized your ESIA you should share it with the public. You can do this through meetings, by distributing written copies of your report, or by creating public summaries to share. It is a good idea to also share monitoring results each year with the public.

FSC Principle 8: Monitoring shall be conducted — appropriate to the scale and intensity of forest management — to assess the condition of the forest, yields of forest products, chain of custody, management activities and their social and environmental impacts.

FSC standard FSC STD 01 001 V4 EN
High Conservation Value Assessment

One of the key priorities of FSC is to identify and protect special areas within the forest that are said to have High Conservation Value (HCV). HCV forests provide especially important functions by conserving unique or endangered biodiversity, as well as protecting vital ecosystem services and areas important to the livelihoods and culture of local people.

For FSC certification, forest managers must identify what HCVs are in the Forest Management Units (FMUs) registered with their group, as well as in the areas very near or adjacent to group member lands. If the HCV assessment finds that HCVs are present, then the Forest Management Plans and monitoring must be adapted to ensure these values are protected. Having land that contains an HCV does not mean that the land cannot be touched or managed in any way. Instead, if you have an HCV present you should ensure that your management plan protects and enhances the HCV.

It is important to note that the aim of the HCV concept is not to create more protected areas. The goal is to evaluate existing natural areas within the forest, and ensure that important products and services the areas provide to people are responsibly managed. The forest manager and group members will need to consider the values identified and make management decisions to protect or enhance them following the “precautionary principle”.

Precautionary Principle:
Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

Principle 15 of the Rio Declaration on Environment and Development 1978
## Table 4.2: Six Categories of High Conservation Values

<table>
<thead>
<tr>
<th>HCV 1: Areas with high concentrations of biologically diverse species</th>
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</thead>
<tbody>
<tr>
<td>• Concentration of rare, endangered or threatened species</td>
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<tr>
<td>• Concentration of endemic species</td>
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<table>
<thead>
<tr>
<th>HCV 2: Large landscape level ecosystems or mosaics</th>
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<tbody>
<tr>
<td>• Landscape level forest areas or other ecosystems that contain most naturally occurring species</td>
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<tr>
<td>• Protected areas that are significant at the global, regional and/or national level</td>
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</tbody>
</table>

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<tr>
<th>HCV 3: Rare or threatened ecosystems or habitats</th>
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</thead>
<tbody>
<tr>
<td>• Rare ecosystems</td>
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<tr>
<td>• Ecosystems that are threatened by human actions</td>
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<table>
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<tr>
<th>HCV 4: Basic ecosystem services that are critical to people</th>
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<tbody>
<tr>
<td>• Protection of water quality and quantity</td>
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<tr>
<td>• Protection of vulnerable soils and slopes</td>
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<tr>
<td>• Protection from fire</td>
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<tr>
<th>HCV 5: Basic needs for local communities or indigenous peoples</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Sources of products or services fundamental for local people for livelihoods, health, water, etc.</td>
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<table>
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<tr>
<th>HCV 6: Cultural sites, resources and landscapes significant to local communities or indigenous people</th>
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<tbody>
<tr>
<td>• Cultural or religious sites of local people that are critical</td>
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<tr>
<td>• Archeological or historical sites</td>
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Table adapted from: FSC Glossary of Terms FSC-STD-01-002 (V1-0) EN, and FSC STD-01-001_V5
Global and national toolkits have been created to assist companies, governments and communities in applying the HCV concept to their forest management and planning activities. Currently, over 20 national toolkits have been developed. The HCV Resource Network has also been created to be a clearinghouse of information and to connect individuals and groups involved in HCV work (www.hcvnetwork.org).

### FSC Criteria for High Conservation Value Forest

C9.1. Assessment to determine the presence of the attributes consistent with High Conservation Value Forests will be completed, appropriate to scale and intensity of forest management.

C9.2. The consultative portion of the certification process must place emphasis on the identified conservation attributes, and options for the maintenance thereof.

C9.3. The management plan shall include and implement specific measures that ensure the maintenance and/or enhancement of the applicable conservation attributes consistent with the precautionary approach. These measures shall be specifically included in the publicly available management plan summary.

C9.4. Annual monitoring shall be conducted to assess the effectiveness of the measures employed to maintain or enhance the applicable conservation attributes.

FSC standard FSC STD 01 001 V4 EN
For smallholder agroforests, an HCV assessment does not need to be an expensive and difficult process. FSC has developed a guide for smallholders and community agroforests that qualify as Small and Low Intensity Managed Forests (SLIMF)\textsuperscript{5}. In this chapter we will describe how smallholder agroforest groups can conduct an HCV assessment.

There are three basic steps:

1) Identify areas with HCVs
2) Develop group management standards and procedures for HCVs identified
3) Monitor HCVs and assess the effectiveness of management

**Step 1: Identify areas with HCV**

The first step is to create a list of the HCVs that are likely to be present within or near the group members’ forests. It is a good idea to begin by finding out if there is a toolkit or checklist for your country by looking on the HCV Resource Network website or by contacting any local research institutes, universities, government agencies and NGOs working on HCV issues in your region, in order to narrow down your search.

Once you have some information about possible HCVs within your region, you can either assume that the HCVs are present everywhere and create plans to protect them throughout your area, or you will need to conduct a field assessment. It is recommended that a field assessment team be comprised of the forest manager, members of the group, local experts and other stakeholders. It is very important to engage with any affected or interested stakeholders for both identifying and assessing the status of HCVs in the forest management units. FSC auditors will want to see a list of people that you have consulted with and may conduct interviews during their annual evaluations (Chapter 25).

**On what scale should we do the field assessment for HCVs?**

The field assessment can be done in a number of ways for large groups of agroforest smallholders. For some group managers it may be more economical to conduct the HCV field survey when an agroforest plot is first registered with the group and the team is conducting the forest inventory (Chapter 13) or conducting the Environmental and Social Impact Assessment (Chapter 18). This may be a good option in areas where the

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\textsuperscript{5} Robinson D, George P, Stewart T, and T Rayden. (2009) FSC Step-by-Step Guide: Good Practice Guide to Meeting FSC Certification Requirements for Biodiversity and High Conservation Value Forests in Small and Low Intensity Man-
sizes of the agroforests are large (10-100 ha) and spatially scattered in the landscape. For other group managers it may be more economical to do the field assessment for the whole group, separate from the forest inventory, and focus the assessment on identifying all HCVs within the region that the group will be operating. This may be especially true if the group is composed of many small agroforests, located near one another, with similar types of ecosystems or vegetation.

**How do we conduct a field assessment for HCVs?**

Armed with a list of potential HCVs in the region of the community agroforest, the HCV field assessment teams can be divided into an ecological and a social assessment. It is a good idea to use a map of the region, in which the group member’s agroforests have been marked, as well as important features such as protected areas and waterways. If you have them, maps of topography, soil types and ecosystem types in the landscape are also very helpful.

**Recommended Resources:**

HCV Resource Network is an international network of experts providing new and improved guidance and toolkits for identifying and protecting HCV around the world. [http://www.hcvnetwork.org/](http://www.hcvnetwork.org/)

**Ecological field assessment**

The ecological field assessment team should concentrate on those agroforest plots that contain or are located next to natural forests, natural habitats, water bodies or streams that provide water to local communities.

The team will be looking for good indicators of:

- Plants and animals that are rare, threatened, endangered, endemic or locally protected. There may be some areas that are important to wildlife species at different times of year such as salt or mud-licks. You can get a list of endangered or protected plants and animals from local government officials and environmental organizations. Local wildlife guides, hunters, or medicinal plant experts are another good source of information about where you might find them.
Rare or threatened habitat types. The team may want to create simple sketch maps of any natural forest areas within the agroforest plots, as well as other habitats such as mangrove forests, peat forests or grasslands. Think about where there are unique examples of ecosystems or habitat types that have largely been destroyed. These areas will likely have unique plant and animal species as well.

Water courses and areas prone to erosion such as steep slopes. If your region is prone to forest fires, you may also want to identify areas to protect as fires breaks. The team will want to add any of these features that are present to their sketch map of the area. Existing surveys may be available which already identify areas that are important for communities because they provide ecosystem services in the region.
Textbox 4.16: Where is the Best Place to Find HCVs Within Smallholder Agroforests?

The best place to find HCV’s will depend on the HCV’s you are looking for. If you think that a population of orangutans living in a national park may periodically travel to smallholder agroforests for food sources, it would be a good idea to visit only those agroforests located adjacent to the national park (A). If you are looking for HCV areas that are important for drinking water and protection of soil erosion, then you would want to concentrate on those smallholder agroforests located next to lakes, streams and rivers (B). If you are looking for rare ecosystems such as mangrove forests, concentrate on those agroforests located along the coast (C). If you are looking for medicinal plants that only grow in high rocky meadows, concentrate on the areas where the plants are known to grow (D).
Social field assessment

The social field assessment team will likely be interviewing local community members. Interview questions will need to be developed beforehand, preferably in the native language of those being interviewed. Participatory mapping may also be used to identify how different groups within the community use the natural areas within or adjacent to the group smallholder agroforests.

The team will be looking for good indicators of:

- Important sources of food, medicine or other natural resources for the local community. You will want to ask individuals in the local community what products they collect, and where they are located. It is important to note that agroforests provide vital food and income for the owner and their family; however, agroforests are not considered natural forests because they are intensively managed planted trees and crops. Agroforests can contain some areas that would qualify as HCV in this category, such as native honey trees or medicinal plants. If possible have them show you specific sites that you can mark on your sketch maps. It is also important to find out if agroforests located next to natural areas are important access points for individuals who collect certain forest products from that area.

- Cultural or historical sites that are in the area. You will want to ask individuals in the local community what areas are important for local cultural traditions or have historical significance, and find out exactly where they are located so that they can be added to your sketch maps. For example, there may be a specific type of tree that is considered an ancestral or spirit tree used for annual celebrations. There may be specific water bodies or caves that have a cultural significance. Cemeteries are also very common in agroforests. There may also be relics or ruins located within the agroforest.
Who Should We Interview or Invite to a Participatory Survey to Find HCV?

It is important to engage with diverse stakeholders within the community. Stakeholders are not just those who are part of the group certificate but any individuals who have a customary or legal rights to use the forest. You should focus on consulting different members of society (young, old, women, men, different ethnic groups, different religions, the poor or landless, etc). There may also be certain local experts and resource people that should be consulted. Traditional medicinal people will likely have the most knowledge about areas important for collecting wild medicinal plants. Some community members may know more about key fishing or hunting sites, or key spots to gather firewood or rattan. You should seek out these local experts, who rely most on these natural resources.

Step 2: Develop group management standards and procedures

If your field assessment identified any HCVs, the next step is to decide what should be done to protect or enhance the HCVs identified. The results from the surveys will need to be compiled and presented to the rest of the smallholder agroforest group, as well as interested stakeholders. It is very important that you seek input from local experts, and those individuals who will be most affected by HCV management decisions. FSC auditors will want to see documentation that public consultation on HCVs was held, including a list of stakeholders involved in the process (Chapter 25).

For these meetings, the information can be presented in a number of different ways, including using maps, diagrams, reports or verbal descriptions. The main point is to communicate the findings in a usable way so that the group can understand what was found and ask questions.

For every HCV identified in the assessment, it is a good idea to present information on the types of activities that are likely to impact the HCVs (ex. building roads, harvesting trees, skidding, planting, pruning, thinning, etc). As we mention in Chapter 18, it is a good idea to start with a list of key negative impacts and discuss with the group some practical ways to avoid or minimize them. For example, if one HCV that was identified is a sacred cave that the local sub-group within the community uses for a religious ceremony every year in April, then the smallholder agroforests where the cave is located will make a rule to not harvest trees at that time of the year, and allow access to the local group at that time. The solutions the group decides on will depend on the unique HCVs identified.
Step 3: Monitoring High Conservation Values

The aim of the monitoring plan is to see that the areas with HCVs are being protected or enhanced by your management activities. Your monitoring plans should be developed to track the specific HCVs identified, and will be unique to the tools and technology available.

Pre-harvest and post harvest survey

For smallholder agroforests, the HCV monitoring can be included in the pre-harvest and post-harvest assessment or survey. A pre-harvest survey of the forest can include marking areas with HCV. For each HCV found on site, the specific management recommendation previously developed by the group is then written into the harvest report template (see Appendix 9). The post-harvest survey is then conducted to assess if the specific management recommendations were followed. Another later post-harvest survey may also be conducted up to one year after the harvest to see if there are any residual impacts to the HCV that may not have been evident earlier.

The results of this monitoring can then be used to assess if the logging crew are following procedures or if additional training or other actions are needed. The monitoring results may also tell you if the recommendations are in fact protecting the HCV, or if new recommendations will need to be developed that are more effective.

It is important to note that during an FSC audit, the certification body (CB) will want to see documentation that the HCV within the FMUs are being monitored, and that the results are being used to modify management plans and procedures (see Chapter 25). This information will also be part of the public summary of the Forest Management Plan.
Chain of Custody (CoC) is a term used to describe the process of tracking a forest product from its finished form ready for sale, back to the forest in which it was grown. This chain begins when a tree is harvested, and includes all of the steps in processing and manufacture as it becomes a final product. In order for a forest product to carry the status of FSC certified, each producer, trader, and processor will need to obtain an FSC CoC certificate. The purpose of the CoC certificate is to assure the final consumer that the forest product they buy with the FSC logo truly came from a certified forest that meets all FSC Principles and Criteria.

All group forest management operations that want to sell their products as FSC certified will need to obtain a CoC certificate as well as a Forest Management certificate. A CoC certificate will require an additional type of FSC audit in which the certification body (CB) will want to see a written description of an internal CoC system, in addition to cross-checking records to verify that no non-certified wood is mixed into the supply chain and sold as FSC certified (see Chapter 25). Also, if the group uses the FSC logo directly on the forest product or in promotional materials, the CB will want to check that these uses are in compliance with international trademark law, and produced according to FSC graphic design standards (see Textbox 5.9).

Recommended Readings:
FSC Chain of Custody (CoC) Standards for Group Forest Management Operations

Criteria 9.1: The group entity shall document and implement a system for tracking and tracing of forest products produced by the group members which are supposed to be sold as FSC certified.

Criteria 9.2: For the purpose of ensuring that non certified material is not being mixed with FSC certified material, FSC products shall only be sold according to a sales protocol agreed by the group members and the group entity.

Criteria 9.3: The group entity shall ensure that all invoices for sales of FSC certified material are issued with the required information (see FSC-STD-40-004 V2-0 Clause 6.1.1) and are filed by the group members.

Criteria 9.4: The group entity shall ensure that all uses of the FSC Trademark are approved by the responsible certification body in advance.

FSC standards FSC-STD-30-005 (V1-0) EN

Developing an Internal Chain of Custody System

For FSC group certificates, the internal CoC system should be created that tracks the logs from stump to forest gate. Forest gate is defined as the point where the ownership of the logs is transferred from the member or group manager to the buyer.

There are three main components to a good internal CoC system:

- Identification
- Separation
- Documentation

Identification

The CoC system will include procedures on how to label or mark logs in such a way that a log can be traced back to the stump. This can be done by marking each tree to be harvested with a unique identification number during the
pre-harvest inventory. Other information such as the group member ID, and the agroforest plot ID can also be added. This series of numbers can then be marked on one of the cut ends of log when it is harvested. The mark should be made using a permanent ink that can be easily read. Another option is to attach a plastic or metal tag to each log with this information.

**Separation**

The CoC system may also include procedures on how to keep certified logs separate from non-certified logs. These procedures should be created for instances where group members’ logs are transported or stored with non-members’ logs. This can be done by physically separating the certified wood into different areas which are marked using signs, barriers or ropes. You can also contract with truck drivers, sawmills or logging yard owners that exclusively buy and sell certified wood, though this may be difficult in many areas. It is important to note that during an FSC audit, the CB will want to know who your contactors are and may interview them to verify that they follow the CoC system, and understand the importance of ensuring no non-certified wood is mixed with certified wood.

**Documentation**

The CoC will also include an administrative system, in which all documents relating to the member registration, inventory, harvest, transport and sale of wood are linked. This can be done by creating procedures where the unique log ID (member ID, agroforest plot ID and tree ID) is written on relevant documents. Each of the records should verify the origin, species, and quantity of timber for each step in the internal chain of custody (see Figure 4.11).

All group members, staff and contractors that will be using these documents should receive proper training (Chapter 6). It is a good idea to create a series of standard forms or templates that are easily accessible and reproducible. The system should also include a way to double check that the information is accurate and reliable. Documents should all be kept in a central location for a minimum of 5 years.

If the forest inventory was conducted several years earlier when the member joined the group, a pre-harvest inventory of trees to be cut should be done to have an accurate estimate of volume (Chapter 13). Inconsistencies, especially in the quantities or species of timber, will raise red flags when auditors cross-check the documents with those of the buyer or processors at other steps in the supply chain. If it is found that a group member knowingly sold non-certified wood as certified, the group CoC certificate can be suspended or revoked.
Section 4: Forest Management

Figure 4.11: Example of a Chain of Custody System

This diagram begins the CoC system when the trees are initially marked during the forest inventory or pre-harvest inventory (1). When trees are harvested (2) the unique tree ID is marked on the stump (3). The tree is then bucked and divided into logs which each are given their own additional number, adding another number to the unique ID which is now written on the end of each log (4). The actual volume or grade of the log may also be marked on the logs at this time. This information is recorded during the harvest by the crew supervisor in a notebook (5) and later transferred to the harvest documents (6). The logs may then be transferred to a log yard and stored (7). The manager of the log yard can easily use the unique ID to trace the log back to its origin in the agroforest (8). When there is a timber sale, the unique ID for each log is then recorded on the sales invoice and transport licence (9). The CoC system for the group ends at the forest gate where ownership of the timber is transferred to the timber buyer (10).
For all forest management operations it is important to comply with all relevant laws and regulations. These may include (but are not limited to) laws relating to business operation, timber harvest and transport, environmental protection, water and soil conservation, worker health and safety and long-term use rights to the land.

For FSC certification, compliance with all applicable laws, both national and international, is paramount. As we have noted in the sections on group management (Chapter 5), timber harvesting (Chapter 13), Environmental and Social Impact Assessment (Chapter 18), FSC certification requires that forest managers and group members demonstrate that they are managing their forest operations legally. FSC auditors will want to see that no illegal activities are occurring, and that the forest managers and group members are being pro-active in reducing the likelihood that illegal activity will occur in the future.

In the Forest Management Plan, it is important to include a section that explains how you are respecting national and international laws. This may include bulleted lists of all relevant laws, policies, treaties and binding conventions related to forest management. The forest management procedures, work plans and training schedule will demonstrate to FSC auditors that you are incorporating those laws into your forest management activities. The FSC auditors may also want to see copies of harvesting or transport permits that you have received or receipts of taxes that you have paid.

Many certification bodies (CB) offer a certification of legal harvest. Contact your CB or FSC national initiative for more information. See Appendix 3 for a list of current CBs.
The Challenge of Legality for LPTP

For the Luang Prabang Teak Program, participating villages who wanted to join the program and legally harvest timber first needed to register their land through the local government. This was a lengthy process, in which a land use plan with clear boundaries and defined areas for private and community lands were defined, as well as conservation areas. Only then could farmers with private lands register with the local government, and apply for a legal timber harvesting permit. While this was a challenge in the beginning, the communities now have more definite land tenure rights, and the local government is recognizing the ability of the community to manage their forest resources legally and responsibly.

How do we find information about relevant national and international laws?

As we noted in the preliminary survey (Chapter 4), a good place to find information is to check the TFT Legality Checklists (available at www.tft-forests.org). These checklists were developed in response to recent legislation in the E.U. and U.S. that requires buyers to verify that the timber they purchase comes from a forest that has the documented legal right to harvest, and followed all laws and regulations. Other organizations such as Rainforest Alliance and the International Tropical Timber Organization (ITTO) also have checklists or additional resources available online. The best resource, of course is your local or regional forestry office.

How do we find information about relevant regional and local laws?

As we also noted in the preliminary survey (Chapter 4) that information about regional and local forestry policies can be found by visiting government forestry offices at different administrative levels. It is a good idea to have regular communication with these offices so that you can adapt the management activities as forest policies change. Often forestry networks or associations in your country will also send out updates with information on new laws, so these should also be explored.

Resources on Legality

TFT Risk Assessment tool developed for TTAP http://www.tft-forests.org/ttap/risk-assessment/

FSC Principles and Criteria Relating to Legality

**Principle 1:** Forest management shall respect all applicable laws of the country in which they occur, and international treaties and agreements to which the country is a signatory, and comply with all FSC Principles and Criteria.

Criteria 1.1 Forest management shall respect all national and local laws and administrative requirements.

Criteria 1.2. All applicable and legally prescribed fees, royalties, taxes and other charges shall be paid.

Criteria 1.3. In signatory countries, the provisions of all binding international agreements such as CITES, ILO Conventions, ITTA, and Convention on Biological Diversity, shall be respected.

Criteria 1.5. Forest management areas should be protected from illegal harvesting, settlement and other unauthorized activities.

**Principle 2:** Long-term tenure and use rights to the land and forest resources shall be clearly defined, documented and legally established.

Criteria 2.1. Clear evidence of long-term forest use rights to the land (ex. land title, customary rights, or lease agreements) shall be demonstrated.

Criteria 2.2. Local communities with legal or customary tenure or use rights shall maintain control, to the extent necessary to protect their rights or resources, over forest operations unless they delegate control with free and informed consent to other agencies.

**Principle 3:** The legal and customary rights of indigenous peoples to own, use and manage their lands, territories and resources shall be recognized and respected.

**Principle :** Forest management operations shall maintain or enhance the long-term social and economic well-being of forest workers and local communities.

Criteria 4.2. Forest management should meet or exceed all applicable laws and/or regulations covering health and safety of employees and their families.

Criteria 4.3 The rights of workers to organize and voluntarily negotiate with their employers shall be guaranteed as outlined in Conventions 87 and 98 of the International Labour Organization (ILO).

FSC standard FSC STD 01 001 V4 EN
Section 5: Business Management
Introduction

Strong business management is an essential component for the long-term sustainability of a community agroforestry program. In general, community forest businesses face significant access barriers to preferred markets (national and international) as a result of organizational inefficiencies, lack of market knowledge and difficulties in satisfying buyer’s demand for specific timber species, quality, quantity and delivery deadlines\(^1\). FSC certification is meant to improve market access for forest products that have been responsibly managed, but managers and donors of certification programs often focus on the technical requirements, and only consider the business aspects of the program once FSC certification is obtained.

Smallholder agroforest groups have the additional challenge of creating a group financial management system that is equitable and transparent. Group members need to trust that their income is being appropriately managed, and that they are being paid fairly for their timber. It is important to remember that FSC certification does not require that members sell their wood as a group. There are, however, multiple benefits for smallholders who sell their wood together, such as a greater ability to negotiate prices with timber buyers, and other benefits of economy of scale, such as shared transaction and operational costs. In addition, community agroforest programs with a sound financial management system will be more competitive if they plan to apply for bank loans or small grants such as the FSC smallholder fund (Textbox 5.1).

Textbox 5.1: FSC Smallholder Fund

In 2012, FSC developed a Smallholder Fund to help small and community producers gain and maintain their FSC certification.

Money from the fund can be used for starting a new group, paying the cost of certification and improving market access. The long-term viability of a business (evidence through business planning and budgeting) is a key factor for successful grants. Grants are small (maximum of $30,000 USD) and are typically one-time only.

More information is available at www.fsc.org or by contacting an FSC office in your region.

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This section is designed to provide guidance on several key business management aspects, such as how to develop an annual budget, create simple financial monitoring reports, and market your community’s forest products by focusing on your strengths and the opportunities available. Throughout the section are important tips on book keeping, business contracts and budgeting for FSC certification costs. It is important to note that this section is not meant to be a complete guide on business planning, but an overview of some tools we recommend managers use to build or strengthen the financial aspects of their community agroforest program. You should consult with accountants, lawyers, and other business professionals in order to understand the specific business considerations for your region.

This section is divided into three chapters:

Chapter 22: Budgeting

Chapter 23: Financial Reporting

Chapter 24: Marketing
Textbox 5.2: Common Reasons for Success and Failure of Small Businesses

Reasons for Failure:

- **Managerial incompetence or inexperience.** If managers do not know how to make basic business decisions, they are unlikely to be successful in the long run.
- **Neglect.** Starting a small business requires an overwhelming time commitment.
- **Weak financial reporting and oversight systems.** If financial reporting and oversight systems do not signal impending problems, managers may be in serious trouble before more visible difficulties alert them.
- **Insufficient capital.** A new business should have enough capital to operate for at least six months without earning a profit.

Reasons for Success

- **Hard work, drive and dedication.** Small business owners must be committed to succeeding and be willing to put in the substantial time and effort required to make it happen.
- **Market demand for the product and services being provided.** Careful analysis of market conditions can help small businesses assess the probable reception of their products in the marketplace.
- **Managerial competence.** Successful small businesspeople may acquire competence through training or experience, or by using the expertise of others.
- **Luck.** Luck also plays a role in the success of some companies. For example changes in government spending on community agriculture or forestry can contribute to the success of a community agroforest program.

A budget is a financial statement which compares anticipated costs and expenses with projected revenue. In simpler terms, a budget is a spending plan to outline what you will spend your funds on and how much you plan to spend on each cost. This spending plan is then compared to how much money (or revenue) you expect to receive, and can tell you if you will receive enough revenue to cover your planned costs. If not, you need to change your plan, or budget, if you want to remain a viable business.

Figure 5.1: A budget compares anticipated costs with projected revenue
A budget is an important internal document that is used by community agroforest managers to make decisions about how the business will operate in the future. For example, managers may use a budget to decide between two projects, by comparing the potential costs and benefits of each. A budget may also be useful for creating spending guidelines, so that limited resources are used wisely.

Budgets are typically created for one year, but monthly or quarterly budgets are also useful for guiding your spending. A three or five year budget may be needed if your program is considering large capital expenditures (ex. purchasing land, buildings or heavy equipment). For many rural forest managers, creating a budget and monitoring spending against a budget may be a completely new experience, but one that is very important to learn as early as possible.

Many timber and agricultural industries have a business cycle, also known as a fiscal year, which follows the harvest season. This allows managers to use the less busy period of the year to compare the actual financial operation of the business against the budget, and assess if plans are succeeding or if a change in business strategies is needed for the coming year.

Textbox 5.3: Opening a Bank Account

It is a good idea to have a business savings or checking account for your community agroforest business. Not only is a bank account a safe place to keep business funds, but it will help you to create financial reports, and build up credit. Bank accounts will issue bank statements that can provide a record of all the money coming in, as well as the withdrawals that have taken place in a month. Bank statements can be used to transparently demonstrate where money is coming from and where it is going.

A bank account is also very useful when you are receiving a large payment from buyers. Instead of asking them to pay with a check, money order or cash, which can be lost, stolen or destroyed, you can ask them to directly deposit the funds into your business account.

You may also want to open one or more accounts to separate out savings for large annual costs. For example, you may want to set up a savings account specifically for the FSC assessment costs and another for equipment purchases that you anticipate making in the future.
Anticipating costs and expenses

The process of developing a community agroforest program budget begins with a list of all necessary purchases costs, and expenses for community agroforest activities planned for the budget cycle (see Table 5.1). The list may include labour, materials and related expenses for operations such as:

- Tree harvesting
- Timber transport
- Tree nursery management
- Forest inventory
- Training
- Monitoring
- Administration
- Report writing
- Travel to meet with buyers
- Member meetings
- FSC certification audit
- Taxes and licenses
- Start-up equipment
- Rent and utilities
- Salaries
The more accurate your estimates of costs are the better. If you are just beginning a community agroforest program, much of the information about costs of doing business may be collected during the preliminary survey (Chapter 4). It is a good idea to also talk with other timber businesses in the region to make sure you are not leaving out important expenses or underestimating the costs to do business.

Once you have a list of anticipated expenses, categorize them into start-up costs, variable costs, and fixed expenses. These categories will be useful for calculating the break-even point at the end of this chapter, and will be part of the financial reporting we will discuss in Chapter 23. You may also discover that there are a few non-essential business expenses that can be postponed until there is additional income.

Preparation for Unexpected Miscellaneous Expenses

For all businesses, there will be additional unexpected cost that will come up during the budget cycle. To address this uncertainty, many budgets include an additional 20 percent of the total start-up expenses to be budgeted as “miscellaneous”. That is not to say that miscellaneous expenses allow managers to informally spend a portion of the budget. Budgeting for miscellaneous expenses is meant to give managers some flexibility when there is an unexpected opportunity to make a sale, or an unexpected expense that they could not have predicted. This funding can also be useful to recover quickly if there is an unexpected loss. For example, a miscellaneous expense may be to purchase equipment that was stolen or to repair broken equipment. This buffer allows managers to adapt as circumstances change, so that unexpected events don’t destroy a business’ budget.
Table 5.1: Example of Anticipated Costs and Expenses for Community Agroforest Business

A series of tables can easily be created that list all start-up expenses, variable costs and fixed expenses for your community agro-forest program. Annual expenses such as the direct costs for FSC certification assessments and audits can be divided by 12 to get an estimate of the monthly costs. Budgets should also include a narrative explaining the major assumptions that were used to estimate your costs and expenses. Later, the anticipated expenses will be compared to the actual expenses at the end of the monitoring period (ex. fiscal year, quarter or month).

<table>
<thead>
<tr>
<th>Start-Up Expenses</th>
<th>Variable Costs (monthly)</th>
<th>Fixed Expenses (monthly)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tangible</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>Software</td>
<td>350</td>
<td></td>
</tr>
<tr>
<td>Office equipment</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>GPS receiver</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>Forest inventory tools</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>Safety equipment</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>Chainsaws</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>Handsaws</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td><strong>Intangible</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lawyer fees</td>
<td>700</td>
<td></td>
</tr>
<tr>
<td>Accountant fees</td>
<td>400</td>
<td></td>
</tr>
<tr>
<td>Business consultant fees</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>Training/education for staff</td>
<td>900</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2,600</td>
<td></td>
</tr>
</tbody>
</table>

| **Marketing**     |                          | **Fixed Expenses (monthly)** |
| Travel costs to meet buyer | 100               | Salaries | 3,000                     |
| Phone costs        | 60                      | Rent & Utilities | 400                      |
| **Harvesting**    |                          | FSC direct costs (1/12\(^{th}\) of total) | 1,080                     |
| Payments for member wood | 5,800            | Maintenance | 120                      |
| Logging crew       | 900                     | Advertising | 200                      |
| Equipment rental   | 90                      | Loan repayment | 400                      |
| **Transportation**|                          | Miscellaneous (5%) | 210                      |
| Truck driver       | 400                     | **Total**    | 5,410                     |
| Tractor, truck, animal rental | 300                   |                          |
| **Licenses / Taxes**|                          |                          |
| Harvest license    | 90                      |                          |
| Transport license  | 50                      |                          |
| Sales Tax          | 40                      |                          |
| **Total**          | 7,830                   |                          |

**Total Start-up Expenses** 2,600  
**Total Variable Expenses** 7,830  
**Total Fixed Expenses** 5,410  

**Total Anticipated Expenses** $15,840
Start-up costs

Community agroforest programs that are just beginning will likely have many start-up costs that will need to be paid before the first sale. Start-up expenses are one-time expenses that cover costs for activities that must take place before you start generating revenue. Start-up costs may include purchasing high priced tangible items such as computers, vehicles, and other equipment that cannot be rented or leased. In addition, there may be several intangible expenses you may need to pay, such as fees for legally registering your business with the government. Staff training or additional education may also be a necessary cost in order for the business to be ready for operations.

Textbox 5.4: Recommendations for Funding Start-Up Costs

Start-up costs can be substantial for small community agroforest programs. Here is a list of some ways to cover some of these expenses. It is recommended that you explore as many of these options as possible.

- Ask group members if they want to invest into the business in return for a higher dividend
- Contact investors and sell shares’ of the new business
- Negotiate with timber buyers to pay a percentage of the sale in advance
- Apply for a loan from a bank or credit union
- Apply for a grant or loan through a NGO or government program (see Textbox 5.1)
- Ask community members to donate the use of equipment
- Ask if other partner organizations can donate computers, books, space or other tools
- Ask if university students can intern, lead group trainings, or conduct research for school credit
Variable costs

Variable costs are those costs that will be higher or lower based on how many activities you carry out in a given time frame. These are usually related to the cost of activities necessary to make a sale, and are therefore also known as the costs of goods sold. These are essentially the costs to produce a product. For example, when you have a timber sale, you need to hire a chainsaw operator and buy fuel to operate the chainsaw, as well as pay for the timber to be brought to the place where the buyer will collect it. The more timber you are selling, the more you will need to spend on labor and fuel. The costs of meeting and communicating with buyers is also a variable expense, as different buyers are located in different areas and may require variable amounts of staff time to complete a sale. The cost for harvest and transportation permits, sales tax and other fees may also be included in variable costs.

Fixed expenses

Fixed expenses are those costs that will need to be paid regularly, even if there is no revenue or income generating activities occurring. For example, if you are operating out of an office, you will need to pay rent every month even when there are no timber sales. Part of the marketing budget may be considered a fixed expense, such as the costs of advertising or other promotions. Loan repayments are also considered a fixed expense as banks typically require a monthly repayment schedule. Salaries for full-time staff are also often fixed expenses.
Textbox 5.5: Budgeting for the Direct Costs of FSC Certification

Direct FSC certification costs are an important fixed expense for community agroforest programs to budget. After all, you want to ensure you have money set aside to pay for the assessments after all of this hard work! An FSC certificate for forest management is good for five years. You should consider both the direct costs for the main FSC assessment and each of the four annual audits. In addition, you may want to contract the certification body (CB) for a pre-assessment or scoping audit, although it is not required for Small and Low Intensity Forest Management (SLIMF) operations.

From TFT’s experience in Southeast Asia, as well as other sources\(^2\),\(^3\) the direct costs for a group SLIMF certificate costs are approximately:

- **Pre-assessment or scoping**: USD $10,000 – $15,000
- **Main assessment**: USD $10,000 - $20,000
- **Annual surveillance audits**: USD $5,000 - $10,000

The exact costs will depend on a number of variables, and each CB should give you an estimate before you commit to hiring them. Some good questions when deciding which CB to use for your assessment are:

- **How many auditors will be part of the team?** Typically the assessment team is composed of 2-3 auditors; however the CB may want more individuals on the team if they will have to visit a large sample of Forest Management Units (FMUs). More team members usually results in higher certification costs.

- **What are the estimated travel and accommodation costs for the assessors?** The travel costs will depend on where the CB offices are located, and where your community agroforests and offices are located.

- **If we become FSC certified, what will you likely charge for Annual Audits?** Both the FSC assessment and the annual surveillance audits may cost more if there are a number of Major Corrective Action Requests (CARs) that will need to be checked by the auditors, and increase the time it will take both for the field assessments and report writing.

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Projected revenue and additional income

The next step to creating a budget is to make an estimate of your projected revenue. The projected revenue is essentially an estimate of the amount of income from sales or other additional sources (such as loans or grants, membership fees, etc.) that you will likely receive in the budget cycle. It is important to have realistic expectations about the amount of money your community agroforest business will bring in to avoid losing money by spending more money than you earn.

Projected revenue from sales is calculated using the equation:

\[
\text{projected sales revenue} = \text{sales forecast} \times \text{average price}
\]

Sales forecast

A sales forecast is an estimate of the amount of timber and non-timber forest products that will be sold in the future. The main function of a sales forecast is to make reasonable sales goals based on the information you have.

For community agroforest programs, the sales forecast will be partially based on projected timber volumes measured in the forest inventory (Chapter 13) and the sustainable harvest level (Chapter 14). Sales forecasts should also consider the size of orders you are likely to receive, and how much timber your staff has the capacity to process for a buyer in a given time period.

A new community agroforest program may also consider what their plans are for expanding the group, and what amount of timber is available in the region (Chapter 4). In this case, it means that you anticipate new group members will be joining during the budget cycle. For example, a community agroforest program may have 100 current members in the group by the first year with an expected growth of 50 new members in the coming year. You know from the preliminary survey that the average size of land per member is 2 ha with an average of 5 marketable trees per member, with a volume of 2 m³ per tree. The estimated sales for the next year will be:

\[
150 \text{ members} \times 5 \text{ trees} \times 2 \text{ m}^3 = 1500 \text{ m}^3
\]
However, it is important to remember that with community agroforests the decision of when to sell will depend on the agroforest owners’ needs at the time (Chapter 13). The actual sales may be much lower if smallholders are not willing to sell or community forest operations do not have the capacity to deliver.

Additionally, your members may have enough trees to sustainably harvest 1,500 m³ in a year, but your staff may only be able to arrange for 20 trees to be harvested, graded and transported to the buyer per month. Thus, the capacity of your staff to deliver timber is:

\[
20 \text{ trees} \times 2 \text{ m}^3 \text{ per tree} \times 12 \text{ months} = 480 \text{ m}^3 \text{ per year}
\]

This means that you will need to greatly increase your staff capacity, or increase the number of staff to reach your full potential for harvest and sales. It also means that you need to be careful not to over-promise your buyers how much they will receive and when. It is important that you always negotiate with buyers for more time to deliver an order than what you actually need. Then they will be pleased when you deliver early or on time despite unexpected delays occurring.

It is very common for a buyer to first place a small test or exploratory order to test if you can deliver the right amount on time, and if the quality of wood meets their requirements. For this reason, if you are just getting started you should expect that initial orders will be small, followed by much larger orders based on your success with the initial ones. It is very important that you successfully deliver on these test orders if you want to build a good reputation and get larger, regular orders from that buyer in the future.

**Starting Small and Building on Success**

When just beginning a community agroforest business, it is recommend that you start small and then gradually move to larger and larger orders, as you expand your group. If you can, minimize expenses in the beginning, and then invest profits into your business so that slowly you grow at a pace that group managers and staff can manage. Too many small businesses think they will sell the maximum amount of wood possible in a given year, only to find that their staff cannot even process that amount of wood in a given time. Instead, plan to fulfil one or two orders in your first quarter, a few more in your second quarter, and so on. Anticipate that there will be unexpected problems, as they always occur, no matter how prepared you are ahead of time.
Average selling price

The average selling price is the average price at which a product or service is sold. For community agroforest programs, you will want to estimate the price for each type of forest product, non-timber forest product (NTFP), or other services you plan to sell in the budget cycle.

Like the sales forecast, estimating the average price will be challenging for new community agroforest programs. From the preliminary survey (Chapter 4) you should have some idea of the current prices for forest products in the region. However, your selling prices must cover the cost of production, and give community members a good return on their investment. Community members will only be likely to stay with the group in the long run if they can receive more money for their timber through the group, then by selling to outside buyers. In addition to considering the going market price for the wood, you should also conduct a breakeven analysis to inform your price offer.

Conducting a breakeven analysis

This analysis will tell you how many units at a given price must be sold to cover all costs (before profit is made). This number of units is known as the breakeven point. Before you calculate the breakeven point, you should first calculate the costs of production.

Step 1 Calculate the cost of production

To calculate the cost to produce one cubic meter of wood, simply divide the variable expenses by the total volume of wood sold.

\[
\text{cost to produce 1 unit} = \frac{\text{variable costs}}{\text{number of units sold}}
\]
For example, it costs a community agroforest program $200 to pay for the marketing, harvesting, transportation, licenses and taxes to sell 50 m$^3$ of mahogany roundwood to Factory ABC.

\[
\text{cost to produce 1 m}^3 \text{ mahogany roundwood} = \frac{\$200}{50 \text{ m}^3} = \$4/\text{m}^3
\]

It is important to note that this $4/\text{m}^3$ is an underestimate of the costs to produce 1 m$^3$ of wood because it does not include the fixed expenses. To both cover these costs and produce a reasonable profit, the average sale price will need to be higher.

**Step 2 Calculate breakeven point**

Next calculate your breakeven point by including fixed expenses.

\[
\text{breakeven point (units)} = \frac{\text{total fixed costs}}{\text{price} - \text{variable costs}}
\]

For example, it costs a community agroforest program $500 a month for all fixed expenses, which includes staff salary, rent for a small office and monthly repayment on a loan that was taken out to pay for initial start-up expenses. Using the data from the previous example, the average cost to produce 1 unit of mahogany roundwood was $4/\text{m}^3$. We know that the price per unit will need to be higher than this to cover the fixed expenses, and let’s say a common price paid for mahogany is $6/\text{m}^3$. The breakeven analysis will tell us how many units the community will need to sell before they will begin to make a profit.

\[
\text{breakeven point} = \frac{\$500}{\$6 - \$4} = \frac{\$6 - \$4}{250 \text{ m}^3/\text{month}}
\]

This means that the community will need to sell at least 250 m$^3$ per month to break even if the price is $6/\text{m}^3$. If the community sells 300 m$^3$ in one month, they will make a profit of $2 per unit after 250$m^3$, for a total of $100 for the month. If the community sells only 200 m$^3$ in one month, they will not be covering all operational costs, and will be operating at a loss because they are spending more than they are earning.
Step 3 Re-calculate breakeven point

The community can hit the breakeven point earlier if they sell the timber at a higher price, such as $9/m$³.

\[
\begin{align*}
&= \frac{\$500}{\$9 - \$4} \\
&= 100 \text{ m}^3/\text{month}
\end{align*}
\]

This means that the community will need to sell at least 100 m$^3$ per month to make enough money to cover their expenses. If the community sells 300 m$^3$ in one month, they will make a profit of $5 per unit after 100 m$^3$, for a total of $1,000.

---

**Why Not Charge a High Price and Begin to Make a Profit Earlier?**

Price is also dependant on what customers are willing to pay, and what your competitors are charging for similar products. If your price is set too high, you will have difficulty getting orders and sales will be low. The customers will simply buy from your competitors.

When negotiating price with a customer, it is important to have a range of asking prices, and know the quantity of timber you will need to sell to be able to cover all costs and make a reasonable profit from the sale. Remember that since you are just getting started, you may not yet be as good at delivering the volumes on time, or in the perfect way that the customer likes, compared to your competitors who may have long-term relationships with this buyer. For this reason, we recommend starting with a price slightly lower than your competitors, and then gradually raising it as you prove to your customers that you are a reliable supplier.
Textbox 5.6: The Importance of Contracts

Many of us are familiar with the image of two businessmen shaking hands to make a business deal. The handshake signifies a verbal promise that says, “if you do X, I will do Y”. But a handshake is considered an incomplete contract, as there are no specific details about obligations and compensation. There may be trust between each businessman, but there is always a chance that one will not or cannot deliver on his or her promise. There may also be a possibility of a misunderstanding, in which the product being sold is not exactly what the buyer wants. The producer risks the chance that a shipment is returned, or of only receiving a portion of the original price for the shipment.

We strongly recommend developing a written contract template to use with buyers for community agroforest businesses. In general, a good contract should include the following information:

- Name and contact information of both individuals / organizations
- Volume, dimensions, grades of timber or NTFPs to be purchased
- How the timber grading will be done
- Defined point of sale (at what point/location the buyer becomes the owner of the wood)
- What is included in the price
- Timing of delivery
- Timing of payment
- Payment logistics, for example bank transfer or other
- Agreed method for resolving any disagreements related to the contract

A method for penalizing someone who does not meet the contract requirements can also be added. For example, the contract may specify that if payment is not received within 30 days, a 20 percent fee is added to the total costs. The contract may also state that if the timber is not delivered on time, the contract is re-negotiated. Or the contract can agree on a neutral party that can decide on a solution if there is a disagreement that they cannot work out themselves.
Calculating annual projected revenue and additional income

Now that you have an estimate of the amount of forest products you plan to sell during the budget cycle, and an average price for each of the forest products, you can easily create a projected revenue table similar to Table 5.2. This will give the management team an idea of the revenue the forest operations will generate in the coming year using the equation:

\[
sales\ forecast \times \text{average price} = \text{projected revenue}
\]

<table>
<thead>
<tr>
<th>Forest Product</th>
<th>Sales Forecast Year 1(m³)</th>
<th>Average Price (USD$/m³)</th>
<th>Projected Revenue (USD$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teak roundwood</td>
<td>500</td>
<td>10</td>
<td>5000</td>
</tr>
<tr>
<td>Teak boards</td>
<td>200</td>
<td>20</td>
<td>4000</td>
</tr>
<tr>
<td>Mahogany roundwood</td>
<td>1000</td>
<td>9</td>
<td>9000</td>
</tr>
<tr>
<td>Mahogany boards</td>
<td>400</td>
<td>40</td>
<td>16000</td>
</tr>
<tr>
<td>Non-timber forest product</td>
<td>100</td>
<td>5</td>
<td>500</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>$34,500</strong></td>
</tr>
</tbody>
</table>

Table 5.2: Example of Projected Revenue for Community Agroforest Business
In addition, your community agroforest program may also be receiving additional income from sources such as membership fees, grants, donations or loans. While this is not considered revenue it can be an important source of funding for your program’s annual budget. It is important to remember that bank loans repayments will need to be budgeted under fix expenses.

Table 5.3: Example of Additional Funding Sources for Community Agroforest Business

<table>
<thead>
<tr>
<th>Additional Funding Source</th>
<th>Projected Revenue (USD$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Membership fees</td>
<td>10,000</td>
</tr>
<tr>
<td>Government grant</td>
<td>40,000</td>
</tr>
<tr>
<td>Bank loan</td>
<td>20,000</td>
</tr>
<tr>
<td>Donations</td>
<td>16,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$66,000</strong></td>
</tr>
</tbody>
</table>
Financial reports are a series of documents that track the actual expenses and income of the community agroforest program. These documents are meant to answer some basic financial questions such as:

- Did we make a profit last year?
- Did we suffer a loss for any sales?
- Where did most of the income come from?
- Do we have enough cash to pay the variable costs for the next big sale?
- Should we reinvest or distribute profits?
While financial reports can be complicated, a system of financial reporting should be developed that is easy to read and transparent so that all group managers and members can understand where money is coming and going. Not only is this important for the success of the community agroforest business, but it will also improve the long-term sustainability of the program if group members can see that their group manager is managing the business well, and profits are being distributed fairly among members. As we noted in Chapter 6, some community agroforest groups have a specific financial monitoring board, composed of elected members or professional financial staff to monitor funds.

In this chapter we highlight three types of financial reports that have been found to be useful for community agroforest programs:

- Income statement
- Cash flow statement
- Balance sheet

**Income statement**

An income statement is one of the main financial reports for a business. Similar to the budget, an income statement documents the main transactions that occur for a specific period of time, typically one year, but may also be produced every quarter, or month if needed. The income statement shows in just one or two pages all of the revenue your business received, and all of the costs and expenses incurred for operating your business. The bottom line of the income statement, also known as net income, shows if your business made a profit or if there was a loss for that period.

The income statement can help you to answer three basic questions:

1. **How much money did the business bring in?** The top section of an income statement is a list of all money your business received from sales and other sources. If there is an order for timber but you have not received the payment yet, the money still owed should not be included in the income statement. Other income your business may have received during that period should also be included, such as grants, membership fees, loans or donations received.
2. How much money did the business spend? The middle section of an income statement is a list of all of the money your business spent, including variable costs and fixed expenses. If you have a stock of timber harvested, the costs to produce that wood should be added to the total costs even if the money has not been received for the sale. Costs for permits, sales tax, interest on loans and other legal expenses should also be included if they were paid during this period.

3. Did the business make a profit? The bottom line is called the net income for the period of the income statement. It is calculated by subtracting all expenses and costs from the total revenue generated from sales and income from other sources. Your business will make a profit if the total amount of money coming in (question 1) is larger than the total amount of money you are spending (question 2). If you are spending more than you are bringing in, a loss has occurred and your net income will be negative.

**Profit vs. Loss**

If your community agroforest business made a profit, good for you! Now, you will want to assess what you are doing right, and keep up the good work. You will also need to decide whether to invest a portion or all of the profits back into the business (capital investment), or to disburse it to group members in the form of a dividend payment. This is an important decision for the group to make, and may affect the future success of the program.

If the community agroforest business had a loss, it is paramount you evaluate what went wrong, and adjust your plans to minimize the chance of future losses. As we noted in the beginning of this section there are several reasons why a business fails, one loss does not equal the failure of the community agroforest business, but neglect and weak financial control systems will not lead to success. Assess your decisions and get back to work!
### Table 5.4: Example Income Statement

<table>
<thead>
<tr>
<th>Total Sales</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Teak round wood</td>
<td>6,000</td>
</tr>
<tr>
<td>Teak boards</td>
<td>4,800</td>
</tr>
<tr>
<td>Mahogany round wood</td>
<td>24,000</td>
</tr>
<tr>
<td>Mahogany boards</td>
<td>19,200</td>
</tr>
<tr>
<td>Non-timber forest product</td>
<td>600</td>
</tr>
<tr>
<td><strong>Total Revenue from Sales</strong></td>
<td><strong>$54,600</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional Funding</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Government grant</td>
<td>5,000</td>
</tr>
<tr>
<td>Interest earned</td>
<td>500</td>
</tr>
<tr>
<td><strong>Total Additional Funding</strong></td>
<td><strong>$5,500</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable Costs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing</td>
<td>5,000</td>
</tr>
<tr>
<td>Harvesting</td>
<td>7,050</td>
</tr>
<tr>
<td>Transportation</td>
<td>1,000</td>
</tr>
<tr>
<td>Licenses/Taxes</td>
<td>2,500</td>
</tr>
<tr>
<td><strong>Total Variable Costs</strong></td>
<td><strong>$15,550</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fixed Expenses</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries</td>
<td>30,000</td>
</tr>
<tr>
<td>Rent</td>
<td>2,000</td>
</tr>
<tr>
<td>Utilities</td>
<td>200</td>
</tr>
<tr>
<td><strong>Total Fixed Expenses</strong></td>
<td><strong>32,200</strong></td>
</tr>
</tbody>
</table>

| Net Income                   | $12,350 |
Cash flow statement

In addition to monitoring your income and costs through your income statement, you must also be able to predict how much cash you will have on hand in any given month. Even if your business is profitable, without careful cash flow planning, you may still experience months where you have no cash to pay for your expenses. To plan for your cash flow, you should create a cash flow statement (Table 5.5).

A cash flow statement is a financial report that documents the movement of cash or deposits during a period of time, typically one month. Similar to a check book or bank account statement, the cash flow statement can help group managers and members track the amount and timing of cash coming in and out of a business. It is useful to determine if your business will be able to cover expenses in the immediate future, such as staff salaries, and variable expenses that will need to be paid before a sale. With a cash flow statement you can estimate the probability of future sales, by analyzing several cash flow statements over the year. However, the cash flow statement does not include transactions until cash has come in. If there is a pending timber order, it will not be included in the cash flow statement until payment has been received.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Beginning Cash Balance</td>
</tr>
<tr>
<td>2</td>
<td>Cash Receipts</td>
</tr>
<tr>
<td></td>
<td>Cash Payments</td>
</tr>
<tr>
<td></td>
<td>Cash Flow from Operations</td>
</tr>
<tr>
<td>3</td>
<td>Net Borrowings</td>
</tr>
<tr>
<td>4</td>
<td>Fixed Asset Purchases</td>
</tr>
<tr>
<td></td>
<td>Taxes Paid</td>
</tr>
<tr>
<td></td>
<td>FSC Audit Savings Account</td>
</tr>
<tr>
<td>5</td>
<td>Ending Cash Balance</td>
</tr>
</tbody>
</table>
The cash flow statement answers five basic questions:

1. **How much money did you have at the beginning of this month?**
   At the top of a cash flow statement is the beginning cash balance. This is essentially the amount of money your business had in the bank at the beginning of the month.

2. **How much money did you bring in and pay out from operating the business?** The next section of the cash flow statement lists the amount of money coming in from sales or other sources, and the money going out to pay the expenses of operating the business. Cash receipts are inflows of money from sales. Cash payments are outflows of money to pay variable costs and fixed expenses.

3. **Did you borrow any money this month?** If your business took out a loan during this period, this counts as a cash inflow to be included on the statement. When you begin paying the loan back, the payments will be considered outflows of cash. Net borrowings is the difference between cash inflows from new loans, minus outflows for previous loan payments.

---

**When to Pay Group Members for Their Wood?**

Remember that you are competing against local buyers for the right to sell the group members’ wood. Most members would prefer to be paid at the time of harvest (or earlier) for the full price of their wood. This is usually the ideal situation for the members and if you can raise enough up-front capital to do this, you should. Another option is to pay the members for their wood when you receive the funds from the buyer. This option may help your cashflow, but will put you at a disadvantage against other buyers, and may result in members thinking you have squandered their money if you take a long time to sell the wood or if a buyer is late to pay you. In general, try to avoid this if possible. A final option is to make a down payment to members at the time that you harvest, and then pay the balance later when you receive funds from the buyer. This is a compromise, carrying with it some of the positive and negative aspects of both of the other options.
4. What other costs did you pay this month? If your business purchased any new equipment, machinery or buildings during this month you will want to add this to the cash flow statement. These are called fixed assets because they are important assets to the business, but their value will depreciate over time, and they will eventually need to be repaired or replaced.

The cash flow statement should include all other expenses that were paid during this period. For example, you may be required to pay an annual business tax once a year. If that payment occurred during the month, then it should be included in the cash flow statement.

Distributing FSC Certification Costs

For FSC certification the surveillance audits can be a rather large expense that will need to be paid annually. When a community agroforest operation becomes certified, the certification body you are working with will give you an estimate of the timing and costs of surveillance audits typically one year in advance. If they do not give you this estimate, you should request it. Community agroforest businesses can either wait to pay this fee in one large bill, or set up a bank account in which a portion of the money that will go toward paying this bill is set aside each month. For example, if the fee for the annual audit is $6,000 due in August 2013, then a cash outflow of $500 can be recorded in the monthly cash flow statement beginning a year in advance in September 2012. This $500 can then be put in a special account so that by the time August 2013 comes, you will have $6,000 to pay the annual audit fee.

5. What is the cash balance at the end of this month? The last line in the cash flow statement is the new cash balance at the end of the month. A business is said to have a positive cash flow if there is more money at the end of the period than at the beginning. If the business spends more cash than it is bringing in then it is said to have a negative cash flow.
We are Making Large Sales, Why are We Broke?

A common problem for new companies is having a negative cash in-flow even when they are making large sales. In the example cash flow statement (Table 5.5), the business has a negative cash flow because the beginning balance was $1,050 and the ending cash balance was $560. This situation can arise when there is a lag between when the business pays its costs and expenses, and when revenue from sales is received. If the business continues to have a negative cash flow, they risk not being able to pay their bills or delivering to another buyer on time. The business may need to bring in additional cash from other sources such as bank loans, selling equipment, fundraising, or negotiate for a partial payment in advance for a timber sale in order to remain in business.

Alternatively, if the business suddenly gets paid by many buyers at once and has much more money coming in than going out, they should be careful to set this money aside as a buffer so that they can draw from it in the future when buyers may be late to pay again.

Balance sheet

A balance sheet is a financial report that is a snapshot of the overall financial health of a business. The balance sheet is typically prepared once a year, but it can be useful to create a balance sheet every quarter or month to get an overall picture of the business health during the initial phases of a new businesses.

As the name implies, the balance sheet is always ‘in balance,’ showing assets listed at the top portion, (or sometimes on the left), verses the liabilities and the owner’s equity on the bottom (or sometimes on the right) side of the financial report (Table 5.5). The owner’s equity is also known as the net worth of a business, as this is an important measure of a business’s financial success.
Often investors and stockholders of businesses will ask for this measure. The balance sheet is based on the basic accounting equation:

\[
\text{assets} = \text{liabilities} + \text{owner’s equity (net worth)}
\]

Or another way to look at it:

\[
\text{owner’s equity (net worth)} = \text{assets} - \text{liabilities}
\]

<table>
<thead>
<tr>
<th>Table 5.6: Example Balance Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
</tr>
<tr>
<td>Cash</td>
</tr>
<tr>
<td>Accounts Receivable</td>
</tr>
<tr>
<td>Inventory</td>
</tr>
<tr>
<td>Prepaid Expenses</td>
</tr>
<tr>
<td><strong>Total Current Assets</strong></td>
</tr>
<tr>
<td>Fixed Assets at Cost</td>
</tr>
<tr>
<td>Accumulated Depreciation</td>
</tr>
<tr>
<td><strong>Total Net Fixed Assets</strong></td>
</tr>
<tr>
<td><strong>Total Assets</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Liabilities &amp; Owner's Equity</strong></th>
<th><strong>Year 1</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Liabilities</td>
<td></td>
</tr>
<tr>
<td>Accounts Payable</td>
<td>2,600</td>
</tr>
<tr>
<td>Long-Term Debt</td>
<td>5,000</td>
</tr>
<tr>
<td>Current Portion of Debt Due</td>
<td>500</td>
</tr>
<tr>
<td>Taxes Payable</td>
<td>200</td>
</tr>
<tr>
<td><strong>Total Liabilities</strong></td>
<td><strong>8,300</strong></td>
</tr>
<tr>
<td>Owner’s Equity (Net Worth)</td>
<td></td>
</tr>
<tr>
<td>Invested Capital</td>
<td>1,800</td>
</tr>
<tr>
<td>Retained Earnings</td>
<td>12,400</td>
</tr>
<tr>
<td><strong>Total Owner’s Equity</strong></td>
<td><strong>14,200</strong></td>
</tr>
<tr>
<td><strong>Liabilities + Owner's Equity</strong></td>
<td><strong>22,500</strong></td>
</tr>
<tr>
<td><strong>Net Worth</strong></td>
<td><strong>14,500</strong></td>
</tr>
</tbody>
</table>
The balance sheet answers three questions:

1. **What are the business’s assets right now?** A business’s assets are all of the valuable things the business owns such as money in the bank, equipment purchased and inventory that is ready to be sold. In the balance sheet, the assets are typically listed in order of liquidity, or how easily they can be converted to cash. Cash is the most liquid asset. The balance sheet may also include:

   - **Accounts receivable:** The obligations customers must pay for products they have already received is called accounts receivable. Most companies require their customers to pay within 30 to 60 days. Once a payment is received from a customer the accounts receivable amount is changed to cash.

   - **Fixed assets:** Equipment, machinery, furniture or buildings purchased by the business are considered fixed assets. For the balance sheet their original purchase prices are recorded on one line as ‘fixed assets at cost’. Then an estimate of the accumulated depreciation is subtracted from original amount (Textbox 5.7).

### Textbox 5.7: What is Depreciation?

Depreciation is a reduction in the value of physical assets overtime, due to wear and tear. For example, a community agroforest business buys 6 chainsaws at $50 each for a total of $300. Each chainsaw is expected to be useful for 5 years with regular repair and maintenance. At the end of 5 years the chainsaws will most likely need to be replaced. The value of the chainsaws is said to depreciate at a rate of:

\[
\frac{$300}{5 \text{ years}} = $60 \text{ per year}
\]

The balance sheet two years after the chainsaws were purchased will state the value of the chainsaws is equal to the original price (fixed assets at cost) of $300, minus two years of accumulated depreciation

\[
$60 \times 2 \text{ years} = $120
\]

After two years of depreciation, the chainsaws are said to have a net value of:

\[
$300 - $120 = $180
\]

Note: By keeping in mind what equipment will wear out and eventually need to be replaced, a business can anticipate when in the future they will need make the purchase and set aside money for it.
2. What are the business’s liabilities right now? A business’s liabilities are those bills, debts and other obligations the business owes. In the balance sheet, the liabilities are typically listed according to how soon they will need to be paid. The balance sheet may include:

- **Accounts payable**: The accounts payable includes all of the bills the business must pay to other businesses for products and services received, or wages to staff still owed. Accounts payable is essentially the opposite of accounts receivable in the assets section of the balance sheet. Once payment has been sent, the liability is reduced.

- **Current portion of debt and long-term debt**: Many companies purchase land, equipment or vehicles by taking out loans. These loans are considered a long-term debt that will need to be repaid over several years. As a business pays a portion of the loan back, the long-term debt is reduced. For the balance sheet, the amount of the long-term debt that will need to be repaid within the next 12 months is typically recorded as the current portion of debt. The remaining amount that will need to be repaid after 12 months is recorded as long-term debt on a separate line in the balance sheet.

- **Taxes payable**: For most businesses, the government requires them to pay sales taxes at the time of sale, monthly, quarterly or yearly. In the balance sheet, all taxes that will need to be paid because of sales that have already occurred are considered current liabilities. The specific taxes your business will need to pay may depend on the type of business organization you have, and the tax laws in your country and region. It is recommended that you contact a business lawyer and business accountant to ensure your business is paying all the required taxes and fees.
Textbox 5.8: Good Record Keeping with Receipts and Expenditure Booklets

For many communities, informal business transactions are common. When a buyer pays for a product or service, there is no written record of the exchange. Diligent record keeping, however, is essential for group members and staff of a community agroforest business.

The use of receipts and expenditure booklets are a simple solution for creating a good record keeping system. A receipt is essentially a piece of paper given to a customer after they purchase something. The seller may also keep a copy of the receipt. Both customer and seller may use the receipts for their own expense records, and financial reporting. The receipt acts as proof of payment, and is a legal document.

If giving receipts is not common in your region, you can buy a receipt or expenditure booklet to track your expenses. When you make a purchase, the person who you pay will need to sign against what you wrote down.

An expenditure booklet will look something like this:

<table>
<thead>
<tr>
<th>Date</th>
<th>Name Of Business</th>
<th>Description</th>
<th>Amount</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/7/2012</td>
<td>Yellow taxi</td>
<td>Taxi ride</td>
<td>$10.00</td>
<td>Omar Lopez (taxi driver)</td>
</tr>
<tr>
<td>2/5/2012</td>
<td>Office store</td>
<td>Paper notebook</td>
<td>$1.50</td>
<td>Ana Vargas (cashier)</td>
</tr>
</tbody>
</table>

Each individual spending money on behalf of your business should be trained to consistently record every payment they make, either through receipts or through an expenditure booklet. At the end of the month, you should subtract the amount of money the person spent according to their receipts or expenditure booklet from the amount of money they were given. The remainder should be returned back to the business.
3. What is the business’s worth right now? As we noted in the beginning of the chapter, when you subtract what the business has (assets), from what it owes (liabilities), what is left is the net worth, also known as owner’s equity. In the balance sheet the owner’s equity can be broken down into two basic categories: the invested capital, and retained earnings.

- **Invested capital:** The amount of money that is coming into the business from outside resources is called the invested capital. Depending on the type of business you are operating, the invested capital can come from a number of sources such as the members (in a cooperative), owners (in a private business) or outside investors.

- **Retained earnings:** The portion of the profit that is reinvested in the business is called the retained earnings. In general, it is a good idea to always reinvest a portion of profits from sales and other services back into your business in order to improve and grow the business in the future. In the balance sheet, the retained earnings are considered a negative amount.

- **Owner’s equity:** When the business makes a profit, it may decide to distribute a portion of these earnings to the owners or investors in the form of a dividend. In the balance sheet, the owner’s equity is calculated by subtracting the total invested capital from the total retained earnings.

### Paying Dividends within Cooperatives

For community agroforest programs that are cooperatives, a large portion of the invested capital may come from several hundreds or even thousands of agroforest owners in the form of group membership fees, which are actually investments in the business. As a result, when the net worth of the cooperative is positive, members who are considered part owners of the business may receive a portion of the profits annually in the form of a dividend or cash payment that is equal to their share in ownership of the business.
Marketing is the action of promoting and selling a product or service. A marketing strategy describes a business's approach to identifying customers and delivering the desired product or services in order to ensure that the customer will buy from them again.

Smallholder agroforest groups will need to consider several things when deciding on the best marketing strategy to pursue. For example, will the group sell in an open market for the highest going price, or will they sell to specific buyers for a set price? Should timber be stored during the months when prices are historically low, in order to wait until prices are high again before negotiating a timber sale? Should the group sign a contract with a large timber buyer that will provide financial or technical assistance in return for the right of first refusal?

When developing a marketing plan, it is recommended that you follow three steps:

1. Conduct market research
2. Conduct a SWOT assessment
3. Develop a marketing strategy
Market Diversification

When your community agroforest enterprise is just beginning it is a good idea to identify a few products and services you will be the most successful at delivering. Then as the business grows larger, you’ll find opportunities to add products, services, locations, customers and markets. This is called market diversification. Diversifying can help the community agroforest enterprises survive when timber markets change, or when there is new competition. Farmers understand this concept well. It is equivalent to planting 10 different food crops instead of just two or three, so that even if the weather changes there will be food on the table.

Marketing research

For community agroforest programs, an effective marketing strategy begins with research on potential customers. Businesses in general can fall into the trap of making assumptions about the intended market. Market research is needed to test assumptions and identify new opportunities to sell your products.

Market research should tell you about:

- Potential customers
- Competitors
- Market conditions

Researching Potential Customers

It is important to understand your customers first and foremost when developing your marketing plan. You want to understand customer preferences so that you can market yourself as the better choice, and ensure that they will be return customers.
When mapping the supply chain during the preliminary survey (Chapter 4), it is likely that you identified many market segments. Market segments are essentially groups of buyers that choose to buy products based on similar selection criteria. For example, large wood traders in your region may all be grouped together into a single market segment because they typically buy the teak roundwood, at a certain price, like $5/m³. The wood traders may then process this wood into boards at a local sawmill at a cost of $2/m³, for example, and then sell to a furniture manufacturer for $10/m³. Gathering this general data of the different market segments can help you to identify what different customers buy and sell, and the costs and prices associated with each link in the supply chain.

For each market segment, you will want to know:

**What products do they typically buy?** You want to know the specific types, volume, and price of the forest products each market segment typically purchases. This gives you an idea of the current capacity of the market.

**What do they want to buy?** It is possible that there is demand in the market for a certain forest product that is not being met. For example, a local wood trader tells you that although they typically purchase *albizia*, they would prefer *acacia*. If your group has a sustainable supply of *acacia*, this may be a great opportunity for your community agroforest program.

**What will the final product be?** If you have an idea of the final product of your group's forest products, you may be able to make some changes in your timber management to produce a higher quality product and receive a higher price. It is important to then research the costs associated with producing the higher quality of an item to ensure that it is worth the investment.

For more details of what kind of information to gather, see Chapter 4.

**Reseaching the competition**

You will want to present your business as well as you can, and that will largely depend on how you compare to other businesses in the eyes of the customer. Competition is broadly defined as any other business that is selling a similar product to one of your current or potential customers.

**Who are your direct competitors?**

It does not matter if your competitors are smallholder agroforest operations or large forest concessions; if they are supplying to the same customers as you, they are your direct competitors. You need to understand who your main competitors are, what products they sell and what their prices
are. You can obtain a lot of this information by calling up your competitors and asking them questions that any potential customers would ask. You will also want to ask potential customers questions to assess your competitor’s strengths and weaknesses, and determine how customers perceive them. You may also find out about future opportunities or threats to your competition in these discussions.

Who are your indirect competitors? You may likely focus primarily on your direct competition, but it is also important to understand who your indirect competitors are. The indirect competitors are businesses that supply to your customers, but who are not producing the same type of product. For example, if your community agroforest program is selling timber for building houses, you would want to find out how other materials such as stone, bamboo, or cement compare in terms of value to the customer. Then when you meet with a customer, you can focus on why your wood is a better choice over the other types of materials.

Why are customers buying from them? For both direct and indirect competitors, you want to understand the reasons customers purchase from one supplier over another. The answer may surprise you. It may be that there is only one supplier for a preferable product. It may also be that the buyer has a long term relationship with a supplier. It may be that the customer has had negative experiences with some suppliers in terms of quality, or delivery times, and so they prefer to buy from suppliers with good business reputations. It may also be that there are specific values they want in their suppliers. For example, they may want to support the local economy, buy from sustainable sources or work with people from a region they grew up in. These are important factors that tell you what the opportunities are available, and help you to identify how your business can become a preferred supplier in the future.

Researching external market conditions

The success of your business will also depend on external market factors. Community agroforest program managers should have an understanding about how these outside factors shape their business in order to avoid possible pitfalls and take advantage of positive market trends to be a sustainable business. The external factors can be political, social and economic in nature.

• Political: Changes to government regulations, taxes and budgets can directly affect the success or failure of businesses large and small. These factors are especially relevant if your community agroforest program is fully or partially funded by national or international government agencies. While a small community agroforest program may have little political power, it can make a big impres-
sion if the success of your program is advertised widely, and the funding agencies can use your program as an example of government funding well spent. If possible, it is a good idea to build good will with government agencies by participating in public events and forums, hosting representatives and publicly thanking officials for their support of your program.

- **Social:** Embedded in society is a series of values, beliefs and ideas that affect businesses. These social factors can affect the purchasing decisions of customers of community agroforest products. If you are aware of these social factors, you may be able to develop ways to promote your business and the products and services you are selling to customers.

- **Economic:** Broad economic conditions affect consumer spending that can help or hurt community agroforest businesses. In general, all economies follow a pattern of prosperity, recession and recovery. These broad economic conditions affect the spending patterns of consumers, businesses and governments. For community agroforest programs this means that pricing and marketing strategies will need to adapt to the current economic conditions. If you are selling forest products internationally it also means that global economic conditions in different regions of the world will affect your business.

**SWOT Analysis**

Now that you have researched potential customers, competitors and market conditions, the next step is to analyze your current business in relation to these factors. This can be accomplished by conducting a SWOT Analysis, in which you compare your businesses’ strengths and weaknesses to the opportunities and threats you have identified. It is a good idea to conduct a SWOT Analysis once a year, or more frequently if market conditions are changing quickly.

An objective self-analysis of your community agroforest business can be challenging. Look at your businesses from different points of view. Talk with managers to get an internal perspective, as well as individuals outside of your business who know about the market. Remember that you are using your competitors as a measuring stick. Once you have an honest perspective of your business, you will be able to sell your strengths to customers, and develop plans to improve your weaknesses.
Topics to consider:

<table>
<thead>
<tr>
<th>Product type</th>
<th>Delivery</th>
<th>Sales expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality</td>
<td>Payment system</td>
<td>Assets</td>
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<tr>
<td>Quantity</td>
<td>Location</td>
<td>Branding</td>
</tr>
<tr>
<td>Price</td>
<td>Management expertise</td>
<td>Business values</td>
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**Strengths:** Make a list of your business’s strengths.

- What do you do well?
- What advantages do you have?
- What resources do you have?

**Weaknesses:** Make a list of your business’s weaknesses:

- What can you improve on?
- What advantages do your competitors have over you?
- What resources are limiting?

**Opportunity:** Make a list of potential opportunities for your business.

- What opportunities exist considering your businesses strengths?
- What opportunities do you know of currently, but aren’t taking advantage of?
- What trends could turn into opportunities for your business?

**Threats:** Make a list of threats to your business.

- What threats exist considering your businesses weaknesses?
- What barriers are currently impacting your business?
- What trends could potentially hurt your business in the future?
Developing a marketing strategy

Now that you have a good idea of where your business stands, the next step is to use that knowledge to develop a marketing strategy and begin to implement it.

Your strategy should specify:

- **Target customers:** Which market segment will you focus on? Create a list of preferred customers and their contact information. If you are seeking to market yourself to an international audience, try to work with an international organization that can help you make contacts. Examples of these are TFT, FAO, ICCO, TNC, WWF and Forests of the World (see Appendix 2).

- **Product and services:** What products will your business sell? Will you focus sales on logs, sawn boards or more valued products such as furniture and handicrafts? Create a list of products you have to sell in the short-term, including species, volume and grade. What other services will you provide? For example, will you or the buyer pay for delivery? If your forest management strategies need to be changed, specify how. For example, will there be changes to harvesting procedures or standards? Is new training needed to deliver a higher quality of products, or to improve delivery to suppliers?

- **Price:** What will be your average price for your products? What will be the lowest price you will accept? The price should be based on the breakeven analysis from Chapter 21, as well as the information on the price customers are willing to pay and what competitors are charging for similar products.

Building Relationships with Buyers Face-to-Face

Often in the wood industry, factories have long term relationships with certain suppliers and are not likely to change suppliers easily. To develop relationships with buyers, we recommend actually visiting the factories you would like to sell to and introducing yourself. Work hard to build a relationship and if they give you a chance with a trial order, be sure to meet or exceed their expectations.
• **Promotion**: What messages will you use to describe your business? How will you describe your products? Your messaging should focus on your businesses strengths, and the common values you share with your customers. What resources will you focus on to deliver your message to your potential customers and others? For example, will you develop a website, mail fliers, call or directly visit your potential buyers? Will you give workshops or tours of the community agroforest? Will you be attending forums or inviting government officials to see your programs?

• **Target sales**: How much (volume or number of units) are you planning to sell in the next year, two years and three years? Is your sales team knowledgeable, energetic, and persuasive? Will you need to train or hire staff if needed to meet your target sales? Remember to adjust your sales forecast, and budget to reflect changes to your marketing plan.

• **Monitoring**: How will you track if you are on target for sales, or if your marketing activities are bringing in customers? Develop simple indicators for short-term and long-term success of your marketing activities. For example, when you talk to a potential new customer you can ask them how they heard of your program. If they say they read a newspaper article, this would be an indicator that your promotional activities are reaching your target audience.

• **Timing**: Find out if there is a certain season that your customers will need to buy larger amounts of wood. For example, if you are selling to factories that plan to use the wood for garden furniture in the northern hemisphere, they will likely do most of their buying in August and September, in preparation for their spring season. If you are selling to a factory that makes tourist items, they may be influenced by the tourist seasons. By timing your marketing just before buyers need to buy a large amount of wood, you will be fresh in their memories when they are looking to buy.
Textbox 5.9: Using the FSC Trademark

The FSC logo is protected by international trademark legislations; this means that the FSC logo can only be used in specific ways with permission. The Forest Stewardship Council has developed guidelines on how the logo must be printed both on product and off product.

- On-product labelling is the use of the FSC logo on the product itself or on packaging in order to tell the customers that the product comes from an FSC certified forest.

- Off-product use includes all promotional materials such as catalogues, websites, brochures, posters, etc. These materials are generally used by businesses to communicate with other businesses and customers that they are selling a product that is FSC certified. These materials may also include general information on who FSC is and what FSC certification means.

When the certification body (CB) conducts the FSC audit, the assessors will review your planned use of the FSC logo and give you a copy of the latest trademark guidelines. Generally, community agroforest products will be 100 percent wood that comes from certified origin, but there may be some exceptions. For example, if community wood is processed in a local furniture factory and other forest products are used to make a product, then the label should accurately represent the total percent of the wood that is FSC certified.

Your use of the FSC logo will then be one of the components of the annual surveillance audit. Improper use of the initials FSC, the words Forest Stewardship Council, or the FSC Logo is considered copyright infringement, and can result in loss or revocation of FSC certification and legal ramifications.
Section 6: FSC Assessment and Group Expansion
Introduction

Finally, after years of hard work your community forest program is ready to apply for FSC certification as a group. In this section of the handbook, we will describe the certification process, and provide you with tips and advice on how to prepare for the FSC auditors. Once you have attained an FSC certificate, it is likely that your group will expand in members. In this section, we will also provide some guidance on how to ensure your community forest program is sustainable as it continues to grow in size.

This section is divided into two chapters:

Chapter 25: Preparing for the FSC Assessment

Chapter 26: Group Expansion and Member Monitoring
In order to prepare for the FSC assessment, it is a good idea to understand the role of the FSC auditors. As we noted in Chapter 1, the Forest Stewardship Council provides accreditation services for a global network of certification bodies (CB). The role of the CB is to carry out the certification assessment and evaluate all critical aspects of your forest management operations to ensure that your operations conform to all applicable FSC requirements. Each CB is annually assessed and monitored by FSC to ensure that their procedures meet FSC accreditation requirements, and auditors are implementing these procedures properly.

During the FSC assessment, auditors from the CB will compare information from three sources:

- Documents and records
- Stakeholder consultation
- Site visit

Figure 6.1: Basic steps to certification for smallholders (based on FSC-SECR-0002)
Textbox 6.1: Basic Steps to Certification for Smallholders

1. **Contact a certification body (CB) in your area**

You can find a list of FSC accredited Certification Bodies at http://www.accreditation-services.com/archives/standards/fsc. Contact one or several FSC accredited certification bodies working in your area to give you a first estimate of cost and time needed for certification. The certification body will need some basic information about your operation. Be sure to let them know that you are a group of SLIMF, and provide the average size of each member plot and the number of members that you have. They will provide you with information about the requirements of certification. You will need to sign a contract with the CB with which you decide to work. Most CBs require a down payment before the assessment, and a final payment when you receive the results.

2. **Management Planning**

You may need to create or make changes to your management plan in order to comply with FSC standards. Most forest operations already have management plans that include the appropriate level of harvest to ensure that harvest can occur on a regular basis without loss in yield. Some management plans also have an environmental impact management component (e.g., to protect waterways or minimize the run-off from forest roads). In any case, your management plan must cover all of the requirements described in the FSC standard.

3. **Certification assessment**

The certification body will do a certification assessment to see if your operation qualifies for FSC certification. It will then prepare a report and make a decision as to whether your operation gains certification or not.

4. **Certification**

If the certification body decides to certify you, you will receive an FSC certificate. This will allow you to use the FSC logo on your products. If the audit reveals that your operation is not yet in full compliance with FSC standards, then you will be asked to change some aspects of your forest management within a certain period of time (these requested changes are called “corrective action requests” or CARs. A Major CAR is an issue that must be addressed before you can become FSC certified. A Minor CAR is an issue that will not prevent you from becoming FSC certified, but must be addressed within a time frame stipulated by the CB. If you do not adequately resolve the Minor CAR within the timeframe given, it could turn into a Major CAR and cause your FSC certificate to be suspended until it is adequately addressed.

5. **Annual audit**

Most operations will be subjected to an annual audit. At this time the CB will review documents and records related to the certificate, and check that all of your Minor CARs have been closed. For SLIMFs, the first annual audit will include an FMU site-level visit. However, if there are no corrective action requests that require site visits, no complaints requiring evaluation, and no significant forest activities in the past 12 months, the remaining audits may not require site visits (these are known as ‘desk audits’). This is also true for groups or sub-groups of SLIMFs that have less than 100 members (taking into account the rate of change of group members, any changes in the group management structure, and the type and variety of forest activities).

+ **Recertification after five years**

FSC certificates are valid for five years. At the end of the five-year period, if you decide to get recertified, you will have to undergo the same procedures as for the main evaluation.

FSC website http://www.fsc.org/steps-to-certification.155.htm
Documents and Records

The FSC auditors will want to review several types of documents and records that can be used to assess conformity with FSC indicators, such as:

- Forest management plan
- Forest inventory records
- Member files
- Legal documents
- Records of complaints and grievances
- Informed consent documents
- Group monitoring records
- Wildlife surveys
- Social and Environmental Impact Assessment records
- Standard Operating Procedures (SOP)
- Maps showing the location of FMUs
- HCV Assessment records
- Records of accidents
- Workers contracts
- Worker record of payments
- Chemical use records

The CB will likely want you to send them key documents which define the Forest Management Units (FMUs) that will be included in the scope of the audit. If group members own or manage land that will not be included in the certificate, FSC will want information about these forests as well as a description on how the group will avoid confusion between forest products from certified forests and non-certified forests. They will also want to see a description of the group organization structure that details the responsi-
bilities of the group manager and group members (Chapter 6). The CB will use this information to determine the sampling intensity for FMUs, and identify areas where they will want to evaluate during the field visit. Each CB will have their own procedures for selecting which FMUs to visit. FSC only requires that the minimum sampling intensity be determined using a similar two step process as we discuss in Chapter 8.

It is important to note that small forests do not need to be as fully documented as a large enterprise. A system based on verbal descriptions and simple documentation may be sufficient to implement all applicable FSC standards1.

Stakeholder Consultation

A minimum of six weeks before the date of the assessment, stakeholders will need to be consulted about the performance of your group. The aim of this consultation process is to gather information from stakeholders relating to the group’s conformance to the FSC standards before the certification body grants a certificate, however as we have noted in other sections of this handbook (Chapter 4, Chapter 5, Chapter 19, and Chapter 21), it is a good idea to be reaching out to stakeholders in order to build relationships with individuals and groups that may become partners in the future.

The CB should work with you to identify specific local and national stakeholders in your region, and help you to develop methods of communication that meet FSC standards. Typically this will include:

- Putting up a sign in a public space
- Writing a notice in the local newspaper
- Sending letters or questionnaires to known stakeholders
- Making phone calls, or
- Organizing a stakeholder meeting to take place during the FSC evaluation

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All consultations should be documented, and given to the CB. The CB may delegate some or all of the communication efforts to you, but they are required to follow up to ensure that all stakeholders have access to the following information prior to the evaluation:

- That an FSC forest evaluation is due to take place
- The start date of the evaluation
- The applicant’s name and the location of the FMUs to be assessed
- How to acquire a copy of the Forest Stewardship Standard to be used for the evaluation
- That the CB is seeking the views and opinions of stakeholders as to whether the applicant’s forest management complies with the requirements of the standard
- How stakeholders may contact the CB to explain their views and opinions
- That the team will make arrangements to allow stakeholders to meet with them during the evaluation
- Of the existence of the CB’s mechanisms for resolution of complaints or disputes
- That the source of any information is kept confidential on request

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Textbox 6.2: Who are Stakeholders?

For the FSC certification, stakeholders are defined as individuals and organizations with a legitimate interest in the goods and services provided by a FMU, and those with an interest in the environmental and social effects of a FMUs activities, products and services. They include:

- FSC National Initiative, if available
- Local forest agencies or equivalent
- Statutory bodies with some legal mandate over the FMU under evaluation
- National NGOs that are involved in forestry
- International NGOs that have requested to be contacted
- Representatives of Indigenous Peoples or communities in the region
- Labor organizations or forestry unions, if applicable
- Contractors who provide services to the forest operation to be assessed

Field visit

During the field visit, two or more of the auditors visit the group manager office and a sample of the FMUs included in the group certificate. The main goal of the field visit is for the FSC auditors to see with their own eyes (ex. make direct factual, observations), and assess if the group is meeting all FSC standards. The auditors will want to verify that the documents given to them prior to the field assessment accurately matches what is happening on the ground.

They will also be assessing if the people involved in different management activities have the right amount of training and experience to carry out management activities consistently and effectively. The auditors will want to view training records and interview members. Outside contractors and laborers may also be interviewed in order to evaluate if they understand the group rules and procedures sufficiently for their work.
The auditors will want to visit recently harvested areas, as well as any current logging operations. They will be checking to see that safety equipment and procedures are being followed. For example, they may want to see how harvested trees are marked and separated during timber harvesting activities, and how the logging crew completes the harvesting documentation to ensure that the forest products are adequately traced within the forest area up to the forest gate (Chapter 20).

**Non-conformances**

The auditors will identify any part of the FSC standard which you have not fully complied with, and discuss these non-conformities with you on the last day of the field visit. The auditors will discuss whether each non-conformity is considered a major or minor Corrective Action Request (CAR).

- **Major CARs** result in the fundamental failure to achieve the objective of the relevant FSC requirement or are a significant part of the applied management system.

- **Minor CARs** do not result in the fundamental failure to achieve the objective of the relevant FSC requirement. They are a temporary lapse, unusual or non-systematic or the impacts of the non-conformity are limited in scale.

Essentially major CARs can be distinguished from minor CARs if the auditors believe the non-conformity has continued over a long period of time, is repeated or systematic, affects a large area, causes significant damage or indicates that there is no effective management system that meets an FSC requirement. If there are a large number of minor CARs, the CB may issue a major CAR.
Certification decision

After the evaluation, the CB will write a report which details their findings and any non-compliances they found. The auditors will ask for your comments on a draft copy of the report before they finalize the report and issue the certification decision. If there are no major CARs, the CB will issue a certificate. They will inform you that a portion of their report will be made public on the FSC website, and their own website. They will also send you information about the use of the FSC logo on forest products and marketing materials. If the audit reveals that your forest operations are not yet in full compliance with FSC, you will be asked to change some aspects of your management within a certain time frame, depending on whether the CARs are major or minor.

- Major CARs will need to be addressed typically before the certificate is issued, or within three months of an annual audit. Some major CARs will require immediate action. For example the CB may ask you to immediately stop using prohibited chemicals, or prevent any dangerous or environmentally damaging activities from occurring. If a major CAR has not been appropriately or fully implemented within the timeline, it will lead to suspension of the certificate.

- Minor CARs will need to be addressed within a longer timeframe, as stipulated by the CB (often one year). The CB will check to see if corrective actions for each minor CAR have been implemented during the annual audits. If so, the minor CAR will be closed. If not, a minor CAR can be upgraded to a major CAR.

For both major and minor CARs, the CB may give an extension if there are circumstances beyond your control that prevented you from addressing the CAR effectively.

Mock FSC Audit

In 2010 group managers of Dipantara, a timber trading company in Central Java, decided to have a mock FSC audit with TFT staff and forest managers from two other agroforest projects in Indonesia—KHJL and KOSTAJASA—that have successfully obtained FSC group certification. During the mock audit, the experienced group managers discussed the specific requirements for FSC certification for agroforests in their region, and helped Dipantara to anticipate any non-conformity to the FSC standards for small groups. Because of this exercise, Dipantara created a plan to address all identified non-conformities before the official FSC assessment, saving time and money.
Annual audit or re-evaluation after five years

The certificate will be good for five years. An annual surveillance audit will be scheduled each year, for four years. The annual audits are a simplified assessment of documents and a field visit. In general, they should cost less than the original certification assessment, however if there are several major CARs not closed out, an annual surveillance audit can be as cost as much or more (see Chapter 22). The CB will schedule the annual audits with you, but they have the right to a surprise visit at any time, especially if there are complaints or grievances.

Auditors will want to review any changes in membership, and may request to verify that new group members are meeting the FSC standards before allowing them to officially join the group certificate. The auditors may also want to review any major changes to the Forest Management Plan or group structure to ensure that they are still complying with FSC standards.

Like the main assessment, the CB auditors will issue minor and major CARs for any non-compliances.

- If there are five or more major CARs, the certificate will be suspended after an annual audit.
- If there are any major CARs during the re-evaluation, the certificate will not be renewed.

New standards

Periodically, FSC standards are changed. In fact, as we are writing this text, members of the Forest Stewardship Council have approved new Principles and Criteria. These changes typically take one year to become the norm for all applicable forest management certificates, and then the certificate holders have one year to meet the new standards.

It is important to maintain good communication with the CB, to ensure you can implement any new changes in the standards before they take effect. If you are unable to comply with the new standard within the time frame, the CB may withdraw or suspend your certificate.
Once the group manager obtains FSC certification, the big challenge is likely to be expanding the group with more members, while also monitoring the current members to ensure that standards are being met. Expanding membership is a great way to increase your Annual Allowable Cut (AAC) (Chapter 14), allowing you to offer larger volumes of wood to your clients. It is also a good way to ensure that the benefits of your group reach as many people as possible.

However, as you expand you must also ensure that you still have the capacity to adequately train, inventory and monitor all group members. You may need to add additional staff to accomplish this, or invest in new infrastructure. Make sure that you carefully think about your capacity as you expand, and if you are starting to feel overwhelmed, slow down and allow yourself to focus on providing the best service for your current group.

Certification bodies (CB) will want to be kept up to date on all changes in membership. In most cases all new members will automatically become part of the FSC group certificate once they have met all the membership requirements for your group. However, in some cases the CB may want to approve new members before they are officially part of the FSC group certificate, or may put a limit on the number of members the group can have. You should discuss how new members will be recognized with the CB at the time of your assessment. The CB will of course want to be sure that the group manager has the ability to adequately meet their responsibilities to the group as it grows.
Here are some common challenges FSC community groups face, and some tips and advice for overcoming them.

- **Communicating with potential new group members.** When meeting with potential new members, it is a good idea to first meet with the formal and informal community leaders. Be humble and use the common terms or the local language if possible. Have a few pamphlets or documents for community leaders to review. If they are interested in learning about your program further, arrange to have a short presentation to the entire community. It may take multiple meetings, but meeting face to face is an effective way for communities to judge your trustworthiness. If possible, arrange for a field trip to some of the group member’s lands so that potential new members can have a chance to see the program in action and ask questions.

- **Smallholders leaving the group.** There can be a number of reasons why a member may choose to leave the group. A common issue with smallholder agroforests in Southeast Asia is that they historically cut timber only when they need to. If the member needs cash immediately, they may decide to sell outside the group rules. Depending on the sanctions, the member may be expelled from the group or leave on their own. We recommend having an interview with a group members who have indicated they are withdrawing from the group so that you may fully understand their reasons. Records of who has left and why should be kept for five years for FSC auditors, and reviewed often by group managers to see if you can address the concerns of those who have left, and ensure that others do not follow. Of course, if too many members leave then your group is not very sustainable and this could put your FSC certificate in jeopardy.

- **Corruption or nepotism in the group management.** It can be common practice for individuals in the group management team to hire or promote their friends and family. This can be perceived by members of the group as wrong-doing, especially if the individuals who are being hired are not qualified for their position. The group management team can lose the faith of the group to be good managers, and this can lead to mistrust and hard feelings. It is a good idea to avoid this within your community forest program by having a hiring committee to decide on the required qualifications for the position, and then interview candidates as other businesses do. If there is a possible conflict of interest when the candidate is a member or close friend to one of the group managers, the group manager should excuse themselves from the hiring decision to avoid the perception of corruption or nepotism.
We believe that as long as you stay focused on providing the best possible service to your group members, and stay diligent in monitoring to ensure that you are meeting the FSC requirements, your group should develop and grow over time, becoming more and more successful. There will of course be tough years, and when you run into problems you should always reach out to the myriad of organizations that work to support smallholder FSC groups like yourself. These include TFT, FSC Smallholders Department, in addition to CI, CIFOR, ICCO, ICRAF, IIED, ITTO, FAO, Forests of the World, Rainforest Alliance, RECOFT, TNC, WWF, and many others. See Appendix 2 for a list of the web pages associated with these various organizations. Good luck and we look forward to hearing from you as you test out the recommendations provided in this book!
Appendix 1: FSC Principles and Criteria

**Principle 1: Forest management shall respect all applicable laws of the country in which they occur, and international treaties and agreements to which the country is a signatory, and comply with all FSC Principles and Criteria.**

Criteria 1.1: Forest management shall respect all national and local laws and administrative requirements.
Criteria 1.2: All applicable and legally prescribed fees, royalties, taxes and other charges shall be paid.
Criteria 1.3: In signatory countries, the provisions of all binding international agreements such as CITES, ILO Conventions, ITTA, and Convention on Biological Diversity, shall be respected.
Criteria 1.4: Conflicts between laws, regulations and the FSC Principles and Criteria shall be evaluated for the purposes of certification, on a case by case basis, by the certifiers and by the involved or affected parties.
Criteria 1.5: Forest management areas should be protected from illegal harvesting, settlement and other unauthorized activities.
Criteria 1.6: Forest managers shall demonstrate a long-term commitment to adhere to the FSC Principles and Criteria.

**Principle 2: Long-term tenure and use rights to the land and forest resources shall be clearly defined, documented and legally established.**

Criteria 2.1: Clear evidence of long-term forest use rights to the land (e.g., land title, customary rights, or lease agreements) shall be demonstrated.
Criteria 2.2: Local communities with legal or customary tenure or use rights shall maintain control, to the extent necessary to protect their rights or resources, over forest operations unless they delegate control with free and informed consent to other agencies.
Criteria 2.3: Appropriate mechanisms shall be employed to resolve disputes over tenure claims and use rights. The circumstances and status of any outstanding disputes will be explicitly considered in the certification evaluation. Disputes of substantial magnitude involving a significant number of interests will normally disqualify an operation from being certified.

**Principle 3: The legal and customary rights of indigenous peoples to own, use and manage their lands, territories, and resources shall be recognized and respected.**

Criteria 3.1: Indigenous peoples shall control forest management on their lands and territories unless they delegate control with free and informed consent to other agencies.
Criteria 3.2: Forest management shall not threaten or diminish, either directly or indirectly, the resources or tenure rights of indigenous peoples.
Criteria 3.3: Sites of special cultural, ecological, economic or religious significance to indigenous peoples shall be clearly identified in cooperation with such peoples, and recognized and protected by forest managers.
Criteria 3.4: Indigenous peoples shall be compensated for the application of their traditional knowledge regarding the use of forest species or management systems in forest operations. This compensation shall be formally agreed upon with their free and informed consent before forest operations commence.
Principle 4: Forest management operations shall maintain or enhance the long-term social and economic well-being of forest workers and local communities.

Criteria 4.1: The communities within, or adjacent to, the forest management area should be given opportunities for employment, training, and other services.

Criteria 4.2: Forest management should meet or exceed all applicable laws and/or regulations covering health and safety of employees and their families.

Criteria 4.3: The rights of workers to organize and voluntarily negotiate with their employers shall be guaranteed as outlined in Conventions 87 and 98 of the International Labor Organization (ILO).

Criteria 4.4: Management planning and operations shall incorporate the results of evaluations of social impact. Consultations shall be maintained with people and groups directly affected by management operations.

Criteria 4.5: Appropriate mechanisms shall be employed for resolving grievances and for providing fair compensation in the case of loss or damage affecting the legal or customary rights, property, resources, or livelihoods of local peoples. Measures shall be taken to avoid such loss or damage.

Principle 5: Forest management operations shall encourage the efficient use of the forest’s multiple products and services to ensure economic viability and a wide range of environmental and social benefits.

Criteria 5.1: Forest management should strive toward economic viability, while taking into account the full environmental, social, and operational costs of production, and ensuring the investments necessary to maintain the ecological productivity of the forest.

Criteria 5.2: Forest management and marketing operations should encourage the optimal use and local processing of the forest’s diversity of products.

Criteria 5.3: Forest management should minimize waste associated with harvesting and on-site processing operations and avoid damage to other forest resources.

Criteria 5.4: Forest management should strive to strengthen and diversify the local economy, avoiding dependence on a single forest product.

Criteria 5.5: Forest management operations shall recognize, maintain, and, where appropriate, enhance the value of forest services and resources such as watersheds and fisheries.

Criteria 5.6: The rate of harvest of forest products shall not exceed levels that can be permanently sustained.

Principle 6: Forest management shall conserve biological diversity and its associated values, water resources, soils, and unique and fragile ecosystems and landscapes, and, by so doing, maintain the ecological functions and the integrity of the forest.

Criteria 6.1: Assessments of environmental impacts shall be completed — appropriate to the scale, intensity of forest management and the uniqueness of the affected resources — and adequately integrated into management systems. Assessments shall include landscape level considerations as well as the impacts of on-site processing facilities. Environmental impacts shall be assessed prior to commencement of site-disturbing operations.

Criteria 6.2: Safeguards shall exist which protect rare, threatened and endangered species and their habitats (e.g., nesting and feeding areas). Conservation zones and protection areas shall be established, appropriate to the scale and intensity of forest management and the uniqueness of the affected resources. Inappropriate hunting, fishing, trapping, and collecting shall be controlled.

Criteria 6.3: Ecological functions and values shall be maintained intact, enhanced, or restored, including:
a) Forest regeneration and succession.
b) Genetic, species, and ecosystem diversity.
c) Natural cycles that affect the productivity of the forest ecosystem.

Criteria 6.4: Representative samples of existing ecosystems within the landscape shall be protected in their natural state and recorded on maps, appropriate to the scale and intensity of operations and the uniqueness of the affected resources.

Criteria 6.5: Written guidelines shall be prepared and implemented to control erosion; minimize forest damage during harvesting, road construction, and all other mechanical disturbances; and to protect water resources.

Criteria 6.6: Management systems shall promote the development and adoption of environmentally friendly non-chemical methods of pest management and strive to avoid the use of chemical pesticides. World Health Organization Type 1A and 1B and chlorinated hydrocarbon pesticides; pesticides that are persistent, toxic or whose derivatives remain biologically active and accumulate in the food chain beyond their intended use; as well as any pesticides banned by international agreement, shall be prohibited. If chemicals are used, proper equipment and training shall be provided to minimize health and environmental risks.

Criteria 6.7: Chemicals, containers, liquid and solid non-organic wastes including fuel and oil shall be disposed of in an environmentally appropriate manner at off-site locations.

Criteria 6.8: Use of biological control agents shall be documented, minimized, monitored, and strictly controlled in accordance with national laws and internationally accepted scientific protocols. Use of genetically modified organisms shall be prohibited.

Criteria 6.9: The use of exotic species shall be carefully controlled and actively monitored to avoid adverse ecological impacts.

Criteria 6.10: Forest conversion to plantations or non-forest land uses shall not occur, except in circumstances where conversion:

a) Entails a very limited portion of the forest management unit
b) Does not occur on high conservation value forest areas
c) Will enable clear, substantial, additional, secure, long term conservation benefits across the forest management unit.

Principle 7: A management plan — appropriate to the scale and intensity of the operations — shall be written, implemented, and kept up to date. The long-term objectives of management, and the means of achieving them, shall be clearly stated.

Criteria 7.1: The management plan and supporting documents shall provide:

a) Management objectives. b) Description of the forest resources to be managed, environmental limitations, land use and ownership status, socio-economic conditions, and a profile of adjacent lands. c) Description of silvicultural and/or other management system, based on the ecology of the forest in question and information gathered through resource inventories. d) Rationale for rate of annual harvest and species selection. e) Provisions for monitoring of forest growth and dynamics. f) Environmental safeguards based on environmental assessments. g) Plans for the identification and protection of rare, threatened and endangered species. h) Maps describing the forest resource base including protected areas, planned management activities and land ownership. i) Description and justification of harvesting techniques and equipment to be used.

Criteria 7.2: The management plan shall be periodically revised to incorporate the results of monitoring or new scientific and technical information, as well as to respond to changing environmental, social and economic circumstances.

Criteria 7.3: Forest workers shall receive adequate training and supervision to ensure proper implementation of the management plans.
Criteria 7.4: While respecting the confidentiality of information, forest managers shall make publicly available a summary of the primary elements of the management plan, including those listed in Criterion 7.1.

Principle 8: Monitoring shall be conducted — appropriate to the scale and intensity of forest management — to assess the condition of the forest, yields of forest products, chain of custody, management activities and their social and environmental impacts.

Criteria 8.1: The frequency and intensity of monitoring should be determined by the scale and intensity of forest management operations, as well as, the relative complexity and fragility of the affected environment. Monitoring procedures should be consistent and replicable over time to allow comparison of results and assessment of change.

Criteria 8.2: Forest management should include the research and data collection needed to monitor, at a minimum, the following indicators: a) Yield of all forest products harvested, b) Growth rates, regeneration, and condition of the forest, c) Composition and observed changes in the flora and fauna, d) Environmental and social impacts of harvesting and other operations, and e) Cost, productivity, and efficiency of forest management.

Criteria 8.3: Documentation shall be provided by the forest manager to enable monitoring and certifying organizations to trace each forest product from its origin, a process known as the "chain of custody."

Criteria 8.4: The results of monitoring shall be incorporated into the implementation and revision of the management plan.

Criteria 8.5: While respecting the confidentiality of information, forest managers shall make publicly available a summary of the results of monitoring indicators, including those listed in Criterion 8.2.

Principle 9: Management activities in High Conservation Value Forests shall maintain or enhance the attributes which define such forests. Decisions regarding high conservation value forests shall always be considered in the context of a precautionary approach.

Criteria 9.1: Assessment to determine the presence of the attributes consistent with High Conservation Value Forests will be completed, appropriate to scale and intensity of forest management.

Criteria 9.2: The consultative portion of the certification process must place emphasis on the identified conservation attributes, and options for the maintenance thereof.

Criteria 9.3: The management plan shall include and implement specific measures that ensure the maintenance and/or enhancement of the applicable conservation attributes consistent with the precautionary approach. These measures shall be specifically included in the publicly available management plan summary.

Criteria 9.4: Annual monitoring shall be conducted to assess the effectiveness of the measures employed to maintain or enhance the applicable conservation attributes.

Principle 10: Plantations shall be planned and managed in accordance with Principles and Criteria 1–9, and Principle 10 and its Criteria. While plantations can provide an array of social and economic benefits, and can contribute to satisfying the world’s needs for forest products, they should complement the management of, reduce pressures on, and promote the restoration and conservation of natural forests.
Criteria 10.1: The management objectives of the plantation, including natural forest conservation and restoration objectives, shall be explicitly stated in the management plan, and clearly demonstrated in the implementation of the plan.

Criteria 10.2: The design and layout of plantations should promote the protection, restoration and conservation of natural forests, and not increase pressures on natural forests. Wildlife corridors, streamside zones and a mosaic of stands of different ages and rotation periods shall be used in the layout of the plantation, consistent with the scale of the operation. The scale and layout of plantation blocks shall be consistent with the patterns of forest stands found within the natural landscape.

Criteria 10.3: Diversity in the composition of plantations is preferred, so as to enhance economic, ecological and social stability. Such diversity may include the size and spatial distribution of management units within the landscape, number and genetic composition of species, age classes and structures.

Criteria 10.4: The selection of species for planting shall be based on their overall suitability for the site and their appropriateness to the management objectives. In order to enhance the conservation of biological diversity, native species are preferred over exotic species in the establishment of plantations and the restoration of degraded ecosystems. Exotic species, which shall be used only when their performance is greater than that of native species, shall be carefully monitored to detect unusual mortality, disease, or insect outbreaks and adverse ecological impacts.

Criteria 10.5: A proportion of the overall forest management area, appropriate to the scale of the plantation and to be determined in regional standards, shall be managed so as to restore the site to a natural forest cover.

Criteria 10.6: Measures shall be taken to maintain or improve soil structure, fertility, and biological activity. The techniques and rate of harvesting, road and trail construction and maintenance, and the choice of species shall not result in long term soil degradation or adverse impacts on water quality, quantity or substantial deviation from stream course drainage patterns.

Criteria 10.7: Measures shall be taken to prevent and minimize outbreaks of pests, diseases, fire, and invasive plant introductions. Integrated pest management shall form an essential part of the management plan, with primary reliance on prevention and biological control methods rather than chemical pesticides and fertilizers. Plantation management should make every effort to move away from chemical pesticides and fertilizers, including their use in nurseries. The use of chemicals is also covered in Criteria 6.6 and 6.7.

Criteria 10.8: Appropriate to the scale and diversity of the operation, monitoring of plantations shall include regular assessment of potential on-site and off-site ecological and social impacts, (e.g., natural regeneration, effects on water resources and soil fertility, and impacts on local welfare and social well-being), in addition to those elements addressed in Principles 8, 6 and 4. No species should be planted on a large scale until local trials and/or experience have shown that they are ecologically well-adapted to the site, are not invasive, and do not have significant negative ecological impacts on other ecosystems. Special attention will be paid to social issues of land acquisition for plantations, especially the protection of local rights of ownership, use or access.

Criteria 10.9: Plantations established in areas converted from natural forests after November 1994 normally shall not qualify for certification. Certification may be allowed in circumstances where sufficient evidence is submitted to the certification body that the manager/owner is not responsible directly or indirectly of such conversion.
Appendix 2: List of Organizations Working with Smallholders and FSC Certification

Conservation International (CI)
Main Office: Arlington, Virginia, USA
Multiple Regional Offices
Website: www.conservation.org
Phone: +1-703-341-2400

Center for International Forestry Research (CIFOR)
Main Office: Bogor, Indonesia
Website: www.cifor.org
Phone: +62-251-8622-622
Email: cifor@cgiar.org

Center for Agriculture Research for Development (CIRAD)
Main Office: Paris, France
Multiple Regional Offices
Website: www.cirad.fr/en

Food and Agriculture Organizations of the United Nations (FAO)
Main Office: Rome, Italy
Multiple Regional Offices
Website: www.fao.org

Forest of the World
Main Office: Durham, North Carolina, USA
Multiple Regional Offices
Website: http://forestoftheworld.com/

Forest Stewardship Council (FSC)
Main Office: Bonn, Germany
Multiple Regional Offices
Website: www.fsc.org
Phone: +49 (0)228 367 660,
Email: fsc@fsc.org

Proforest
Main Office: Oxford, United Kingdom
Website: www.proforest.net
Phone: +44 (0)1865 243439
Email: info@proforest.net

HCV Resource Network (c/o The Proforest Initiative)
Main Office: Oxford, UK
Website: www.hcvnetwork.org
Phone: +44 (0)1865 243 439
Email: info@hcvnetwork.org

Interchurch Organisation for Development Cooperation (ICCO)
Main Office: Utrecht, the Netherlands
Multiple Regional Offices
Website: www.icco.eu/en/home
Phone: +31 (0)30 692 56 14
Email: info@icco.nl

World Agroforestry Centre (ICRAF)
Main Office: Nairobi, Kenya
Website: www.worldagroforestrycentre.org
Phone: +254 20 7224000

International Institute for Environment and Development (IIED)
Main Office: London, UK
Website: www.iied.org
Phone: +44 (0)20 3463 7399

International Tropical Timber Organization (ITTO)
Main Office: Yokohama, Japan
Website: www.itto.int
Phone: +81-45-223-1110
Email: itto@itto.int

International Union for Conservation of Nature (IUCN)
Main Office: Gland, Switzerland
Multiple Regional Offices
Website: www.iucn.org
Phone: +41 22 999 0000
Email: mail@iucn.org

Rainforest Alliance
Main Office: New York, New York, USA
Multiple Regional Offices
Website: www.rainforest-alliance.org
Phone: +1 (212) 677-1900
Email: info@ra.org

Center for People and Forests (RECOFT)
Main Office: Bangkok, Thailand
Website: www.recoftc.org
Phone: 66-2-940-5700
Email: info@recoftc.org
The Nature Conservancy (TNC)
Main Office: Arlington, Virginia, USA
Multiple Regional Offices
Website: www.nature.org
Phone: +01-800-628-6860
Email: member@tnc.org

WWF-The Global Forest and Trade Network
Main Offices: Gland, Switzerland
Website: http://gftn.panda.org/
Phone: +44 1394 420 518
Email: gftn@wwf.panda.org

The Forest Trust (TFT)
Main Office: Crassier, Switzerland
Multiple Regional Offices
Website: www.tft-forests.org
Phone: +41 (0) 22 367 94 40
Email: info@tft-forests.org
Appendix 3: Certification Bodies for the Forest Stewardship Council

This is a list of certification bodies that have been independently verified by Accreditation Services International (ASI) to certify forests worldwide using the FSC Principles and Criteria.

This list was up to date as of June 2012. For a more recent list go to: www.accreditation-services.com

Bureau Veritas Certification (BVC)  
Accredited since 25 July 2005 (FSC-ACC-020)

Control Union Certifications B.V. (CU)  
Accredited since 13 October 2005 (FSC-ACC-019)

GFA Consulting Group GmbH (GFA)  
Accredited since 01 June 2000 (FSC-ACC-009)

KPMG Forest Certification Services Inc. (KF)  
Accredited since 01 December 2002 (FSC-ACC-010)

LGA InterCert GmbH (IC)  
Accredited since 20 November 2007 (FSC-ACC-023)

QMI-SAI Global Assurance Services (QMI)  
Accredited since 11 August 2008 (FSC-ACC-025)

Rainforest Alliance SmartWood Program (SW)  
Accredited since 01 July 1995 (FSC-ACC-004)

Scientific Certification Systems (SCS)  
Accredited since 01 July 1995 (FSC-ACC-003)

Soil Association Woodmark (SA)  
Accredited since 01 July 1995 (FSC-ACC-002)

Swiss Association for Quality and Management Systems (SQS)  
Accredited since 28 December 2002 (FSC-ACC-013)
Appendix 4: Recommended Reading


### Appendix 5: Sample Monitoring Template for Group Managers

<table>
<thead>
<tr>
<th>Name of group</th>
<th>Number of group (ID)</th>
<th>Number of members</th>
<th>Address</th>
<th>Number of registered agroforest plots</th>
</tr>
</thead>
</table>

#### Management of documents

<table>
<thead>
<tr>
<th>Monitoring</th>
<th>Weigh</th>
<th>Level of compliance</th>
<th>Value</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Memorandum of Understanding</td>
<td>6.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Contract between group manager and member (farmer group)</td>
<td>6.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. List of member</td>
<td>6.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Filled Form by the members</td>
<td>6.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Land certificate or other</td>
<td>6.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Guest book</td>
<td>6.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Financial report</td>
<td>6.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. List of attendance in farmer group meetings</td>
<td>6.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Minutes meetings</td>
<td>6.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Dipantara Management Plan &amp; Annual Plan</td>
<td>6.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Various SOPs of Dipantara</td>
<td>6.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Documents on wood flow for the group</td>
<td>6.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Documents on harvesting</td>
<td>6.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Organizational Structure</td>
<td>6.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Role and responsibility of each executive of the farmer group</td>
<td>6.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Maps or sketch of land of members</td>
<td>6.25</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total compliance for management of documents**: 100.00

#### Implementation of Sustainable Forest Management (SFM)

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Weigh</th>
<th>Level of compliance</th>
<th>Value</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>Not using prohibited hazardous chemical by FSC</td>
<td>16.67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Flowing procedures for handling hazardous waste</td>
<td>16.67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Controlling hunting of protected plants and animals</td>
<td>16.67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Controlling invasive species</td>
<td>16.67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Protection of water springs</td>
<td>16.67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Protection of social and cultural sites</td>
<td>16.67</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total implementation of SFM**: 100.00

**Directions**: The group manager should assess the level of compliance for each category. To calculate the value, multiply the weight of each category by the percent for the corresponding level of compliance. For example, if there is a record of farmer’s group minutes for 4 out of 5 meetings the level of compliance would be fair = 75%. The weight for this monitoring activity is 6.25, therefore the value is 6.25 x 0.75 = 4.69.
## Appendix 6: Example Smallholder Agroforest Five Year Management Plan

<table>
<thead>
<tr>
<th>Description of current status</th>
<th>Management and Monitoring Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Animals and Plants</strong></td>
<td>Report sightings and protect any rare, threatened or critically endangered species</td>
</tr>
<tr>
<td>Animals and plants are protected</td>
<td></td>
</tr>
<tr>
<td><strong>Pests and Diseases</strong></td>
<td>Trees have space and natural vegetation maintained within plantation</td>
</tr>
<tr>
<td>Defoliator and termites damage</td>
<td></td>
</tr>
<tr>
<td><strong>Erosion</strong></td>
<td>No cutting of valuable species and cutting others at 0.5 meters.</td>
</tr>
<tr>
<td>Medium risk &lt;50% moderate erosion areas dominated by pedestal (&lt; 1cm) or sheet erosion</td>
<td></td>
</tr>
<tr>
<td><strong>Boundaries</strong></td>
<td>Maintain current marked boundaries and improve any areas where markings are deteriorating or absent</td>
</tr>
<tr>
<td>Boundaries marked</td>
<td></td>
</tr>
<tr>
<td><strong>Fire Management</strong></td>
<td>5 m fire break should be made along the fire prone part of the plantation, fire suppressed</td>
</tr>
<tr>
<td>Medium risk (&lt;35 degrees, less than 80% burnt in the last year or less than 4 fires in the last 10 years)</td>
<td></td>
</tr>
<tr>
<td><strong>High Conservation Values</strong></td>
<td>Long lived evergreen species along the boundary, report on breaches of village rules relevant to the adjacent land use</td>
</tr>
<tr>
<td>Neighboring a conservation/ protection forest</td>
<td></td>
</tr>
<tr>
<td><strong>Watercourse Management</strong></td>
<td>2 m buffer: maintain natural regeneration, directional harvesting of teak out of buffer, no replanting and fire stopped</td>
</tr>
<tr>
<td>Ephemeral (less than 60 days/year) watercourse with stream base</td>
<td></td>
</tr>
<tr>
<td><strong>Form</strong></td>
<td>Seed only collected from the best trees if not available elsewhere and not to be shared or sold</td>
</tr>
<tr>
<td>30-80% of the trees are straight (good stem shape)</td>
<td></td>
</tr>
<tr>
<td><strong>Pruning</strong></td>
<td>Form pruning shall be completed within 2 years, singling shall be done within 1 year</td>
</tr>
<tr>
<td>Dominated by multi-stems, heavy and/or low branches</td>
<td></td>
</tr>
<tr>
<td><strong>Thinning</strong></td>
<td>Thinning shall be completed within three years</td>
</tr>
<tr>
<td>Tree canopies beginning to compete</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 7: Guidance on How to Measure Tree Diameter

This appendix is based on US Forest Service guidance for measuring diameter at breast height (DBH) found at http://phytosphere.com/treeord/measuringdbh.htm. The DBH is 4.5 feet, but can be 1.3 meters, 1.4 meters, or 1.5 meters depending on the forestry standards in your region.

1. The tree tapers in such a way that the diameter at a point below 4.5 ft is actually smaller than the diameter at 4.5 ft. Measure diameter at the smallest point and record the height at which diameter was measured on the data sheet.

2. Tree has branches or bumps which interfere with DBH measurement. Measure DBH below the branch or bump. Some references say to measure a foot below the branching point, which assumes this point is the smallest diameter of the trunk below 4.5 ft. US Forest Service measures DBH immediately above point were bumps or branches cease to affect diameter of the stem. The underlying concept is to measure the diameter that would be closest to the expected DBH if branches or other irregularities were not present. Record the height at which the diameter measured.

3. Vertically growing tree is on a slope. There are several commonly accepted ways to find the DBH height. Probably the easiest method is to measure diameter 4.5 ft from the ground on the upper side of the slope. This method is used by the US Forest Service. Some references (e.g., International Society of Arboriculture’s Tree Appraisal Manual) say to measure 4.5 ft from the midpoint of the trunk along the slope. However, finding the location of the trunk midpoint is probably subject to more error than finding the upper side of the trunk, so the USFS method is likely to be more repeatable than the ISA method.

4. Tree leans. There are several commonly accepted ways to find the DBH height. The US Forest Service measures 4.5 ft up the stem in the direction of the lean. Some references (e.g., ISA) say to measure 4.5 ft from the midpoint of the lean. As noted under 3 above, the USFS method is probably less prone to error and more readily repeatable by different observers.

5. Tree forks below DBH or near DBH. The measurement is recorded at the narrowest part of the main stem below the fork. The height of the DBH measurement and the fork should be noted (e.g., 3 ft diameter @ 2 ft [Forks @ 4 ft]).

6. Tree splits into several trunks close to ground level. Measure DBH of each trunk separately, using the principals shown in categories 1-5 above. The DBH for the tree is found by taking the square root of the sum of all squared stem DBHs.
**Sketch Map**

Directions: Sketch the boundaries of the forest plot. Note adjacent land use and ownership if known. Include important features such as roads, water ways, slopes, areas with high erosion. Mark different land uses types (ex agriculture plot, mixed agroforests, plantation, natural forests, or others). Estimate the average age of the forest block in the table and the % of the area the target tree species covers to record an estimate of stand density (ex teak). In the tables below record the measurements from the forest inventory team. Add additional sheets if needed. If you are taking a representative sample instead of a full census, record the spacing of trees as well.

<table>
<thead>
<tr>
<th>age</th>
<th>no trees</th>
<th>% of plot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Block 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Block 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Block 4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Tree Inventory**

<table>
<thead>
<tr>
<th>Block 1:</th>
<th>Block 2:</th>
<th>Block 3:</th>
<th>Block 4:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species</td>
<td>DBH</td>
<td>Height</td>
<td>Species</td>
</tr>
<tr>
<td>% no trees</td>
<td>Management requirements</td>
<td>% no trees</td>
<td>Management requirements</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 9: Sample Harvest Monitoring Report

<table>
<thead>
<tr>
<th>Site personnel</th>
<th>Agroforest plot ID:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Village</td>
<td></td>
</tr>
<tr>
<td>Farmer name:</td>
<td></td>
</tr>
<tr>
<td>Lead harvester</td>
<td>age:</td>
</tr>
<tr>
<td>1st harvester’s name</td>
<td>age:</td>
</tr>
<tr>
<td>2nd harvester’s name</td>
<td>age:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Checklist</th>
<th>Plantation Certificate signed?</th>
<th>Guidelines present?</th>
<th>Tree marked?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every worker &gt;14 (unless own family land) workers &lt;18 not working hard?</td>
<td>Cutting permission signed?</td>
<td>Read Forest Management Plan?</td>
<td>Know and have buyers specifications?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Observations from the field inspection (before and after harvesting)</th>
<th>Status Pre-harvest</th>
<th>Preventive action agreed</th>
<th>Status Post-harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HCV (protected animals, watercourses, steep areas, spirit forest)?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety equipment available and procedures followed?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understory condition? Restoration activities required?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stumps are marked and cut low?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All slash cut down &lt;0.5m high?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All marked trees removed?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is there any rubbish, oil spills or waste on site</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential commercial wood left behind?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Observations and / or Corrective Actions Required (CAR) after harvesting intervention</th>
<th>Correct Action Required</th>
<th>Deadline</th>
<th>Checked and Accepted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Appendix 10: Guidance on How to Create a Teak and Mahogany Tree Nursery

Creating Seed Beds
Before you begin, it is important to determine what is the best location to build the seed bed. The seedbeds should be on a relatively flat piece of land, which has easy access for monitoring the seeds. Make sure good drainage and sufficient water supply is close to the planting location.

Requirements for a Good Seed Bed
Seedbeds are made for the seeds to germinate into seedlings. A good seed bed will:

- Have sufficient exposure to the morning sunlight.
- Have water outlets so the soil can easily drain.
- Be sheltered with reeds, sago palm leaves, coconut leaves, or plastic sheets.
- The surface of the sowing beds is higher than the ground surface and the sides of the beds are enforced with bamboos or wooden boards.
- The sowing medium is made loose and cleared of any roots, stones, and layered with a mixture of topsoil and sand.
- The distance between sowing beds and the seedling beds is not too far.

Creating Weaning Beds
Weaning beds are used to separate seeds which have already germinated in order to give them more space to grow.

Requirements for Good Weaning Beds:
- Have sufficient exposure to the sunlight. It is better to have it laid northward-southward.
- Have water outlets so the soil can easily drain.
- The soil is clear of grass and roots.
- Be sheltered with reeds, sago palm leaves, coconut leaves, or plastic sheets.
- The distance between sowing beds and the seedling beds is not too far.

Selection of Seeds
The selection of seeds is done to get good quality seeds that with a high germinating ability. The quality of forest plant seeds can be determined by inspecting the seeds’ outer appearance and knowing their origin. In general, good seeds are derive from ripe fruits, and appear to be shiny, dark, full, unwrinkled, with no insect holes or no stains of fungi on the skin. It is recommended to find certified seeds or seeds from seeding production area.

Seed Treatments
Prior to sowing the seeds, they may be given a treatment to speed up the process of germination. For example some seedling won’t germinate unless they are immersed in or a particular solution such as distilled water, or burned briefly.

Weaning the Seedlings
The weaning process is done after the seedlings have 4-6 leaves. The seedlings are uprooted and taken out by using a wooden stick or sharpened bamboo so as not to destroy their roots. Next, the seedlings are put into a polybag in the weaning beds. Before being uprooted, the seedlings must be sprayed with water to make the uprooting easier. The best time for weaning is in the morning between 6 to 9 am and in the afternoon between 4 to 5 p.m.
Things to Pay Attention to:
- Only good seedlings are weaned.
- While uprooting, avoid destroying their roots.
- Roots must not be folded while putting them in the polybags.
- Position the seedlings upright

Collecting Seedlings from Nature
Collect seedlings when they have 2-4 leaves. They should be uprooted carefully so as to not destroy roots. While putting them in the polybags, the roots should not be folded and when it is necessary. Some of the leaves may be removed to reduce plant transpiration. For bigger seedlings, they can be moved into the polybags by use of a stumping technique, which entails trimming both the leaves and roots of seedlings.

Seedling Maintenance
Seedling maintenance includes watering, fertilizing and replacing. Watering is generally done once a day, but when the weather is hot, it can be done twice a day, in the morning and in the afternoon. Dead seedlings are replaced if they become infected by a plant disease. Grass which grows in the polybags or the weaning beds must be cleared off. Fertilization is done after the seedlings reach 4-5 weeks old and the dosage is determined by the type of the seedlings.

Prevention from Pests and Diseases
The prevention against pests and diseases in the seedling beds can be done by:
- Sterilizing the seeding medium to be used.
- Arranging the shelters and drainage.
- Using healthy seeds and seedlings.
- Mixing or immersing seeds in an acceptable pesticide before sowing.
- Spraying seedlings with an acceptable pesticides or fungicides as needed.

Monitoring Growth
Monitoring is performed in the sowing beds and in the weaning beds. The former is meant to calculate the percentage of seed germination. It is also meant to determine the number of polybags needed. The latter is intended to determine the number of seedling stock in the seedling beds for the planting plan.

Seedling Monitoring
Information which needs documenting in relation to seedling activity includes:
- Name of the private forest managing unit.
- Types of plants.
- Date of weaning.
- Number of seeds being sowed.
- Number of seedlings in the weaning beds.

The documentation is done by using an information board and a report on seedlings activity and supply of seedlings.

Seedling Planting
Ongoing planting is done to avoid depletion as a result of harvesting. It is also useful to create green open space on the members’ lands, and can improve the quality of the environment, and increases the earnings of the member farmers.

Planting can be occur on the members’ lands, critical lands, river borders, and on the land which is prone to landslides. The planting patterns on the members’ lands can be a monoculture pattern or a mixed pattern.
Making Planting Holes
Holes for planting are usually made 2-4 weeks prior to planting. In principle, the bigger the size of the planting holes, the better the growth of the seedlings will be. After 2-4 weeks, the dug-out soil is mixed with organic fertilizers and then filled into the hole and is left for 2 weeks. This is done so that the organic materials in the fertilizer can decompose first to become a good medium for plants.

Things to Consider for Proper Planting
- Planting is done at the beginning of the rainy season and is better done in the morning or in the afternoon.
- Seedlings to be planted are fresh seedlings, healthy, and fulfill technical requirements.
- The polybags of the seedlings to be planted should first be taken off.
- The planting medium is not be broken up or scattered.
- The roots are not destroyed.
- The seedling medium is put into the planting hole and is fully covered with soil.
- The position of the stem is upright.
- The seedlings are covered with solid top soil.
- The seedlings are watered until they are saturated with water.

Monitoring Planting Activities
Monitoring is done using an information board and a report on all planting activities. Documentation should include:
- Date of planting.
- Distance of planting.
- Number of seedlings.
- Types of trees.
- Origin of seedlings.

Plant Maintenance
Plant maintenance is performed to take care of the plants by fertilizing, pruning, weeding, replacing, hoeing, sparing, and controlling pests and diseases. These activities are intended to obtain optimal tree growth, and good quality wood that is straight with no eyes or wood pests.

Monitoring Plant Maintenance
Monitoring is done using an information board and a report on maintenance activities. Documentation should include:
- Date of maintenance activities.
- Types of maintenance activities done.
- Frequency of maintenance activities.
- Number of dead and live plants.
- Types of pest and disease attacks.

Things to Consider for Plant Maintenance
- Replacement plants should not be too different in age and condition from the live plants. Plants should be replaced in the first planting year at the beginning of the rainy season.
- The amount of fertilizer should be adjusted to the age of the plant and not be added too close to the stem. Fertilization is best done when the plants are 3-6 months old or according to the growing condition of the plants.
- Hoeing and weeding should not destroy the roots, and should be done until the plants are 1-2 years old.
- Pruning should be done on young branches using a sharp cutter and should not harm the stem.
- Thinning should remove plants that have a bad growth (have a curvy stem, or a physical defect), are infected by pests, or are too densely planted.
Appendix 11: FSC Pesticides Identified as “Highly Hazardous”

**Chlorinated hydrocarbon compounds**, such as some chlorinated pesticides have been noted for their ability to accumulate in biological tissues, and to particularly concentrate in organisms that occupy positions in the upper trophic levels and persistence in the environment. Compounds included in this class include pesticides such as DDT, chlordane, lindane, heptachlor, dieldrin, aldrin, toxaphene, mirex and chlordecone.

**World Health Organization Extremely hazardous (Class IA) technical grade active ingredients in pesticides**

<table>
<thead>
<tr>
<th>Aldicarb</th>
<th>Chloromephos</th>
<th>Ethoprophos</th>
<th>Phenylmercury acetate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brodifacoum</td>
<td>Chlorophacinone</td>
<td>Flocoumafen</td>
<td>Phorate</td>
</tr>
<tr>
<td>Bromadiolone</td>
<td>Difenacoum</td>
<td>Hexachlorobenzene</td>
<td>Phosphamidon</td>
</tr>
<tr>
<td>Bromethalin</td>
<td>Difethialone</td>
<td>Mercuric chloride</td>
<td>Sodium fluoroacetate</td>
</tr>
<tr>
<td>Calcium cyanide</td>
<td>Diphacinone</td>
<td>Mevinphos</td>
<td>Sulfitop</td>
</tr>
<tr>
<td>Captafol</td>
<td>Disulfoton</td>
<td>Parathion</td>
<td>Tebupirimfos</td>
</tr>
<tr>
<td>Chlorothoxyfos</td>
<td>EPN</td>
<td>Parathion-methyl</td>
<td>Terbufos</td>
</tr>
</tbody>
</table>

**World Health Organization Highly hazardous (Class IB) technical grade active ingredients in pesticide**

<table>
<thead>
<tr>
<th>Acrolein</th>
<th>Zeta-cypermethrin</th>
<th>Heptenophos</th>
<th>Paris green</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allyl alcohol</td>
<td>Demeton-S-methyl</td>
<td>Isoxathion</td>
<td>Pentachlorophenol</td>
</tr>
<tr>
<td>Azinphos-ethyl</td>
<td>Dichlorvos</td>
<td>Lead arsenate</td>
<td>Propetamphos</td>
</tr>
<tr>
<td>Azinphos-methyl</td>
<td>Dicrotophos</td>
<td>Mecarbam</td>
<td>Sodium arsenite</td>
</tr>
<tr>
<td>Blasticid-S</td>
<td>Dinoterb</td>
<td>Mercuric oxide</td>
<td>Sodium cyanide</td>
</tr>
<tr>
<td>Butocarboxim</td>
<td>DNOC</td>
<td>Methamidophos</td>
<td>Strychnine</td>
</tr>
<tr>
<td>Butoxycarboxim</td>
<td>Edifenphos</td>
<td>Methidathion</td>
<td>Tefluthrin</td>
</tr>
<tr>
<td>Cadusafos</td>
<td>Ethiofencarb</td>
<td>Methiocarb</td>
<td>Thallium sulfate</td>
</tr>
<tr>
<td>Calcium arsenate</td>
<td>Famphur</td>
<td>Methomyl</td>
<td>Thiofanox</td>
</tr>
<tr>
<td>Carbofuran</td>
<td>Fenamiphos</td>
<td>Monocrotophos</td>
<td>Thiometon</td>
</tr>
<tr>
<td>Chlorfenvinphos</td>
<td>Flucytthinate</td>
<td>Nicotine</td>
<td>Triazophos</td>
</tr>
<tr>
<td>3-Chloro-1,2-propanedio</td>
<td>Fluoroacetamide</td>
<td>Omethoate</td>
<td>Vamidothion</td>
</tr>
<tr>
<td>Coumaphos</td>
<td>Formetanate</td>
<td>Oxamyl</td>
<td>Warfarin</td>
</tr>
<tr>
<td>Coumatetraetyl</td>
<td>Furathiocarb</td>
<td>Oxydemeton-methyl</td>
<td>Zinc phosphide</td>
</tr>
</tbody>
</table>

**Pesticides which are banned by international agreement**

FSC maintains its own list of highly hazardous pesticides based on data from:

- The e-electronic Pesticide Manual (e-PM)
- The US Environment Protection Agency (US EPA)
- The International Agency for Research on Cancer
- The World Health Organization (WHO)
- The European Union
- The Stockholm Convention on Persistence Organic Pesticides (POPs)

Source [www.fsc.org FSC-GUI-30-001 VERSION 2.0 EN](http://www.fsc.org)
Appendix 12: High Conservation Value Forest Questions for Community Agroforest Groups

This Appendix is designed to provide a set of simple questions that community agroforest groups can use to guide their High Conservation Value (HCV) Assessments. These questions should be used in conjunction with Chapter 19, which contains guidance on identifying areas with HCV, developing group management standards and procedures and monitoring the HCVs present.

It should be noted that the below questions are designed primarily for agroforest groups, and not for groups managing natural forests. This guide briefly discusses the meaning of each of the six categories of HCV, and then provides simple questions to identify HCVs that exists in or near your members’ land. This guide was adapted from a variety of documents that are available on the HCV Resource Network website. Below are the six HCV categories with listed sub-categories:

HCV 1: Areas containing globally, regionally or nationally significant concentrations of biodiversity values (ex. endemism, endangered species, refugia)

   HCV 1.1: Protected areas
   HCV 1.2: Threatened and endangered species
   HCV 1.3: Endemic species
   HCV 1.4: Critical temporal use

HCV 2: Globally, regionally or nationally significant large landscape-level areas where viable populations of most, if not all, naturally occurring species exist in natural patterns of distribution and abundance

   HCV 2.1: Large natural landscapes with capacity to maintain natural ecological processes and dynamics
   HCV 2.2: Areas that contain two or more contiguous ecosystems
   HCV 2.3: Areas that contain representative populations of most naturally occurring species

HCV 3: Areas that are in or contain rare, threatened or endangered ecosystems

HCV 4: Areas that provide basic ecosystem services in critical situations (ex. watershed protection, erosion control)

   HCV 4.1: Forests critical to water catchments
   HCV 4.2: Forests critical to erosion control
   HCV 4.3: Forests providing barriers to destructive fire

HCV 5: Areas fundamental to meeting basic needs of local communities (ex. subsistence, health)

HCV 6: Areas critical to local communities’ traditional cultural identity (ex. areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities)

One of the challenges that agroforest managers face when conducting an HCV assessment is the question of whether or not the agroforests are natural ecosystems, and therefore whether they qualify as HCV. Even among HCV experts there is some disagreement about whether or not a forest needs to be natural in order to qualify as HCV. We recommend taking a precautionary approach and assuming that if there are natural elements to your agroforest, such as native tree and plant species that regenerate naturally, you should consider these areas as potentially eligible for containing HCV. Additionally, completely planted and intensively managed agroforest systems can play important roles in providing support to HCVs that are identified in adjacent or nearby natural ecosystems.

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1 http://www.hcvnetwork.org/resources/folder.2006-09-29.6584228415; See Works Consulted for a list of specific documents that were consulted in developing these questions.

2 The authors held an email consultation with the HCV Technical Panel on this matter.
In the following section, we discuss each of the six categories of HCVs individually, and provide some simple questions to guide you through the process of an HCVF Assessment.

**HCV 1: Areas containing globally, regionally or nationally significant concentrations of biodiversity values**

**HCV 1.1: Protected areas**
- Are there any protected or conservation areas in or near your members’ land? (If yes, this is HCV 1.1)
  - If yes, does the management of the agroforests impact the protected areas, or impact any of the natural populations of species in these protected areas in any way? Or do they help to protect the protected area in any way?
  - If yes, this means that the agroforests are in the management area for the identified HCV 1.1. You should next describe how the management of the agroforests is impacting the protected areas.

**HCV 1.2: Threatened and endangered species**
- Are there any threatened or endangered species in the area where your group agroforests are?
  - If yes, does the management of your members’ agroforests affect the species in any way?
  - If yes, you have two options:
    - Assume that the species are present in your members’ land and therefore say that HCV 1.2 is present following the precautionary principle, or
    - Work with experts on these species to survey members land to confirm whether or not the species is likely present
  - If the species is present or assumed present, then HCV 1.2 is present and you will need to develop management recommendations for your group that protect and support the presence of these threatened and endangered species.

**HCV 1.3: Endemic species**
- Are there any species in your area that are unique and only found in your specific area? Are they confined to a certain ecosystem or have a small range?
  - If yes, then HCV 1.3 is present, and you will need to develop management recommendations for your group that protect and support the populations of these endemic species.

**HCV 1.4: Critical temporal use**
- Are there any areas either within or nearby your agroforests that are used temporarily by certain species or groups of species? Examples of this HCV include areas that are used by a certain species during certain times of year, such as seasonally, or areas used under extreme conditions, such as watering holes that are vital to species survival in extreme drought conditions. Migration routes and wildlife corridors would also qualify as HCV 1.4. Special areas used for mating or reproduction should be considered here. There may be many more examples.
  - If yes, do the agroforests managed by your members impact these critical temporal use areas in any way?
  - If yes, this means that the agroforests are in the management area for the identified HCV 1.4. You should next describe how the management of the agroforests is impacting the critical temporal use areas.

**HCV 2: Globally, regionally or nationally significant natural landscapes and dynamics**

Before reviewing the sub-categories for this HCV, there are some key questions you should ask:

- Are there any large-scale\(^3\) natural areas containing multiple types of natural ecosystems located near or adjacent to your agroforests?
  - If yes, you should go through the questions below to check if HCV 2 is present or not.
  - If no, you can stop here because HCV 2 is not present in your members’ lands.

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\(^3\) Some HCV guides define “large-scale as a minimum of 50,000 hectares in size”, however others do not assign any minimum size.

\(^4\) The Indonesian HCVF Toolkit Revision 2 defines “core area” as a forest block with an internal core >20,000 hectares and surrounded by a natural vegetation buffer of at least 3 kilometers from the forest edge.
HCV 2.1: Large natural landscapes with capacity to maintain natural ecological processes and dynamics
  • Does the large-scale natural area near your members’ land have a core area\(^4\) that is not fragmented in any way and where natural processes are undisturbed?
    o If yes, do the agroforests managed by your members protect or impact this core area in any way?
      • If yes, this means that your agroforests are in the management area for HCV 2.1 and you should describe how the management of the agroforests is impacting this large-scale natural area.

HCV 2.2: Areas that contain two or more contiguous ecosystems
  • Does the large-scale natural area near your members’ land contain at least two different ecosystem types that are adjacent or connected to each other?
    o If yes, do the agroforests managed by your members impact these multiple ecosystems or the areas connecting them in any way?
      • If yes, this means that your agroforests are in the management area for HCV 2.2 and you should describe how the management of the agroforests is impacting this large-scale natural area.

HCV 2.3: Areas that contain representative populations of most naturally occurring species
  • Does the large-scale natural area near you contain any populations of large predators, such as leopards, tigers, eagles, etc?
  • Does the large-scale natural area contain any viable populations of low-density far-ranging species like primates, bears or elephants?
    o If yes to either question, this means that the area qualifies as HCV 2.3. Next, ask yourself if the management of your members’ agroforests impact these naturally occurring species in any way?
      • If yes this means that your agroforests are in the management area for HCV 2.3, and you should describe how the management of the agroforests is impacting their populations.

Note that we definitely recommend you speak with local biology and ecology experts when assessing how management of the agroforests may be impacting the species described in HCV 2.3, and how management can be better adapted to support the HCV 2.3 identified. Local hunters and trappers can also be very helpful in identifying the species range and habitat of HCV 2.3 in the area.

HCV 3: Globally, regionally or nationally significant rare or endangered ecosystems
  • Are there any natural ecosystems that are present in or near your agroforests which have largely been destroyed in the last 50 years and are still under pressure (ex. mangroves, swamps, lowland forests, river bottom areas, or peat forest that are intact but have been mostly drained or cleared)?
  • Are there any ecosystems that are present in or near your agroforests which are unique or rare in your area\(^5\) (ex. unique cave systems, karst forests, salt licks)?
    o If yes to either question, do the agroforests managed by your members impact these areas in any way?
      • If yes, this means that your agroforests are in the management area for HCV 3, and you should describe how the management of the agroforests is impacting these rare or endangered ecosystems.

HCV 4: Environmental services

This HCV addresses areas that provide basic ecosystem services in critical situations, usually related to watershed protection and soil erosion control. The key aspect of this is judging whether or not the service being provided is critical. When assessing this HCV you will likely need maps showing topography, soil types with erosion risk ratings, and waterways. It is a good idea to mark the location of all of the agroforests managed by your members, as well areas that have historically experienced large-scale or frequent fires or other major disturbances on these maps.

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5 The Indonesian HCVF Toolkit Revision 2 defines “rare” as covering <5% of the landscape.
HCV 4.1: Areas or ecosystems important for the provision of water and prevention of floods for downstream communities

As a first step when assessing HCV 4.1, use a map to identify all of the important water sources for communities located in the area that your group covers. These areas are considered important if they provide the majority of water, or are the only source of water for one or more communities. It is important to consider water sources that are critical at certain times of year (like dry seasons) or in cases of extreme drought. If there is a source that is only used by a small number of people but it is their only source of water, this would also qualify as important, and therefore qualify as HCV 4.1.

Next, think about where key water catchment areas for these water sources are located. Does the water come from underground aquifers that are fed by huge areas of land? Does it come from forest on mountain areas? Do nearby swamps or wetlands contribute water? The source areas for the water, as well as those areas located adjacent to the catchment areas (buffer zones) should be considered HCV 4.1.

Once you have mapped all HCV 4.1 areas, ask:

- Are any of the agroforests in your group adjacent to the water sources or located within the catchment areas? If yes, do the agroforests managed by your members’ impact the water sources, or local peoples’ access to the water sources in any way? If yes, this means that your agroforests are in the management area for HCV 4.1, and you should describe how management of the agroforests impacts these water source or catchment areas.

HCV 4.2: Areas important for the prevention of erosion and sedimentation

- Are any of the agroforests located in areas with highly erodible soils (check a soil map with risk indicators or check with regional experts)? If yes, then HCV 4.2 is present, and those agroforests must be managed in such a way as to minimize soil erosion in these areas.

HCV 4.3: Areas that function as natural barriers to the spread of forest or ground fire

- Are any of the agroforests in your group within or adjacent to areas that have historically experienced widespread and/or frequent fires? If yes, do the agroforests managed by your members affect the course of the fire in any way—such as helping to slow it down or preventing it from spreading into other areas? If yes, then your agroforests qualify as HCV 4.3, and you should describe how management of the agroforests impacts the fires.

HCV 5: Natural areas critical for meeting the basic needs of local people

Most agroforests play a critical role in meeting the basic needs of local people, but as mentioned before, it may be difficult to judge if they are natural and therefore qualify as HCV areas. As a first step in assessing HCV 5, we recommend that you think carefully about your agroforests, and the degree to which they are managed or natural. Try to define the natural aspects of your agroforest, these will likely include native plants that grow naturally on the plots, or native animals that use the plots as habitat. As you assess HCV 5, focus on these natural aspects of your agroforest areas, and do not include the aspects that are heavily managed and occur only as a result of human effort.

You need to assess if these natural aspects provide any basic needs to local people. Examples of basic needs are as follows:

a. food
b. water
c. clothing
d. materials or tools for building
e. firewood
f. medicine
g. fodder for livestock

6 Where catchment areas are large or widespread, consider whether or not your agroforests cover a significant portion of the catchment area, enough to have an impact on the hydrologic process.
Note each individual case where a natural plant or animal in your agroforests provides for one or more of these basic needs. For each case consider the following questions.

- Is this the **only** source of the basic need that certain people have (i.e. the only source of food/water/clothing/building or tool materials, etc)? You should also consider the question from a temporal scale, is it the **only** source at certain times?
  - If yes, it is HCV 5, and you should describe how management of the agroforests impact this natural source of basic needs.
  - If no, is this natural source the **main** source of that basic need for anyone?
    - If no, it does not qualify as HCV 5.
    - If yes, is it easily substituted by any other source for that basic need—one that is equally abundant, available and affordable to the people who commonly use the original source?
      - If no, meaning it is not easily substituted, then it qualifies as HCV 5 and you should describe how management of the agroforests impacts this natural source of basic needs.

Note that in some cases there may be a natural source of a basic need that occurs in natural areas adjacent to or nearby your agroforests. If there is such a natural area providing a basic need, you should consider whether or not the management of your agroforests impacts this basic need provided by the natural area in any way. If they do, then your agroforests may be in the management area for this basic need, and you should go through the questions above for each basic need to assess whether or not it qualifies as HCV 5.

**HCV 6: Areas critical for maintaining the cultural identity of local communities**

HCV 6 deals with aspects of the environment that are important to the history, culture, identity or beliefs of a group of people. Start by asking the following questions for the area that your group covers (it’s probably easiest to do this at the landscape level):

- Are any in the area that you work that are of historical significance?
  - If yes, list each site individually and describe its significance.
- Are there any sites in the area that are of cultural significance, such as those used traditionally for certain purposes, ones that are symbolically important, or those important to any religions?
  - If yes, list each site individually and describe its significance.
- Are there any natural products that are significant to the identity of a culture, such as those that play a key role in a tradition or a religion, or that a local group of people closely relate themselves to or identify themselves with?
  - If yes, list each natural product individually and describe its significance.

Next, for each site or natural product that you list, you should then ask:

- Does the management of the agroforests in our group impact this site or natural product in any way?
  - If yes, then your agroforest is in the management area for this site or natural product, and you should describe how management of the agroforests impacts this site or natural product.

**Conclusion**

HCV assessments can be very technical, and for this reason you will likely need to reach out to trained experts in the areas of ecology, biology, soils and hydrology to help you. HCV assessments should also include broad consultations with stakeholders, and the questions provided here can be integrated into the preliminary survey (see Chapter 4) that you do at the beginning of the community agroforest program. FSC assessors should take into account the size of your group, and allow your assessment to be simple if you are managing only a small area of forest. However, the assessors will be looking for some documentation that demonstrates that you have done the assessment, including a list of people who were consulted as part of the assessment, with a description of how you consulted them (email, phone, discussion, group interview, community meeting, etc.). They will also be looking for a list of the HCVs you found, and what your plans are for how to manage the relevant agroforestry plots in such a way that the HCVs are maintained or enhanced. Many agroforest groups will not have any HCV’s present, and if this is the case don’t worry, you do not have to find an HCV present in every assessment.
Works Consulted:

