The Fair Wood research project – final report

Building fair, sustainable and competitive wood value chains based on natural tropical forests under the control of communities and smallholders:

Testing assumptions and designing a support system

Executive summary

The problem addressed in this initiative is the poor and declining state of the natural tropical forests and the related poverty of the inhabitants in and around these forests.
The most updated FAO-FRA statistics, from 2010, estimate that the world's natural forests are being deforested at a rate of 13 million hectares per year.[1] However, recent satellite image analyses indicate that the deforestation rate may be underestimated in humid tropical forests.[2] In any event almost all forest loss and forest degradation is taking place in the global South - often in forest lands that if preserved could deliver long-term livelihood opportunities to poor and vulnerable communities.

The partners in this project believe the most fruitful perspective is to view this as a development problem, meaning that industrial development based on the forest resources and including local inhabitants is the only realistic way to create lasting change in terms of large scale forest restoration and poverty alleviation. There are often several existing and potential businesses that utilize the forest resources, e.g. eco-tourism, hunting, fruits, nuts, etc. However, the overall biggest resource is trees for timber. Thus, the potential of a timber industry based on natural tropical forest is the focus of this initiative.

To avoid misunderstanding it is immediately necessary to describe the conditions for which forests can be included in this initiative. First, to be clear, high conservation value forests, such as pristine rainforests, are excluded. The target of intervention is the degraded and secondary forests – these forests have been effected by man for hundreds or thousands of years, and sadly during the past fifty years have most commonly seen a sharp acceleration in depletion and degradation. The total area of these forests is vast. A global mapping by WRI states this area to be 500 million hectares, with the lion's share being tropical forest in the Global South. This condition means that the forests targeted in this initiative often show the following characteristics:

- Lack of responsible management leading to continued degradation
- Little connection to any legal markets
- Remaining usable timber volumes are of lesser known and valued species
- Illegal and unethical logging is ongoing, which poses unfair competition to a responsible industry.

Second, the forests in focus must be under local control, meaning local forest rights-holders have reasonably secure forest tenure and will be in control of, and receive the values from, a future timber industry. This condition is rarely fulfilled, which is one of the main factors behind the poor state of these forests. However, this fact is slowly changing for the better. Between 2002 and 2012 forest land designated or owned by communities increased dramatically from 21% to 31%.[3] This has led to an increasing number of communities with the potential to responsibly manage their own forest resource for long-term benefits. This trend is poised to continue and hence including local people in the equation to preserve and restore the world´s forests will increasingly prove to be a key to success. However, there is a

[1] Global Forest Resources Assessment (2010) Main report Food and Agriculture Organization of the United Nations Rome
[2] Do-Hyung Kim et al; (2015) Accelerated Deforestation in the Humid Tropics from the 1990s to the 2000s. Geophysical Research Letters doi: 10.1002/2014GL062777
Hansen et al (2013). High-Resolution Global Maps of 21st-Century Forest Cover Change. Science, 342, pp. 850-853
[3] WHAT RIGHTS? A Comparative Analysis of Developing Countries' National Legislation on Community and Indigenous Peoples' Forest Tenure Rights Rights and Resources Initiative, May 2012. http://www.rightsandresources.org/documents/files/doc_4924.pdf

high risk that in the absence of functioning markets and industries that provide income from standing forest, that the forest is converted to something that gives the rights holders short term income, such as small-scale farming, grazing or burning for hunting or charcoal or even sale of the land to outside agricultural or plantation investors. This is one of the reasons for the relevance now of this initiative.

Despite this difficult starting point, it is the belief of the partners in this project that the combination of transformative markets and local industry is possible, supporting a turn of the trend towards forest restoration and poverty alleviation. This is based on the past decades' developments in technology, consumer values, corporate and government policies but also in a trust in the interest and capacity of a new generation of entrepreneurs willing to build a responsible business based on a renewable resource.

This project has investigated factors to consider and conditions to be met for such local and international markets and industries to be created. Specifically, the objective has been to develop a viable program of coordinated interventions that can facilitate the creation of several value chains and thus prove that this development is possible.

The point of departure for this project was a draft proposal of a program presented to Sida in the summer of 2015. The result was this research project, which was commissioned by Sida to validate and further develop a program into an implementation-ready state.

The project has run between November 2015 and February 2017 and activities have been undertaken within five areas. Three were research activities involving: -

1. Consultation with international expertise

This activity included organizing two group consultations, over 30 interviews with experts and stakeholders, as well as participation in three conferences. Towards the end of the research phase the team organised a workshop that included representatives of all parts of the value chain as well as supporting NGOs, Development agencies and funding agencies. This workshop was held over three days in total, including meetings with specific geographic or theme focuses on the final day.

2. International market and value chain research

Interviews were carried out with 24 potential buyers of wood from 10 different countries. The companies represented four categories; traders, manufacturers, retailers, real estate and construction. Also included was participation in two industry conferences – one in Chile and one in the Netherlands. Meetings and dialogues with four different national FSC offices. Research activities were also conducted with four providers of technology necessary for developing competitive businesses. Finally, a first draft analysis of the international market for tropical wood was made.

3. Local research on smallholder situations, value chain structure and function and entrepreneurial conditions

Visits were made to five countries selected to demonstrate a range of conditions in relation to forest tenure, entrepreneurship, market situation, forest governance, forest type and general level of institutional and infrastructural development. These countries were

Mozambique, Tanzania, Mexico, Chile and Peru. In addition, in relation to other related work, visits were made to Guatemala, Zimbabwe and Zambia. These field visits were organised to include interviews with a wide range of relevant stakeholders and included where possible visits to forests under management and to processing facilities. Finally, a practical "case study", mimicking a Fair Wood supply chain, from the sawmill company LevasFlor in Mozambique to two different types of final commercial customers in Stockholm was carried out in order to learn hands on the barriers, intricacies and demand criteria affecting the competitive viability of the value chain.

These three research activities then fed results into the fourth and fifth activity area,

4. concept development based on research findings. Revision of the entire initially proposed program, and
5. detailed planning and budgeting of a Fair Wood program.

After analyzing the findings from the research, the program design was revisited. The result is a more developed value chain model and a more detailed specification of the facilitation process and support content to the participating value chain actors. The result is a big leap in thinking in terms of how to organize and implement such a program. The most significant change is that from the assumption of a single entity initiating and facilitating the pilot projects and support components to a coordinated network of partners at international and national level.

The main conclusions from the research with implications for the design of an effective program were in short:
Conclusions for the support content of a program:

- Need for support in silviculture to achieve restoration potential in natural tropical forests (in all sites including FSC-certified)
- To break the traditional commodity trade logic and achieve product co-development between the main actors in the value chain (smallholders, timber processors, manufacturers and final users) is necessary for competitiveness in export markets
- Quality sawing and drying, further processing and fast delivery from the timber processor form a potential opportunity for gaining access to local upscale wood markets, despite competition from big plantations and illegal timber
- Utilizing the timber by-products is necessary to achieve a positive business case for a timber processing enterprise. Given the scales of operation there are opportunities for small-scale electricity production for a local grid.
- Need in export markets, and increasingly in advanced local markets, of a distinct competitive differential for natural tropical wood (often of lesser known species). Sustainability, in terms of *net-positive effect for the forests*, is found to provide such an opportunity, if this can be credibly verified and supported by trusted international organizations.
- Need from manufacturers and commercial end users for support in product development, supply chain development and sustainability communication, when starting up sourcing natural tropical wood from new small-scale suppliers

Conclusions for the organization and funding of a program:

- Local "project owners" of value chain pilot projects– Different types of actors are available and interested to act as clients to a program and part-funders of or funding channels to the respective value chain pilot projects, e.g. local NGO's, international NGO's supporting local community forest projects, local government agencies etc.
- A program can be built and funded according to a modular approach, where value chain pilot projects are added sequentially as well as central support components, coordinated by a lean central function, which follows and continuously adapts a pathway to achieve critical mass for a self-sustaining global market

The resulting revised program, which is presented in the end of the report, is based on a value chain model, which differs radically from the common local and international tropical timber value chains. Based on quality, sustainability and high material efficiency and a unique socio-environmental message, it is designed to be competitive both in local and export markets.

The main focus of the program is the implementation of a number of value chain pilot projects, wherein support is given to build competitive and successful value chains. This support is provided according to a stepwise approach simultaneously to the main actors: smallholders, timber processors, manufacturers and final commercial customers. The strategy is to support the entrepreneurs and the forest communities to identify and develop new business opportunities based on the short and long-term production capacity of the responsibly managed forest and in parallel support the manufactures and commercial end-users to efficiently use and market these new wood products.

The program presented is assumed to have a set of internationally respected organizations[4] to act as founders and appoint a board of directors. An array of carefully selected local and international actors with appropriate competencies are centrally coordinated to implement the facilitation and support components.

The objective of this program is to deliver a proof of concept that limited support will catalyze the emergence of value chains that:

- Deliver sufficient value to local forest rights-holders to incentivize investment in responsible forest management
- Produce and supply inputs to customers that are competitive in terms of quality, delivery, sustainability and price
- Demonstrate a business case of the timber processing enterprise which is attractive for existing and new entrepreneurs and private financier/investor

The partners in this project believe that such a proof of concept will provide a solid ground for scaling and replicating the program. Successful pilot projects will also support organic scaling of value chains, given one of the most powerful dynamics in business – imitation.

Actors who today for different reasons might be skeptical to support locally controlled native timber industry, would perhaps begin to see this intervention as an effective tool to achieve forest restoration, local development and ultimately to fulfil climate and ecosystem agendas.

[4] WWF, Rainforest Allliance, Verdens Skove, IIED (Forest Connect), FAO FFF are possible international partners.

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Introduction

In the summer of 2015 a draft proposal was presented to Sida targeting the dual challenge of forest degradation and forest smallholder poverty. The proposal outlined a five-year program with the objective to facilitate the emergence of timber-wood value chains based on timber from locally controlled and responsibly managed forests. The core strategy was to provide support for the forest smallholders in sustainable forest management and for the local wood processor in quality wood production and market matchmaking with customers prepared to pay for quality and sustainability.

The authors behind this proposal were a partnership of four organizations who are all engaged in finding solutions to this development challenge, but with different backgrounds and perspectives:

- The eco-innovation Foundation – A mix of expertise in two areas: Forest management and wood production systems with a focus on the global South, and green innovation facilitation with a special focus on the urban development and real estate sectors
- WWF Sweden – A long-standing involvement in forest projects in the global South including community engagement and participation in forest management standard development
- FSC Sweden – Engagement in FSC's international initiative to develop a certification system optimized for smallholders
- Pivot Point – A mix of expertise in two areas: Local forest rights advocacy, and finance for forest protection and community development

Sida, constrained by the sudden onslaught of refugees leading to budget cuts in existing programs, could not fund the proposal at that time. Still, Sida found the proposed program of interest as it could potentially add a missing link in a suite of supported programs targeting forest smallholders (namely that of market development and industrial development for competitiveness). Therefor a one-year research project was granted with the objective of researching and further developing the proposed program design and to find other funding sources and partners for successful implementation of a program. This research project started in December of 2015 and ended in February 2017 and this is the final report.

The understanding of the term *"a Fair Wood Program"* has evolved during the research project and in this report one idea on of how a number of smallholder-based timber value chains can be started up and supported by collective efforts is presented. However, this idea still needs to be further co-developed with a *"coalition of willing"* actors that believe in and want to grasp the opportunities of using timber value chains to create long-term incentives amongst forest smallholders to restore and manage natural forests.

Readers' guide:

Objective and Method of the research project

The report starts by presenting the objective and methodology of this research project.

Definitions

During the course of the project it has been found that the terminology used and the meanings of terms differ between sectors and countries. Therefore, central terms which are necessary for an accurate understanding of the program focus and research results, are defined at the beginning.

Summary of Challenges (and opportunities) targeted

A summary of the area of intervention is presented. This serves to give an overview of the challenges targeted by a Fair Wood program and the opportunities for intervention that the program builds on.

Overview of the initially proposed FW program

The main purpose of the project was to solicit feedback on the initial program draft and to further develop this program into an implementation-ready state. Thus, all findings relate to the initially proposed program. Therefore, to provide the reader with a basis for interpreting the findings and results, an overview of the initial program is included.

An account of the implementation of the research project

This section is an account of what happened during the project – the activities performed and the resulting outputs of these activities.

Findings

The findings presented here are selected based on relevance in terms of pointing to need of revision or to reinforcement of initial program design.

Discussion of findings and their implications for a revised program

The discussions that have led to reinforcement or reappraisal of central design components of a Fair Wood program are summarized in this section.

Presentation of a revised Fair Wood program

Here an example of a revised program is presented, which takes into account the most important implications from the research project discussed in the previous section.

Summary of program changes as seen through the budget lens

Last in the report a comparison is made between the initially proposed program and the example of a revised program. This comparison uses budgets for the two programs as base for the comparison narrative.

Objective and Method of the research project

Objective

This project was planned as a concept research and validation project with the aim of researching, refining and raising funds for a Fair Wood program. The main goal was to have a Fair Wood program planned, funded and ready for implementation.

The specific objectives of this project are briefly summarized here:

- Research, critically question, validate or revise some important assumptions and ideas that the Fair Wood program builds on
- Based on this research develop – and if needed change - some central design concepts of the Fair Wood-program, to make it implementation ready
- Develop relations with targeted international organizations and experts who through their knowledge and networks will increase likelihood of success for the Fair Wood program.
- Develop a detailed plan and budget for the Fair Wood program.
- Secure funding and other partnerships for the Fair Wood program from a suitable mix of actors

For a more detailed overview of the intended outputs of the research project, see appendix 1: RBM-chain of the Fair Wood research project.

Method:

The research project was divided into five activity areas. Three were research activities aimed at investigating:

6. Consultation with international expertise on core concepts of the FW Program
    - Interviews with experts, stakeholder and expert group consultations and meetings with potential funders
7. International market and value chain research
    - Interviews and group consultations with manufacturing customers and final customers in Sweden, UK, Germany and the Netherlands
8. Local research on value chain and entrepreneurial conditions:
    - Research country 1, Interviews and observations
    - Research country 2, Interviews and observations
    - Research value chain workings in detail - from South to North

These three research activities would feed results into the fourth and fifth activity area,

9. Concept development based on research findings. Revision of the entire program and specifically development in the following areas:
    - Local engagement strategy when implementing a Fair Wood program
    - Relationship to and agreements with Sawmill entrepreneurs and smallholders in a Fair Wood program
    - Strategies of a Fair Wood program for women's empowerment

- Role of the Fair Wood Facility organization
- Organizational models for smallholders in a Fair Wood program
- Organization, partners, advisory board and funding group of a Fair Wood program

10. Detailed planning and budgeting of a Fair Wood program

Integration with other projects including project focusing on development of an assessment tool for project suitability.

During the research period the project partners were also involved in other projects which are closely related to the current project. These included direct support from Tetrapak for the development of an assessment tool intended to evaluate the suitability of individual smallholder/entrepreneur situations for starting up native wood value chains. Fair Wood support. In addition, there were projects funded by the World Bank to evaluate and advise on the timber sector in Zimbabwe and a project for the development of national forest sector standards in Zambia funded by the FAO. Where relevant the results and observations from these projects are integrated into the current report.

Adaptation of activities and objectives

The approach to project execution was dynamic and as a result of early feedback both the objectives and methods were subject to revision as the project developed. In particular this led to the change from the initial objective of a large centralised Fair Wood organization taking responsibility for all parts of a Fair Wood approach; to a distributed systematic implementation of Fair Wood interventions based on a coordinated network of partners. This is fully described in section “Organization of the program”, p 76.

For an account of actual activities implemented, see “Account of implementation”, p 20. And for an overview of how the implementation deviated from the above plan, see “Overview of project adaptation”, p 23.

Definitions of terms used in the report

During the course of the project it has been found that used terminology and meanings of terms differ between sectors and countries. Therefore, central terms which are necessary for an accurate understanding of the program focus and research results, are here defined.

"Market"

"Market" is an arbitrary term that is used in many ways. The team behind the Fair Wood research project uses this term, for example in the mission statement of "creating a global market for smallholder-based wood".

The term "market" is usually used to denote a group of products or services which are comparable and compete to satisfy a need. A market can be arbitrarily defined narrower or wider to include different levels of competition, depending on the objective of the market analysis. An example in our case are these three levels of market definition:

1. All materials for furniture making (including all wood derivatives and laminates, aluminum, plastic etc.)
2. All types and species of quality sawn and dried hardwood for furniture making
3. All types of quality sawn and dried wood for furniture making that have some verifiable sustainability claim

These levels are descending in order of width, so that 1 includes 2, which includes 3. These market definitions include different segments of customers with different sets of awareness and demands. Depending on which definition is chosen, the recommendations for action can become different – e.g. for 1: Make the case for (sustainable) wood as a sustainability investment for the final user compared to other sustainability investments, or for 3: Make the case that this wood has superior sustainability traits compared to other sources of wood.

Markets are supplied by a number of value chains. New markets emerge as the result of innovations in one or several of these value chains that meet latent demand. The notion of creating a new market means that innovation has resulted in a new product trait (or a new type of solution) that gives a strong attractive differential towards the current products/solutions that satisfy a certain need for a segment of customers. This differential is strong enough that it has potential to "institute" new lasting purchase criteria for this segment. The product rises above the competition and creates a new playing field. Examples are many: LED-bulbs, Organic foods, outdoor daycare, online music etc.

If a new product or solution catches the interest of early adopters and satisfies their latent demand for the new differential, then more and more customers will likely follow on and institute the new purchase criteria. This will be noticed by existing competitors and potential new entrants who want to take part of this "temporary monopoly", either striving to acquire or to defend market share. This is when we say a new market has been created.

Often sustainability investments fail because of failure to communicate a clear and attractive differential, which has the power to influence the purchase criteria of the target customers. One common mistake, once the sustainability investment is made, is to only rely on a green third party seal to take care of the communication, which can't replace necessary marketing and sales efforts of the company itself. It could also be that the sustainability differential is

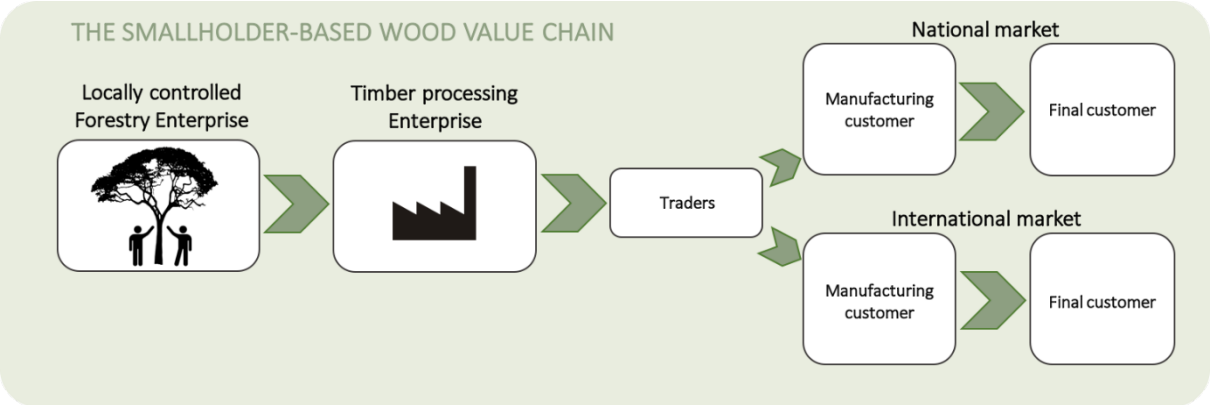
clear and communicated well, but the total mix of traits (quality, style, price etc.), i.e. the value proposition, is not attractive to the target market and so the product fails and the differential strength of the green trait is never tested.

Value chain

In this project, the term "Value chain" is used in short for "Global value chain", as defined by The global value chains initiative[5]. This definition includes the following basic description: "The full range of activities that firms and workers do to bring a product/good or service from its conception to its end use and beyond. This includes activities such as design, production, marketing, distribution and support to the final consumer." "These activities are divided among multiple firms and geographic spaces"

For ease of reading in this report, we approximate the different activities with different actors. We assume the main steps of value addition in the value chain to be performed by different specialized actors, e.g. a smallholder performs the activity of forest management and a timber processing enterprise saws and dries timber. This of course does not always have to be the case. Smallholders can own and run a sawmill, or the activities of sawmilling and manufacturing of wood products can be combined in one enterprise etc.

One singular "value chain" as defined in this report includes all activities and actors that are commercially linked directly or indirectly to one timber processing operation/enterprise. Only the primary activities are included in this definition, i.e. those that add directly to bringing the product from its conception (tree) to its end use (installed wood product). In this way, we define the timber processing enterprise as the central nexus of the value chain. This is the operation that must be physically close to the forest, which in our case is under local control by smallholders. The timber processing enterprise and the smallholders are co-dependent. For a graphical depiction of the smallholder-based timber value chain, see below. There can be many different customers and timber based products in this value chain, but only one sawmill. This sawmill could perceivably be connected to more than one smallholder group in which case it is still considered one value chain. Also, a smallholder group could be connected to several specialized timber processing enterprises, in which case every one of these processors will represent a separate value chain.



[5] See https://globalvaluechains.org/concept-tools

Forest Management (FM), Sustainable Forest Management (SFM)and Best Management Practice (BMP)

Forest management is the process of planning and implementing practices for the stewardship and use of forests and other wooded land to meet specific environmental, economic, social and cultural objectives.[6]

A globally agreed definition of sustainable forest management (SFM) is impractical beyond a very general level because of the huge diversity of forest types, conditions and socioeconomic contexts worldwide. In general, however, SFM can be viewed as the sustainable use and conservation of forests with the aim of maintaining and enhancing multiple forest values through human interventions.[7]

Best Management Practice (BMP) is a principally north American term that considers forestry practices in relation to a range of environmental quality objectives, similar terms used in the UK are Good Forest Practice[8] and in New Zealand, Best Environmental Management Practice[9].

A north American definition of BMP is *Best management practices (BMPs) are proactive and often voluntary practical methods or practices used during forest management to achieve goals related to water quality, silviculture, wildlife and biodiversity, aesthetics, and/or recreation[10].*

Forest Degradation

FAO defines forest degradation as the reduction of the capacity of a forest to provide goods and services.[11] However, there are range of other definitions from e.g. ITTO and CBD.[12] Using the FAO definition from a Fair Wood perspective "goods and services" would imply a broad impretation including the degradation of biodiversity and livelihood options and resilience.

Forest Restoration/Forest Rehabilitation

The term restoration is used indiscriminately and it is difficult to define in a way that compasses all situations found in the literature and practise.[13] FAO defines the purpose of forest restoration is to restore a degraded forest to its original state – that is, to re-establish the presumed structure, productivity and species diversity of the forest originally present at a site. Whilst forest rehabilitation is defined as to restore the capacity of degraded forest land to deliver forest products and services. Forest rehabilitation re-establishes the original

[6] http://www.fao.org/forestry/sfm/85084/en/

[7] Ibid

[8] Forestry Commission (2011) The UK Forestry Standard; The governments' approach to sustainable forest management. Forestry Commission: Edinburgh

[9] New Zealand Forest Owners Association (2007) The New Zealand Environmental Code of Practice for Plantation Forestry. https://www.nzfoa.org.nz/resources/file-libraries-resources/codes-of-practice/44-environmental-code-of-practice/file

[10] http://www2.dnr.cornell.edu/ext/info/pubs/Harvesting/BMPs.htm

[11] FAO FRA 2015 Terms and Definitions - Forest Resources Assessment Working Paper 180. 2012

[12] FAO. Assessing forest degradation - Towards the development of globally applicable guidelines. Forest Resources Assessment Working Paper 177. 2011

[13] Stanturf, John A. 2005 Restoration of boreal and temperate forests, CRC Press, Boca Raton, p. 3-11

productivity of the forest and some, but not necessarily all, of the plant and animal species thought to be originally present at a site.[14]

In the context of Fair Wood, no distinction is made between forest restoration and forest rehabilitation and it is interpreted as improving the natural state of a forest both terms of biodiversity and ecosystem services from a given degraded base line.

Silviculture
The practice of controlling the establishment, growth, composition, health and quality of forests to meet diverse needs and values. Silvicultural practice consists of the interventions applied to forests to maintain or enhance their utility for specific purposes, such as the production of wood and other forest products, biodiversity conservation, recreation and the provision of environmental services.[15]

Natural/Native forest
NA forest area with many of the principal characteristics and key elements of native ecosystems, such as complexity, structure and biological diversity, including soil characteristics, flora and fauna, in which all or almost all the trees are native species, not classified as plantations.[16]

Plantation forest
A forest area established by planting or sowing with using either alien or native species, often with one or few species, regular spacing and even ages, and which lacks most of the principal characteristics and key elements of natural forests. [17]

Site
The geographical area of a smallholder group, which is also the area that is able to support a local timber processing enterprise

”Gender”
In brief, the term gender infers the socially constructed norms, attitudes, beliefs, roles and responsibilities that cultures ascribe to women and men, and the relationships between them. Gender is a fluid continuum which influences the creation and distribution of power, operates on and across multiple scales (individual, community, region/state) and is expressed through socio-cultural, institutional and policy means.

”Gender Equality”
Distribution of power between women, girls, men and boys is asymmetrical, and generally favors men and boys. A common touchstone for this in the literature depicts women’s lack of access to or control over the means of production and benefits. Gender equality is commonly defined such that men and women are attributed equal social value, equal rights

[14] FAO; http://www.fao.org/sustainable-forest-management/toolbox/modules/forest-restoration-and-rehabilitation/basic-knowledge/en/
[15] http://www.fao.org/sustainable-forest-management/toolbox/modules/silviculture-in-natural-forests/basic-knowledge/en/
[16] FSC 2011
[17] Ibid

and equal responsibilities and have equal access to the means (resources, inputs, education and opportunities) to exercise them.

"Women's Economic Empowerment"
Strategies for women's empowerment provide the means by which some of the asymmetries between women and men in gender unequal environments can and have been addressed. For more on how women's economic empowerment is defined in this research project, see appendix 20: Gender strategies

Definition of the actors in the smallholder-based value chain

Smallholder = Individual, or formal or informal group (community) with forest use rights. Such rights can be formal or informal including both customary rights and rights achieved simply by means of residence in threatened forest landscapes.[18]

Smallholder Group, SG = A smallholder can be represented by a Smallholder Group. The group (or association) either sells timber to a local sawmill enterprise or can own and control a mill and thus be the actor who sells wood directly to manufacturing customers or to trade agents. In this report, a small holder group implies some kind of recognized and accepted association of smallholders that through representation provide services and acts as duty bearers that deliver benefits to the rights holders, i.e. smallholders.

Timber Processing The range of activities involved in reducing wood in the form of logs into a form that is usable in the manufacture of end products. These activities may all take place at a single site or may be carried out at different sites and by different value chain actors.

Timber processing enterprise (Sawmill) - A sawmill, including sawing, drying and further processing operation. Potentially, energy production based on by-products from the sawing and the harvest is included as part of the business. This operation can also include various services to the smallholders depending on their agreement, such as harvesting, transportation etc.

Timber processing entrepreneur (Entrepreneur) - is the owner of a timber processing enterprise. This can be one person or a group of part owners (entrepreneur team). It can also be a cooperative, smallholder group/association or foundation.

Trader = Actors that are middlemen between the Timber processing enterprise/SG and manufacturing customer. These can either operate as traditional traders, buying and selling, thus taking ownership of the wood. Or they can operate as agents who represent a Timber processing enterprise/SG, securing deals and receiving a commission on the wood they sell and thus not taking ownership[19].

Manufacturing Customer (Manufacturer) = Actors that are the first in line to do production or further processing using wood from the timber processing enterprise as input. These actors buy sawn and dried wood either directly from the timber processing enterprise or SG, or from traders.

[18] Individual smallholders would always need to be part of an association in order to qualify for inclusion in a Fair Wood program.
[19] If traders would be involved in a Fair Wood program, the current assumption is to require full transparency in terms of pricing and communication of the requirements of the end user in terms of dimensions and properties of the timber used.

Final business customer = Real estate companies, retailers, corporate end users, architects, designers, public procurement offices, market influencing organizations etc.

Consumer – private homebuilders or homebuyers and contractors acting on their behalf. Private buyers of furniture, interior decoration and other solid wood products.

Definitions of the intervention entities in the initial and revised Fair Wood program:

A Fair Wood Program = All proposed activities of the intervention taken together over a defined time period

Value chain Pilot projects = the proposed value chain startup projects in which locally adapted versions of a Fair Wood value chain model are implemented

1. **A Fair Wood value chain model** = our generic model of a competitive smallholder-based native wood value chain including the aspects summarized below: (For more description see appendix 4: Overview of the objective "model" value chain.)

- Value-optimizing environmentally appropriate, socially beneficial, and economically viable community forest management
- High quality small-scale timber processing
- Direct contact between the timber processing enterprise and customers for co-development and high value recovery
- Direct contact between the smallholder and the timber processing enterprise for optimal value recovery from silvicultural and harvesting activities.
- Marketing the sustainability benefits
- Credible certification

The Pilot project facilitation process = A phased method to facilitate the actors to develop, test and launch business concepts and product prototypes and ultimately launch products in the pilot projects. This facilitation process includes comprehensive support in the following dimensions:

- Responsible forest management
- High quality production
- Marketing and business development
- Product and process co-development with customers
- Certification

Summary of Challenges (and opportunities) targeted

A summary of the area of intervention is presented here. This serves to give an overview of the challenges targeted by a Fair Wood program and the opportunities for intervention that the program builds on. This is to aid the reader in quickly grasping the rationale for the program design. For a more complete perspective of the challenges and intervention opportunities that a Fair Wood program targets and builds on, see appendix 2: Context analysis of the initial program.

The development challenge addressed in a Fair Wood program is the dual interlinked challenge of global forest loss and smallholder poverty.
Depletion and loss of forest is taking place in lands occupied and used by forest smallholders and forest communities in developing countries. Investing in locally controlled forestry is seen as a viable pathway to turn this negative spiral into its opposite. Depending on opportunities investments in value chains can become more viable if centered on timber processing SME's, "The missing middle". However, these need to be run by a new generation of market informed entrepreneurs connected to smallholder groups. Such value chains have the potential to create markets for wood products from natural forests in the South that motivate and support:

- protection and restoration of rich and resilient forest ecosystems
- local peoples' control over- and value retrieval from their forest
- modern and scalable entrepreneurship that builds societies

Some of the central challenges to realizing a new market for wood from natural forests controlled and responsibly managed by smallholders are these:

Smallholder Forest Tenure

In many countries forest tenure is formally held by central government. On the other hand central government is remote from the forests and unable to exercise control or to organize beneficial use of forests so that *de facto* tenure lies with smallholders residing in or adjacent to the forest. This disjunction between formal tenure and *de facto* tenure cause a variety of problems for forest management. Where governments use outside agents for forest management often local communities are excluded from the benefit stream so that forests have no perceived value and does not motivate forest protection and management.
Where smallholders manage forests on their own account their activities are frequently considered illegal so that significant value is often lost or diverted from them. Illegal activities are without the benefit of resource tenure that could be used as collateral to obtain finance that would make their forest associated work and more profitable, efficient and safer.
These problems of tenure and lack of local control make investments in smallholder value chains highly questionable and even a non-option. Hence, the Fair Wood value chain model cannot be applied in situations where forest tenure for smallholders cannot be achieved and must of needs concentrate on areas where previous work has resulted in smallholders achieving tenure.

Forest Management and Silviculture

Forest management is the art of intervening in forests to meet desired social, environmental and economic objectives determined as being appropriate for the forest management unit.

Forest management is usually carried out according to a forest management plan in which the actual operations required are scheduled to ensure they are carried out at the right time in order to meet the objectives.

Silviculture is the art and science of manipulating the growth and form of trees (or other organisms) in order to ensure that the forest will generate an appropriate flow of goods and services. Most importantly silviculture can be used to increase the growth rates of individual trees while at the same time improving the properties of the timber produced. Thus the timber value generated by a forest in which appropriate silviculture is used may be 100 times higher than a forest where no silviculture is used.
Most forest activities in tropical forests are carried out without a full management plan and often without defined objectives. Silviculture, if carried out at all, is usually limited to small scale enrichment planting which has no long-term value.

Timber Processing
Primary processing of timber is the activity of converting a roundwood log through a processing plant to produce wood components requested by the market. In the case of tropical timber from native forests this product is usually to boards of industry standard dimensions and minimum lengths. Where drying/seasoning of timber is carried out this is usually done by air drying and to arbitrary and unknown moisture content. This leads to high risk of cracks, warping and mold. Many times, cracks are invisible to the eye, but risk jeopardizing the integrity of a construction. Also, warping and cracks can occur several months after the delivery and become an unpleasant surprise.

The demand for minimum board length means that large quantities of potentially valuable logs are abandoned in the forest. Due to the poor dimensional accuracy of sawing, buyers ask for large ‘overmeasures’ in terms of width and thickness to ensure that the board conforms to minimum dimensions along its entire length. This results in further significant losses of value. The low sawing precision and uneven (air)-drying restricts access to many modern customers, or necessitates additional processing, which reduces possible margin for the timber processing enterprise (and in turn for the smallholders).

International Timber Trade
The international trade in tropical timber is characterized by a system of standard lengths and dimensions. Thus the majority of timber is sold in thicknesses of 2 inches with a minimum width of 5 or 6 inches. Minimum board lengths are 8 foot (often converted to 2.4m and thereafter increments of 30cm with higher prices per volume achieved by longer and thicker boards. As a result any material that does not meet the minimum lengths and dimensions is rejected by the trade and goes to waste. On the other hand most timber actually used by manufacturing industries is used in pieces smaller than these standard dimensions so that the timber is resawn leading to further waste.

Proper communication between the supplying sawmill and the manufacturer should ensure that timber is supplied in the dimensions actually required for manufacturing, eliminating much waste and resulting in cost savings for the manufacturer and increased recovery of smaller dimensions by the timber processor.

Local Markets

Local markets are characterised by poor quality and low prices. Competition with informal/illegal timber makes it difficult for small entrepreneurs (and larger companies) to be profitable while meeting all of their responsibilities to pay relevant taxes and salaries and to maintain a safe working environment.

On the other hand the local market is a key factor to success since much material is produced that is not suitable or does not yet have a market internationally. If this material can be sold then it contributes strongly to the fixed costs of running the business. In line with therising economic status of major cities, new real estate developments demand high quality input material. Gaining access to these new local markets is a new opportunity.

Overview of the initially proposed Fair Wood program

The main purpose of this research project was to solicit feedback on the initial Fair Wood program draft and to further develop this program into an implementation-ready state. This gives that the findings all relate to the initially proposed program. Therefore, to provide the reader with a base for relating the following findings and results, an overview of the initial program is included here. For a deeper summary of the different components of the proposed program, please see appendix 3: The RBM-chain of the initially proposed program, and the section "Summary of the program changes - as seen through the budget lens", page 94 for a budget estimated for such a program. This should be compared to a revised program and budget at the end of the report to see the changes that the learnings from the research project have led to.

Theory of change

In the initial proposal, the theory of change was more elaborated, but in summary the following:

"..our theory of change is that supporting the start-up of "fair" and quality timber/wood value chains in selected suitable locations, will lead to smallholders protecting and restoring their forest, sustained improvement of their livelihoods and aid independence."

Objective

The objective was stated in the following way:

"An increasing number of timber-based value chains providing sufficient and secure long-term income to smallholders to motivate sustainable management of their forests"

This objective was specified as:

- *"The six value chains implemented during the course of the program provide security of future reasonable income to the included forest smallholders/communities.*
- *The implemented value chains have started to transform the included regional and export markets. Demand from customers create opportunity for many more smallholder value chains*
- *Awareness and interest among smallholder/community forestry organizations and potential timber processors has created a pipeline of projects.*

Initial Program design

To illustrate the activities over the program time-period, see below. This graph shows the sequencing of activities divided into the four categories: first the Value chain pilot projects, second the development of the technical assistance components of the facilitation process, third the development of a new actor, "The Fair Wood Facility organization" and fourth the development of the certification for smallholders. The timing of the respective launches of "the Fair Wood Facility organization", the pilot projects and of the certification program is also indicated.

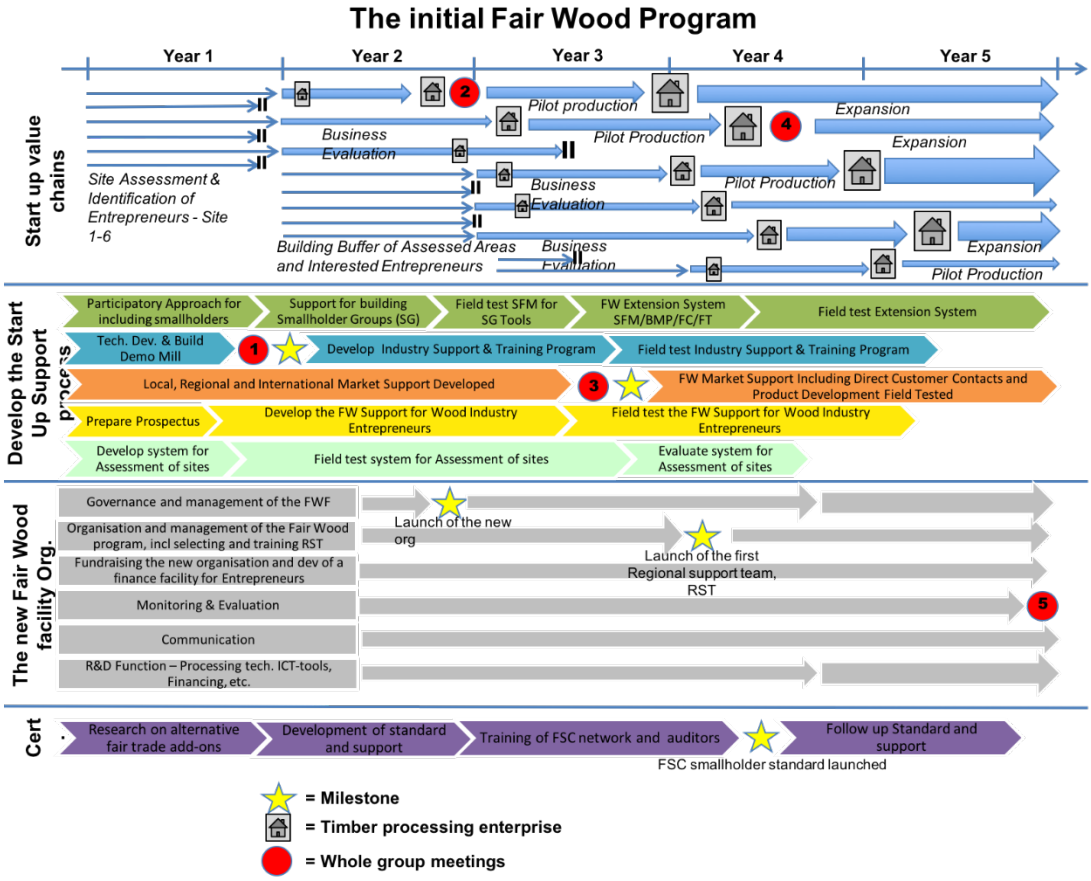


Figure 1. Overview of the Fair Wood Project

- *Each component is presented in a separate segment showing how the four different components are implemented and developed in parallel.*
- *The little "factory building" indicates the start-up of a timber processing operation – starting with a small portable test-saw, followed by a small but complete pilot mill and then expanding into a viable commercial mill.*
- *The red dots indicate the timing of the forums and the stars indicate the launch of the Fair Wood facility organization, the Fair Wood facilitation process and the smallholder certification.*

For further in-depth description of the proposed activities, see appendix 4: RBM-chain of the initial program.

Funding

The funding strategy was aimed at funding the whole program from a small set of co-funders including Sida:

"A small group (3-5) of forest oriented development financing actors, financing the major part of the project cost. Leading donors in the forest area who have links to different projects and organizations and have varying experiences of, and views on effectiveness of intervention methods. We see an advantage for the program, and subsequently the facility actor to be connected to these actors."

Governance

Governance of the fair wood project was expected to be by a unitary centralized body that would be responsible for:-

- Selection of projects for Fair Wood support
- Selection, training and employment of staff in the target countries/regions
- Providing comprehensive support for all actors in the value chain from the forest to the end users
- Facilitating funding for sawmill entrepreneurs
- Obtaining and allocating funding necessary to support the Fair Wood interventions.
- Carrying out research and adapting the Fair Wood intervention system in the light of research findings
- Monitoring the results of Fair Wood interventions
- Providing commercially based support for successful entrepreneurs graduated from the Fair Wood program.

The entity would be controlled by an advisory board chosen for their 1) wide knowledge of all aspects of the smallholder based value chain and 2) their connections to other actors operating in the same space. An executive with delegated powers would have responsibility for day to day running of the program.

An account of the implementation of the research project

A one-year multi-actor concept research and development project can only be planned to a certain degree. Once the project started the sub-objectives were continually revised and activities necessarily deviated from the initial plan. This adaptation was essential to secure the delivery on the high-level objectives of the project. This section is an account of what actually happened during the project, the activities performed and the resulting outputs. The differences between the activities envisioned in the plan and those actually carried out are summarized at the end of this section.

Situation in Producer Countries

Visits were made to five countries selected to demonstrate a range of conditions in relation to forest tenure, forest governance, forest type and general level of development amongst other things. These countries were Mozambique, Tanzania, Mexico, Chile and Peru. In addition, in relation to other related work, visits were made to Guatemala, Zimbabwe and Zambia. Finally a "case study", mimicing a FW supply chain, from product development, the forest concession and saw mill production of the company LevasFlor in Mozambique and all the way to the final commercial user in a real estate development project in Stockholm was carried out. These field visits were organised to include interviews with a wide range of relevant stakeholders and included where possible visits to forests under management and to processing facilities.

Interviews were loosely structured starting with an introduction to the Fair Wood concept followed by a semi structured discussion[20] to include a wide range of issues appropriate to the interviewed stakeholder. Visits to forests included an evaluation of the forest condition and potential based on a brief inspection. Visits to processing facilities focused on appropriateness of technology, efficiency of timber usage, quality of products and observations on health and safety issues.

Table 1 Summary of Research Activities in Producer Countries and funding of these

Country	Funding	No of Fair Wood staff	No of Stakeholder Interviews	No of Forests Visited	No of Processing Facilities visited	Dates of Visit (2016)
México	Sida and Tetrapak (through WWF Sweden)	2	6	2	2	13/9-21/9
Guatemala	Sida for local transport. Flight privately paid	1	2	0	0	9/4
Chile	Sida	2	20	0	12	4/9 - 14/9

[20] Appendix 7: "Interview guidelines", includes a summary of the questions and topics covered in these interviews.

Mozambique I	Sida and Tetrapak (through WWF Sweden)	3	16	0	1	4/6 - 11/6
Peru	Sida	1	7	1	2	29/8 - 3/9
Tanzania	Sida and Tetrapak (through WWF Sweden)	4	6	1	2	29/5 - 4/6
Mozambique II	Tillväxtverket (Swedish agency for Economic and regional growth)	2	8	1	2	4/10 - 8/10
Zimbabwe	World Bank	1	5	2	5	10/5- 17/5
Zambia	FAO	1	6	3	4	26/6- 4/7

In addition to the field activities there was an extensive review of literature relating to a wide range of issues related to the Fair Wood concept. This included: forest management and silviculture, timber processing, forest tenure, other forest related initiatives, REDD+, gender issues and forest governance amongst others. This literature is listed in Appendix 5: "List of sources", and has been used to support the project findings as well as to prepare a number of supporting documents included as appendices.

Case Study

The objective of the case study was to simulate a comprehensive and working Fair Wood supply chain and present the result at the Fair Wood showcase in Stockholm in September 2017. To be relevant the following conditions was set for the case study;

a) an existing FSC certified native forest in a country and region relevant for a Fair Wood project,
b) a local sawmill entrepreneur with the capacity to make test-deliveries of sawn and kiln dried wood,
c) a final product with a large market potential,
d) a commercial customer (for example real estate company) interested in buying responsibly produced tropical hardwood wood from well-known sources,
e) a product development process based on existing forest resources, identified silvicultural needs, local industrial capacity, further processing opportunities and final commercial customer's expectation.
f) Potential for smallholder involvement in timber supply for the Fair Wood supply chain simulated by the case study. Meaning that at the very least the timber used in the case study should be readily available to smallholders in the region or country.

Initially we also included a strict condition for the wood to originate from certified smallholders/communities. However, given the time limits for the project this condition was not possible to meet.

This case study was implemented in partnership with LevasFlor Ltd. in Mozambique, Axxonen Properties AB and United Spaces AB. See appendix 6: Fair Wood Case studies – Use of wood from small-scale producers in installations and manufacturing, 170130.

Situation in Export Markets for ethical timber

International value chain research was conducted through meetings and consultations with potential buyers in markets relevant for exports, predominantly countries in Western Europe. The purpose of the research was ultimately to evaluate the interest among buyers to establish commercial relations with timber producers and sawmills "graduating" from a Fair Wood support system. The potential buyers of wood can all be placed in four categories; traders, manufacturers, retailers, real estate and construction.

Interviews were loosely structured to begin with an introduction to the Fair Wood concept followed by a semi structured discussion[21] based on interview guidelines reflecting how a Fair Wood Foundation could become a partner for cooperation. In the later part of the project, a new version of the interview guidelines was developed[22], in order to better reflect the updated concept based on a more pluralistic approach. In the new version, more focus was also directed on highlighting wood from improved forests - provided by smallholders/communities – as a potential innovation for adding environmental and social value to brands, communication etc.

The number of meetings/interviews carried out, totaling to 24 companies, are summarized in table 2.

Table 2 Summary of interviews carried out with buyers of wood.

Category	Country and No
Traders	Switzerland (2), The Netherlands (3), Taiwan (1)
Manufacturers	Sweden (4), Norway (1), Germany (2), South Africa (1)
Retailers	Sweden (3)
Real estate and construction	Sweden (4), Australia (1), The Netherlands (1), USA (1)

In the general research of the market environment for hardwood, additional meetings were carried out as a complement to direct interviews with the downstream companies. Three conferences /fairs were also attended. These activities are summarized in Table 3.

Table 3: An account for activities related to research of the market environment for hardwoods

Activity	Specification of activities
Meetings with national FSC offices	Denmark, Netherlands, UK (telephone conference)
Sustainable Timber Trade Coalition conference 2016 – Real impact through timber purchasing policies. A European networking event.	Short meetings with 10+ companies, experts and officials + attendance of conference plenum program. For more information, see http://www.europeansttc.com/23-june-2016-conference/#tab-id-3

[21] Appendix ???? includes a summary of the questions and topics covered in these interviews.
[22] Appendix ???? includes a summary of the questions and topics covered in these interviews.

International Business Meetings 2016 – The Chilean Wood Industry	Export promotion event arranged by Prochile in Temuco and Valdivia. Short meetings with 20+ wood processing companies. Attendance of native wood industry conference in Valdivia
Stockholm Furniture and Light Fair 2017	Meetings with 3 companies
Meetings with forest industry experts	Meetings with 3 experts from Sweden, 1 from Colombia and 1 from Chile.

Funding opportunities and supporting organizations.

Several meetings were held with different actors to gain feedback on program design and investigate the funding possibilities for a Fair Wood program. For this purpose, two conferences were attended: The Global forest landscape forum[23] at the Paris COP, The TBLI conference[24] (Impact investment) in Stockholm (where the Fair Wood program was presented and discussed).

Also, three group consultations were organized – one in London with WWF UK and two in North America involving two very different sets of participants. In Washington DC, a high-level strategy group was convened, attended by senior directors from internationally-known forest-focused institutions (WRI, Rainforest Alliance, CLUA, Waxman Strategies, etc.). In San Francisco, a presentation was made at a meeting of the Bay Area Tropical Forest Group (BATFG), a self-selecting group of activists, students, and researchers interested in tropical forestry.

Furthermore, market viability and concept refinement and funding was complemented by consulting experts in: program design and funding, entrepreneur finance, combating illegal logging and deforestation, development of non-timber forest product (NTFP) chains, efforts to secure legal title for smallholders etc. In total over 40 people participated in interviews or the group consultations, see table below.

Table of organizations and experts consulted

Category	**Organizations**
International forestry Research organizations	Cifor, FAO
International Community forestry project owners	Rainforest Alliance (2), WWF UK (several, but in depth follow-up with 3), Verdens skove, Green Wood, Forest and farm Facility
Local smallholder project owners/funders	WWF Bolivia, CORFO, World Bank Mozambique (follow-up after local research)
International ESG NGO's/thinktanks	WRI (3), Waxman strategies, Arcus, CLUA, Center for global development, Earth observations
Entrepreneur finance	

[23] http://www.landscapes.org/glf-2015/
[24] http://www.tbligroup.com/tbliconference/nordic2016.html

Microcredit institutions	FAST, OikoCredit, ResponsAbility
Impact investment funds/asset managers	Finance in Motion, Eco Enterprise Fund, Hedblom Capital
Development finance institutions	Swedfund
Program design and funding	
Potential program co-funders	USAID, DFID, DEFRA, FAO, GEF, AJWS, SI, Swedish church, Gates Foundation
Finance experts (Impact-, program-development)	Rubinstein (TBLI), Fraser Brown (Net-positive solutions), Ian Hanna (FSC head of fundraising), Elise Revell (Kelisec AB)
Program design experts	Brad Auer (Ex UNDP), John Stewart (Ex World Bank), Bruce Carbarle (Partnerships for forests), Michael Conroy (Ex FSC)

This table excludes all stakeholders accounted for in previous tables of field trips. Several of the stakeholders interviewed in the previous mentioned field trips fall into some of the categories in the above table, e.g. local project owners and local project financers.

The Fair Wood Showcase

Towards the end of the research phase the team organized a workshop that included representatives of all parts of the value chain as well as supporting NGOs, Development agencies and funding agencies. This workshop was held over three days in total, including meetings with specific geographic or theme focuses on the final day.
Table of types of participants.

Table 3 Summary of participants at the Fair Wood showcase

Participant category	Africa	Latin-America	Sweden	Other
Architect/Designers			2	
Development organizations	1	2	5	1
Fair Wood Team			13	3
Investor/Private foundations			1	1
Retailers/End users			4	
Sawmill entrepreneurs	2			
Smallholder representatives	2	2		
Technology providers			3	
Traders/Manufactures	5		4	1
WWF/FSC	1		7	1
Other	3	5	3	2
Total participants: 74	**14**	**9**	**42**	**9**

The Showcase was designed with three purposes in mind. Firstly, to present to the participants the entire Fair Wood concept from forest management to product development, second to receive feedback from the participants about the feasibility of the concept and thirdly to obtain additional information about funding for the different components of the Fair Wood system.

The Showcase[25] included live demonstrations of forest management including silvicultural practices for different forest types, timber processing from log to end product using small scale equipment and product and market development engagement with prospective buyers.
The Showcase program presented the complete Fair Wood concept and sought feedback from participants including in relation to funding requirements of the different actors. The showcase also presented feedback on the results of the market research process during 2016.

Overview account of project adaptation

In the end the implementation of the fair Wood research project deviated from the plan in the beginning. For an overview of the adaptations made the table below compares the activities stated in the RBM-chain with the actual implementation:

Planned activities	**Actual activities**
Activity 1: Consultation with international expertise on central concepts of the FWF	
Ca 20 interview dialogues: • Development organizations • Finance actors • Research institutions • Multinational companies working with local farmers 1 Stakeholder consultation workshop 1 Partner workshop	37 interviews: • International smallholder project owners: 4 • Local smallholder project owners: 3 • Entrepreneur finance actors: 9 • Program funding actors: 12 • Research institutions: 3 • International think tanks: 6 • 2 stakeholder consultation workshops (One with WWF UK, One in Washington with 5 organizations) • 1 showcase conference (60 non-Fair Wood participants from ca 10 countries) • Presentations and feedback at 2 external conferences • Participation at 1 other external conference
Activity 2: International market and value chain research.	
Ca 60 Interview dialogues: • Tech providers • Manufacturers • Corporate end users • Retailers 2 Consultation workshops	36 customer company interviews Technology providers are accounted for in activity 3 3 trade conferences: • The Netherlands • Chile • Sweden 3 meetings with FSC offices 6 meetings and desktop research informing an analysis of the tropical hardwood market
Activity 3: Local research on value chain and entrepreneurial conditions:	
3.1 and 3.2: Research in 2 Countries: • Research and contacts • visits • ca 2X15 in person meetings • workshops	Visits in 5 countries + relevant research from 3 countries in other projects 76 stakeholder interviews

[25] See appendix 15: The Fair Wood Showcase Program

<table>
<tr><td>3.3: Case study of value chain workings from South to North</td><td>Case study included one sawmill in Mozambique, two manufacturing customers, two final commercial customers, and several other actors involved in design, installation, transportation etc. See appendix 6.

As the importance of energy part of the timber processing enterprise was realized, this was added as a research objective. This led to research activities in the form of:
Desktop research
Dialogues with two technology solution providers
Dialogue with a big energy company</td></tr>
<tr><td colspan="2">Activity 4: Concept development, based on research findings.
Mainly consolidation and analysis of research results and development work based on this.
Further consultation and feedback will be sought from a selected mix of actors from the research activities.
The development work will focus on the following areas:</td></tr>
<tr><td>• Local engagement strategy when implementing a FW program
• The FW program relationship to and agreements with Sawmill entrepreneurs and smallholders
• Strategies of the FWF for women’s empowerment
• Role of the FWF
• Organizational models for smallholders in a FW program
• Organization of the FWF-project, including advisory board</td><td>• A process starting from pre-assessment to the final phase of a pilot project has been developed, see appendix 12
• The FW program relationships and agreements with smallholders and timber processors: This is covered to some degrees in appendices 9, 10, 12, 13
• A base for a gender strategy has been developed – also a gender-equal mill has been developed, which should be a part of a future program strategy, see appendix 21 and 25
• Role of the FWF: The idea of a new organization to house all activities has been scrapped
• Organizational models: This has been developed, see appendix 9, Smallholder organization at the FMU-level
• A first draft of an organization of a program has been developed. Going further should be done in dialogue with potential founders
In addition to this, several documents were produced during the course of the project that were found needed for different participants and for furthering the program design for future implementation. These are briefly listed here but also found as appendixes in this report:
• Proposal to implement Fair Wood in Kilwa, Tanzania, see appendix 10
• LevasFlor - proposal for a Fair Wood intervention, see appendix 11
• Proposal to implement fair Wood: Mexico case study, see appendix 13
• Lennart Ljungman - The Devil’s Advocate on social and political constraints to FW, see appendix 14
• Environmental and social benefits of the Fair Wood program – to DEFRA, see appendix 16
• Biomass Energy potential from Sawmill Waste – an introduction to energy partners, see appendix 8
• The Forest positive concept, see appendix 19
• REDD+ A brief review, see appendix 20
• Extract on tropical forest management, see appendix 22
• A proposed management system for the miombo woodlands, see appendix 23
• Technology in a Fair Wood program, see appendix 24
• Proposal for gender equity in the LevasFlor mill, see appendix 25</td></tr>
<tr><td colspan="2">Activity 5: Detailed planning, and budgeting of the FWF-project</td></tr>
<tr><td>• Planning
• Budgeting</td><td>• A plan has not been developed. This is now seen to be done in dialogue with local “project owners”and international “program founders”.
• An indicative budget for the revised program has been developed, see Presentation of a revised program</td></tr>
<tr><td></td><td></td></tr>
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Adaptation of objectives

In terms of objectives, the main adaptation was to go from the thinking that a new organization would be needed and that that organization would initiate and run all pilot projects as well as the central support components. Instead a centrally coordinated system of externally owned projects facilitated by a multitude of partners was adopted. Also, the founding of the program was seen to be done by a group of influential international organizations committed to the vision.

This adaption of objective implied that some of the project objectives were changed such as developing the role of the *one organization.* Also, with the new thinking developing a detailed plan and budget is seen to be done in dialogue with a plethora of local and central partners at a later stage of program realization.

Outside of these changed objectives there were a number of objectives that were added during the course of the project as a response the feedback and learnings. Some of these new outputs that were seen as needed to investigate/develop were these:

- Assessment of the tropical hardwood "market environment" – as the future attractiveness of investing in hardwood at all came into question
- Investigation of a possible USP for responsible smallholder-based hardwood
- Viable technology and business case for energy production of a small-scale mill in rural settings – as this came to be seen as deciding for the total business case
- A viable model for restorative management of the miombo forest – as a response to the common reaction that active management of the miombo forest would not be worth while
- Estimate of environmental and social benefits (as an answer to inquiry from potential development funders)

Findings

The many interviews, consultations, events and written sources produced much concrete information as well as stakeholder opinions and perceptions of value for the future realization of the program. In this section, a selection of findings from the research work has been made. The findings presented here are those found by the partners to give the most impetus to revision and development of a program design. In addition, findings are included that reinforce certain initial design parameters that were found relatively uncertain and of hypothetical nature.

The findings presented below are organized according to the different research areas: Upstream field research, Downstream company dialogues, Consultations with Stakeholders and potential funders.

Key findings from upstream field research

Feedback and observations concerning local forest management

A Fair Wood program is based on the assumption that given the opportunity smallholders want to manage their forests in a responsible way but for several reasons this is often difficult for them. One key reason for these difficulties lies in the absence of accepted forest management systems for many types of tropical forest to meet specified objectives and desired benefits. Many temperate and boreal forests are managed with the objective to increase the quantity and quality of timber they produce and thereby the economic value through silvicultural practises is enhanced. However, this rarely happens in tropical forests. There is no a priori reason to believe that silvicultural practices aimed at increasing growth rates and improving timber properties would not be successful in tropical forests.

Initial Research Assumption

- Smallholders want to manage their forests in a responsible way
- Smallholders face hurdles which prevent them from becoming responsible forest managers
- Tropical forests are not managed according to specified objectives and potential economic values are not realized
- Silviculture is rarely practiced in tropical forests.

FINDINGs; Community Commitment and Forest Certification

Finding C1: Strong interest in forest management in visited communities.

The communities believe that they will get good returns from forest management activities.[26],[27],[28]

[26] Report of field visit to Nainokwe (Tanzania)
[27] Stakeholder consultation MCDI (Tanzania)
[28] Interview with Maria Ines Miranda (Chile, Latin America)

Forest Communities (with FSC-Certificate) are proud of the forest rights they have and the acknowledgement (of the good job they have done in protecting and managing the forest) the certificate represents[29],[30],[31]
The visited forest communities are prepared to invest something for the long-term to keep the certificate even without significant short-term economic benefits[32]. Such investment is often the rejection of alternative short term benefits from the forests[33],[34],[35],[36].
Forest management is seen by some as being a cultural choice[37]. "Forest management is a part of a life-style and therefor important for us[38]" and "To keep the lifestyle sustainably the economy of the business is important[39]"

Finding C2: Compliance to legal, social and environmental certification standards imply considerable activities and costs for the community which have to be motivated by increased livelihood benefits

Implementing forest management standards (FSC and alternatives) implies many activities/costs for the communities[40]. Most of these efforts are related to compliance to different legal, administrative, social and environmental performance levels[41],[42],[43].
Even in cases where direct costs are covered by donors the indirect costs in terms of time and technical requirements can be large[44]. Furthermore, long-term market benefits need to motivate certification costs.

Finding C3: Forest Certification (or the FW "evaluation" of smallholders' forest management) sometimes does not make sense for the people involved.

Forest Certification (or the FW "evaluation") of smallholders' forest management (for example Mapuche Communities) does not always make sense for the people involved since they consider much of the standard to be irrelevant to their traditional relationship with the forest [45,46]. Views were expressed that the certification does not add any real values[47] (except possible market access) and therefore the management of the forest will not be sustainably improved, and that in the end the system will fail. One alternative approach proposed was (what could be called) a "life-style certification[48]" instead of "management

[29] Report of Visit to Calleria Community (Peru)
[30] Interview with Marioldy Sanchez, AIDER (Peru)
[31] Interview with Nils von Sydow. (Mozambique)
[32] Stakeholder consultation MCDI (Tanzania)
[33] Stakeholder consultation MCDI (Tanzania)
[34] Field visit to Pueblos Mancomunados (Mexico)
[35] Report of visit to Calleria Community (Peru)
[36] Interview with Nils von Sydow (Mozambique)
[37] Field visit to Pueblos Mancomunados (Mexico)
[38] Interview with Pablo Huaiquilao (Chile)
[39] Interview with Desiderio Millanao (Chile)
[40] Report of visit to Calleria Community (Peru)
[41] Interview with Maria Ines Miranda (Chile, Latin America)
[42] Report of Field visit to Nainokwe (Tanzania)
[43] Visit to Noh Bec Ejido. (Mexico)
[44] Stakeholder consultation MCDI. (Tanzania)
[45] Interview with Desiderio Millanao (Chile)
[46] Interview with Maria Ines Miranda (Chile, Latin America)
[47] Interview with Maria Ines Miranda (Chile, Latin Ameirca)
[48] Interview with Pablo Huaiquilao (Chile)

plan certification", where risk analyses are central (if the "life-style" is resulting in small risks then auditing can be less frequent/intensive and opposite). 'Life style' in this context means the traditional and enduring way in which these smallholders lived with the forest and made use of the forest to fulfill their needs.

Forest management

Finding C4: Visited forest communities make no or very limited investments in securing the native forests long-term economic values such as quality of the trees, volumes and composition of species.

Implementation of forest management and the certification standard in the native community forests does not usually include activities to improve the economic value of the trees and the forest[49,50,51,52,53]. Where it is seen it is usually limited to small scale enrichment planting[54] usually from nurseries funded by donors[55].
Forest management plans accepted by forest auditors focus on reduced impact logging and not on resource management[56].
"Best management practice" in silviculture including planting or natural regeneration, weeding, pre-commercial thinning, pruning, thinning, optimal rotation strategies) to enhance production and wood value is not implemented resulting in low revenue [57],[58],[59] A notable exception to this was the pine forests of the Mexican alpine zone[60]. However all management activities there have now ceased.

Finding C5: Depletion of popular species has accelerated fast in the past years leading to shortages, price increases and "moving to the next species"

In some regions of Tanzania and Mozambique new species, still plentiful and cheap some years ago, now are getting difficult (too expensive) to access[61] for the small-medium scale industry producing for local markets[62],[63].

This situation is common also in tropical forests under commercial concessions where selective harvesting according to minimum diameter rules causes economic extinction of

[49] Field visit to Noh Bec Ejido (Mexico)
[50] Report on visit to Nainokwe (Tanzania)
[51] Report on visit to Calleria Community (Peru)
[52] Stakeholder interview Nils von Sydow. (Mozambique)
[53] Interview with Marioldy Sanchez (Peru)
[54] HJ van Hensbergen pers obs. Mali, Ghana, El Salvador, Cameroon.
[55] Nurseries are easy to fund since the number of seedlings produced can be easily monitored, their failure to thrive once planted in the forest is more difficult to assess.
[56] HJ van Hensbergen, pers. Obs.
[57] Report on visit to Nainokwe (Tanzania)
[58] Report on visit to Calleria Community (Peru)
[59] Stakeholder interview AIDER staff. (Peru)
[60] Report on visit to Pueblos Mancomunados. (Mexico)
[61] Stakeholder consultation Temic. (Tanzania)
[62] Stakeholder interview Nils von Sydow (Mozambique)
[63] Stakeholder interview Darlindo Pechisso (Mozambique)

species[64]; in which commercial species of harvestable size become so rare in the forest that they are no longer able to sustain a market.

Finding C6: Research on forest management and silviculture focusing Native Forests in the tropics (including rehabilitation/restoration) exists but is limited and "forgotten"

Research on tropical forest management (including best management practices for different objectives and economical aspects) exists but only in very limited scale. Few qualified researchers are involved and financing almost non-existing[65],[66],[67] – [68]
Results from this limited research and existing experiments exist and are valuable (and can possibly give support for development of new and more advanced management strategies for the Miombo Forest)[69]
Some recent results exist showing that silvicultural intervention in harvest gaps in tropical high forest produces desired results[70] and is profitable[71],[72],[73],[74],[75].

Finding C7: Local experts are enthusiastic about the possibilities for experimenting with restorative forest management and in development of new forest management models adapted for management of native forest.

Miombo forest regenerates profusely after clear felling[76]. Experts believe that active silviculture of desirable early successional species, Dalbergia, Brachystegia can provide increased value production[77],[78].

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[64] Karsenty A. and S.Gourlet-Fleury. 2006. Assessing sustainability of logging practices in the Congo Basin's managed forests: the issue of commercial species recovery. *Ecology and Society 11(1): 26*.
[65] Interview with Lawrence Mbwambo. (Tanzania)
[66] Interview with Mario Falcao (Mozambique)
[67] Interview with INFOR (Chile)
[68] Mugasha W.A, Tron Eid, Ole M Bollandsås & Lawrence Mbwambo (2016): Modelling diameter growth, mortality and recruitment of trees in miombo woodlands of Tanzania, Southern Forests: a Journal of Forest Science, DOI: 10.2989/20702620.2016.1233755
[69] Interview with Lawrence Mbwambo (Tanzania)
[70] Mostacedo B., Z. Villegas, J.C. Licona, A. Alarcón, D. Villarroel, M. Peña-Claros y T.S. Fredericksen. 2009. Ecología y Silvicultura de los Principales Bosques Tropicales de Bolivia. Instituto Boliviano de Investigación Forestal. Santa Cruz, Bolivia.
[71] Schwartz G., A.L.S. Bais, M. Peña-Claros, M.A. Hoogstra-Klein, G.M.J. Mohren & B.J.M. Arts. 2016.) Profitability of silvicultural treatments in logging gaps in the Brazilian Amazon. *Journal of Tropical Forest Science* 28(1): 68–78.
[72] Interview with Marielos Pena Claros. (Wageningen & Bolivia)
[73] Schwartz G, Vanessa Falkowski, Marielos Peña-Claros (2017) Natural regeneration of tree species in the Eastern Amazon: Short-term responses after reduced-impact logging. Forest Ecology and Management 385 (2017) 97–103
[74] Schwartz G, José C.A. Lopes , Godefridus M.J. Mohren, Marielos Peña-Claros (2013) Post-harvesting silvicultural treatments in logging gaps: A comparison between enrichment planting and tending of natural regeneration. Forest Ecology and Management 293 (2013) 57–64
[75] Doucet J-L, Yao Lambert Kouadio, David Monticelli, Philippe Lejeune (2009) Enrichment of logging gaps with moabi (Baillonella toxisperma Pierre) in a Central African rain forest Forest Ecology and Management xxx (2009) xxx–xxx´
[76] Stakeholder interview Mjumita. (Tanzania)
[77] Interview Lawrence Mbwambo (Tanzania)
[78] Interview Almeida Sitoe (Mozambique)

Feedback and observations concerning local organization for forestry and timber supply

In selecting sites for pilot projects, one central assumption in the initial Fair Wood program was to focus on sites where smallholders were organised and where the business environment was sufficiently permissive of commercial enterprise ("low-hanging fruit"). The facilitation was to focus on the technical assistance in terms of forest management and wood processing and on the market side. The rational was two-fold: to increase likelihood of early success cases and to provide exit pathways for donor supported community organization projects.
Some questions were if we could find organization models conducive to the Fair Wood intervention model and if we could support this assumption. Important aspects of this are a regulatory environment that is conducive to successful business and appropriate supporting organizations to assist smallholders.

Initial Research Assumption

- Smallholder forest projects and sites exist that offer organization-, governance- and business environment which facilitate easy won success in a Fair Wood program
- ???

DISCUSSION: Community Commitment and Forest Certification

FINDINGS: Communities and Forest Management

Finding L1: Group size in community forestry is an important factor relating to successful decision making processes.

Smaller groups find it easier to make decisions. Mapuche communities of closely related families numbering from 30 to 100 persons make effective decisions relatively quickly[79]. Mexican Ejidos with 216 members make joint strategic decisions while delegating day to day decisions to a semi-professionalised management group[80]. Larger communities with more than 500 entitled owners are effective only where they are able to delegate decision making to subgroups either through formal or informal structures[81].
Other research has shown that the 'wisdom of the crowd' is fallacious in complex situations[82] and that large groups often take better decisions when decision making actually involves fewer people[83].

[79] Interview with Maria Ines Miranda (Chile, Latin America)
[80] Visit to Ejido Noh Bec (Mexico)
[81] Report on visit to Nainokwe (Tanzania)
[82] Kao, Albert B., Iain D. Couzin. 2014. Decision accuracy in complex environments is often maximized by small group sizes. *Proceedings of the Royal Society B*. Article published online April 23, 2014. DOI: 10.1098/rspb.2013.3305
[83] Mirta Galesic, Daniel Barkoczi, Konstantinos Katsikopoulos (2015) Can Small Crowds Be Wise? Moderate-Sized Groups Can Outperform Large Groups and Individuals Under Some Task Conditions SFI WORKING PAPER: 2015-12-051, Santa FE Institute

Finding L2: Big differences between communities in organizing forestry and timber production. There is no one size fits all solution.

The organization of land tenure, forest management and timber processing was enormously variable between the investigated sites. Land tenure ranges from fully private[84], through private tenure by groups[85] to communal tenure by groups on a surface rights[86],[87] or land rights basis[88].
Similarly, there are significant differences in decision-making structures, in some cases decisions are always made by the entire community in consensus[89]. In other cases decisions are made by management groups, either with[90] or without[91],[92] the need for approval by the entire community. In many cases, some decisions are delegated. In the more successful case many decisions are delegated to professionalised groups[93],[94].

In addition to this, there are a number of initiatives currently going on to develop alternative and improved models for community and smallholder organization. These include both formal structures such as cooperatives[95] and more informal associations[96]. Alianza Silvamaya in Quintana Roo, Mexico is an example of a voluntary association between three producer groups (Ejidos) to supply a single mill unit for which they are seeking funds[97].

Finding L3: Forest Management is seen by indigenous smallholders as a way to keep the key values of the culture alive in to the future by being the perfect family project.

Forest Management, as a business, keeps the family/generations together (in times where people lives far away from each other) over long time frames and create (if well managed) sustainable incomes.[98]
"What is needed is the story on how the Fair Wood concept can help to bring back - re-create - lost values – key values for the Mapuche communities". The existence of the forest and the landscape made the Mapuche culture possible[99]
This indigenous peoples' view fits well with the recognized importance of Family Forestry for the forest industry in Europe[100] and the United States[101] and endorsed by UN FAO[102].

[84] Interview with Maria Ines Miranda (Chile)
[85] Visit to Ejido Noh Bec (Mexico)
[86] Interview with Darlindo Pechisso (Mozambique)
[87] Interview with Monika Branks (Mozambique)
[88] Stakeholder Interview with MCDI (Tanzania)
[89] Interview with Maria Ines Miranda (Chile, Mapuche)
[90] Report on visit to Pueblos Mancomunados. (Mexico)
[91] Visit to Ejido Noh Bec. (Mexico)
[92] Report on visit to Nainokwe. (Tanzania)
[93] Visit to Ejido Noh BEc (Mexico)
[94] Report on visit to Pueblos Mancomunados (Mexico)
[95] Interview with Darlindo Pechisso (Mozambique)
[96] Interview with UN-FAO FFF.
[97] Visit to Ejido Noh Bec (Mexico)
[98] Interview with Desiderio Millanao (Chile)
[99] Interview with Pablo Huaiquilao (Chile)
[100] http://www.cepf-eu.org/vedl/CEPF%20GA%202014_annual%20report_Part%20I.pdf
[101] https://us.fsc.org/en-us/certification/forest-management-certification/family-forests
[102] http://www.fao.org/family-farming-2014/news/news/details-press-room/en/c/237694/

Findings: Regulatory Environment and Supporting Organizations

Finding L4: Irrational legal conditions and corrupt governance (stump fees, harvesting permits, minimum logging diameters etc.) do not support SFM and "Best Management Practice"

There are governance barriers which hinder promotion of community SFM. Permission for logging can take extremely long time (2 years) even if forest management is FSC certified and all legal requirements are fulfilled (except having the harvesting permission)[103],[104] Permit prices are at a high level regardless of the origin of the timber (legal origin or illegal, illegal costs a little more to legalise)[105]. Costs or efforts for obtaining necessary permits can be very high, sometimes involving long travel to the nearest large city[106].

Forest regulations may prohibit silvicultural activities necessary for forest management such as rules on minimum felling diameter preventing silvicultural thinnings[107].

Finding L5: Interest from existing Service Providers/Umbrella organizations, who today only organize forest plantation owners, to include also communities/smallholders with native forest and develop new business opportunities for native wood.

Supporting organizations and cooperatives welcome new members with an interest in responsible forest management[108],[109].
Forest and Farm Facility of the FAO is aiming to create smallholder umbrella organizations in developing countries.[110] Other NGOs are supporting smallholders for development of business opportunities[111],[112].

Finding L6: Financing organizations, including agencies for development funding and private investors, focus on private industrial scale plantations.

Following large scale plantation fires in Chile during the dry season almost all potential government funding for native forests has been moved to support for plantation restoration[113]. Major aid organizations are concentrated on plantations or woodlots[114],[115],[116]. 'Green' investment funds also prioritise agroforestry, plantations and forest preservation over natural forest management[117], [118].

[103] Report on visit to Calleria Community (Peru)
[104] Stakeholder Interview AIDER (Peru)
[105] Interview with Mr Kalonga, Sawmiller. (Tanzania)
[106] Stakeholder interview with WWF Tanzania
[107] Interview with Darlindo Pechisso (Mozambique)
[108] Stakeholder interview with Procer (Chile).
[109] Stakeholder Interview with Mjumita. (Tanzania)
[110] Stakeholder interview FFF.
[111] Stakeholder Interview with Rainforest Alliance
[112] Telephone discussion with Duncan McQueen, Forest Connect.
[113] E-mail from Maria Ines Miranda (Chile, Latin America)
[114] Interview with DFID
[115] Interview with FFF
[116] Interview with WB Mozambique
[117] Althelia Climate Fund. https://althelia.com/investment/guatemalan-caribbean-forest-corridor/
[118] Moringa Fund, Herve Buurguignon

Findings; Forest Business

Finding R1: Smallholders want to own their own businesses

Smallholders believe that they can make much improved incomes by sawing/processing their own timber[119],[120],[121].
Most smallholders are seeking donor funding to establish processing facilities[122],[123].

Finding R2: There is a major lack of trust in many forest communities towards established traders, forest industries and forest companies and also government institutions.

"It's necessary to understand the bad treatment (of the Mapuche) in history. The forest traders and also the industry, including smaller entrepreneurs and also big industries (such as Louisiana Pacific) behaved super-bad – they changed the rules and did not pay"[124],[125]. It takes a long time to build the trust needed to enter into a business with people who have been badly treated[126]. The finding of abuse of smallholders in business is common[127].
"Everything you (Fair Wood) build must be private sector – Do not wait for the government – instead the concept must come from inside the communities – to protect us (the Mapuche) from the government"[128]
When Pueblos Mancomunados started operations they employed external contractors who bought timber but these cheated them on the volumes so that nowadays they would use their own labour for forest management[129] and do their own processing at an off-site sawmill and factory.
"Conditions are often unfair – 80% for company 20% for Village and cheat on volumes and discounts"[130].
"Local government have, for many years, promised the village electricity based on a diesel generator" (needed not only for establishing small scale wood industry but also for small scale fish and fruit business)"[131]

Finding R3: Opportunities exist to influence National regulations of community business, which is currently under development.

In Mozambique (and other countries) there is frequent revision of forestry related laws and regulations. There are opportunities for Fair Wood associated entities to influence these laws in a positive way. For example, the new cooperative law in Mozambique[132].

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[119] Report on visit to Nainokwe (Tanzania)
[120] Report on visit to Ejido Noh Bec. (Mexico)
[121] Report on visit to Calleria Community (Peru).
[122] Interview with Maria Ines Miranda. (Chile, Latin Ameirca)
[123] Report on visit to Ejido Noh Bec. (Mexico)
[124] Interview with Desiderio Millanao (Chile)
[125] Interview with Pablo Huaiquilao (Chile)
[126] Interview with Maria Ines Miranda. (Chile, Latin America)
[127] Report on visit to Pueblos Mancomunados (Mexico)
[128] [128] Interview with Desiderio Millanao (Chile)
[129] Report on visit to Pueblos Mancomunados, currently they are not managing their own forests (Mexico)
[130] Report on visit to Calleria community.(Peru)
[131] Report on visit to Calleria community. (Peru)
[132] Interview with Darlindo Pechisso (Mozambique)

Finding R4: There is an opportunity to develop a successful co-operation between Smallholders and larger Forest Enterprises

Responsible forest companies can help smaller actors like local entrepreneurs, communities[133],[134] as well as other smallholders in many aspects of developing a successful forest based business[135,136]. For example, big companies have access to 1/ international offices, 2/ harbours – logistic 3/ market people, 4/ product development, 5/ facilitate international markets, 6/ forest restoration experiences[137]. Bigger companies also have forest management expertise that can be used to help smallholders[138],[139].

In the case of Mapuche communities, to become successful and sustainable such co-operation (Mapuche – Forest Companies) requires a new platform (or model) that respects the basis of the Mapuche lifestyle[140]. This would involve a much more 'social' approach that respects cultural and traditional values. An outline for such models based on an alternative paradigm includes key elements such as "meaning", "family project", "business soul" and "ownership"[141].

Wood processors are interested in developing partnerships with smallholders but the market access for new species is a problem that needs to be addressed in order to make processing profitable[142].

Finding R5: Smallholders want to break away from the aid paradigm, and instead focus on how the "business" can integrate elements of culture and protecting trees, forests and landscapes.

Heritage role of the forest is important, but people still want to do business with their forest resources[143]. People have a real interest in technical support and market support. Most common question to the Fair Wood research team was "Can you sell our wood?"[144],[145],[146].

"Mapuche culture is the one that "needs assistance" in the existing paradigm…. "we need to break this paradigm". "There is a need to fight the "help"-approach". In forest management and wood value chain interventions with Mapuche communities there is a need to integrate activities/actions that bring back key values to the Mapuche communities (take care of the forest and integrate elements of the culture). "But business must be more then delivering

[133] Interview with Desiderio Millanao (Chile)
[134] Interview with Pablo Huaiquilao (Chile)
[135] Interview with Maria Ines Miranda re Masisa. (Chile)
[136] Interview with Ricardo Schafner, Eduardo Melo, Arauco. (Chile)
[137] Interview with Maria Ines Miranda (Chile)
[138] Interview with Marioldy Sanchez, AIDER (Peru)
[139] Interview with Nils von Sydow. Levasflor (Mozambique)
[140] Interview with Desiderio Millanao. (Chile)
[141] Interview with Desiderio Millanao (Chile)
[142] Interview with Neil Bridgland, Sound and Fair (Tanzania)
[143] Report on visit to Pueblos Mancomunados. (Mexico)
[144] Workshop with Ejido Noh-Bec, FSC Mexico, Reforestamos Mexico.
[145] Stakeholder interview with MCDI (Tanzania)
[146] Stakeholder workshop of HSBC Zimbabwe.

logs to the industry". The indigenous community vision[147] must include the position of the Mapuche in their landscape but also their forests as part of an international supply chain. The people take pride in knowing that their forests and timber is helping people overseas to fulfil their needs but this must provide returns to satisfy the needs of the Mapuche.Local forest management systems developed over 1000s of years provide valuable models incorporating traditional knowledge[148],[149].

Finding R6: No cases of successful legal and sustainable community timber enterprises encountered

Although our visits were specifically aimed at identifying and studying successful community and smallholder timber enterprises we did not encounter any that were entirely successful. A number are FSC certified but have no commercial activities for a variety of reasons. These include lack of market[150], lack of harvesting permissions[151], own choice for environmental reasons[152] amongst others.
Even cases where a business is being carried out are failing to optimise the income since only logs are sold or processing is of poor quality[153]. In some cases, other factors such as corruption, "gangsterism"[154] or involvement in crime[155] have led to severe problems.

Finding R7: There are examples of (wood processing) concession holders striving to source from nearby smallholder controlled forests.

Visits identified several cases where existing concession holders or timber enterprises are trying to ensure long term timber supply from nearby communities[156],[157],[158]. In one case however a community refused to supply a log trader from China hoping to secure better value in the long term[159].

Findings: Feedback and observations concerning local wood processing

Previous experience of the Fair Wood partners has indicated that local timber processors present and face a variety of challenges that prevents them from being successful. The most common experience has been the inability of timber processing entrepreneurs to produce properly dimensioned and seasoned timber. This has been ascribed to the use of inappropriate, old and worn out equipment. Donor driven projects often result in poor equipment choice. An additional factor that affects business success is the poor recovery

[147] Interview with Pablo Huaiquilao (Chile)
[148] Fairhead J. and M. Leach. 1996. Misreading the African Landscape: Society and Ecology in a Forest-savanna Mosaic. Cambridge University Press, Cambridge. ISBN 0-521-56499-9
[149] Interview with Desiderio Millanao (Chile)
[150] MCDI supported villages in Tanzania
[151] Calleria community, (Peru)
[152] Pueblos Mancomunados do not harvest their own forests in misguided response to bark beetle outbreak (Mexico)
[153] Ejido Noh Bec. (Mexico)
[154] The case of Maderas Verde in Honduras.
[155] The case of Carmelita in the Maya Biosphere Reserve, Guatemala.
[156] Interview with Nils von Sydow, Levasflor, (Mozambique)
[157] Letter from Colosso Ltd (Mozambique)
[158] Interview with Neil Bridgland, Sound and Fair, (Tanzania)
[159] Interview with Darlindo Pechisso, (Mozambique)

rates from forest tree to sawn timber. An additional factor influencing the ability to access higher value markets is the lack of a concept of quality.

Discussion: Feedback and observations concerning local wood processing

Findings: Technical shortcomings of sawmills

Finding T1: Sawmills are unable to produce high quality outputs due to inappropriate and worn out machinery

Of the 26 sites visited with wood processing machinery only the sawmill of Pueblos Mancomunados in Mexico was able to produce items of reasonable quality[160]. This plant was equipped with drying kilns as well as further processing equipment for furniture manufacture. However, even here lack of proper final finishing produced a second-class product. These products are unable to compete in a high end market.

In all other cases the dimensional stability of sawing was poor[161],[162],[163]. In Tanzania, there are estimated to be 500-1000 small sawmills[164]. These sawmills are generally equipped with so called Ding Dong mills using a circular saw operating with a diesel engine. These mills do not have any guides to ensure straight sawing so that dimensional stability is impossible to achieve[165]. Furthermore, the operators receive no training[166].

Finding T2 Although many customers and many producers are aware of the problems caused by poor drying, nothing is done to deal with the problem.

Costs of kilns mean that only large operators can afford them[167][168]. Costs of holding stock for sufficient time to dry properly is prohibitive given that timber supply cannot meet demand in many areas so that customers will take almost anything. *"2-inch thickness boards take 2 years to air dry, 1-inch takes 1 year, But customers can't wait. They take it green, and are not happy (with the final result)"*[169]

Construction companies will not accept wood as a construction material due to poor drying[170]. In many parts of Africa wood has been substituted by metals for roof trusses, window frames and doors[171].

Finding T3 Difficult financial position for small scale operators.

[160] Report of Visit to Pueblos Mancomunados. (Mexico)
[161] Report of visit to Ejido Noh Bec (Mexico)
[162] Report of visit to Nainokwe (Tanzania)
[163] Report on visit to Calleria Coomunity (Peru)
[164] Interview with Prof Reuben Mwamakimbullah. President of Tanzania Association of Foresters.
[165] Interview with Prof Reuben Mwamakimbullah. (Tanzania)
[166] Interview with Professor Iddi, Dep of Wood Utilization, Sokoine (Tanzania)
[167] Interview with Prof Reuben Mwamakimbullah (Tanzania)
[168] Report on visit to Ejido Noh Bec. (Mexico)
[169] Interview with Mr Kalonga, Small sawmill entrepreneur. (Tanzanaia)
[170] Interview with Prof Reuben Mwamakimbullah (Tanzania)
[171] Interview with Felix Njovu, Copperbelt University, Zambia.

Many small operators are only able to compete by avoiding taxes wherever possible. In many countries, most operate entirely outside the formal sector[172],[173]. In Tanzania, the only tax paid is included in the cost of buying or transporting logs through forest department checkpoints[174].

Raw material in the informal sector is of poor quality[175] since better logs are taken by large operators and often exported unsawn[176],[177].

Small processors seek donor funding for processing equipment[178].

Finding T4: Donor driven investment often leads to inappropriate technology.

Beneficiaries of aid are offered entire production systems that become impossible to support/maintain in the context of the country where they are placed[179].

Donor organizations often offer funding for inappropriate equipment[180],[181],[182],[183].

Finding T5: Widespread demand for support in technical system design (saw/dry/energy) accompanied by inadequate local support and knowledge of industrial timber processing.

Mozambique visitors to Fair Wood showcase in Stockholm were very surprised by quality of output that could be achieved with relatively low cost equipment[184].
"At Sokoine there is a Department of Wood Utilisation, these have been seen as the bad guys – We must turn this around – They are the heroes!"[185].

Finding T6 Little or no use of biomass for energy production has significant impact on financial viability.

Electricity is expensive in many developing countries particularly in Africa[186]. This is often combined with a poor development of infrastructure both for generation and distribution. Costs of off grid generation for running sawmill machinery using fossil fuels is very high,

[172] Observation at Basuko informal timber market in Lusaka. (Zambia)
[173] Interview with Mr Kalonga who buys timber from informal pitsawyers. (Tanzania
[174] Report on field visit to Kilwa. (Tanzania)
[175] Interview with Prof Reuben Mwamakimbullah (Tanzania)
[176] Interview with Felix Njovu, Copperbelt University, Zambia
[177] Interview with Sergio Madrid CCMSS (Mexico)
[178] Report on visit to Ejido Noh Bec (Mexico)
[179] Interview with Mr Kalonga, Small Scale Sawmiller in Tanzania.
[180] Report on visit to Ejido Noh Bec. (Mexico)
[181] Observation at Forest Hill sawmill in HSBC, Zimbabwe
[182] Report on visit to Nainokwe Village. (Tanzania)
[183] Interview with WWF Tanzania
[184] Report on the Fair Wood Showcase.
[185] Interview with Dr Lawrence Mbwambo, TAFORI. (Tanzania)
[186] https://www.afdb.org/en/blogs/afdb-championing-inclusive-growth-across-africa/post/the-high-cost-of-electricity-generation-in-africa-11496/

usually two to three times normal electricity cost[187]. In addition, the logistic problems caused by the need to supply sawmills with diesel fuel by boat[188] or over poor roads[189] significantly increase the effective fuel costs.

Much timber processing is carried out using petrol fueled sawmills[190],[191]. Timber drying is also sometimes carried out using electricity[192], or gas[193] both of which are expensive. In many cases waste wood from the sawmill (and from the forest) is simply burnt in the open on site or disposed of as firewood at very low cost[194],[195]. In some cases, waste wood in the forest is converted to charcoal[196].

Unfortunately, capital costs of small scale electricity generating plants that use wood fuels are much higher than diesel generators. Thus, capital limitation dictates the use of alternatives with high running costs[197] as opposed to solutions which could increase the business income from sales of electricity and/or heat.

Finding T7 There is willingness of large timber companies to support small processors.

Big companies see the support of smaller producers as part of their CSR and that this gives them the social licence to operate[198].

Large companies can make partnerships with networks of small companies. *"Masisa have a network of 66.000 carpenters/small-medium entrepreneurs – 11.000 in Chile – moving to 100.000. We help them with information, training etc. etc".*[199].

Large companies also support with logistics for exporting[200] and with their marketing capacities[201].

Finding T8: There is existing capacity for supporting product development, testing new species and developing new business concept (for SME in wood Industry)

[187] https://www.afdb.org/en/blogs/afdb-championing-inclusive-growth-across-africa/post/the-high-cost-of-electricity-generation-in-africa-11496/
[188] Report on visit to Calleria Communty. (Peru)
[189] Report on visit to Levasflor. (Mozambique)
[190] Report on visit to Nainokwe village. (Tanzania)
[191] Report on visit to Calleria community. (Peru)
[192] Interview with Maira Ines Miranda (Chile, Latin America)
[193] Visit to Ejido Noh Bec. (Mexico)
[194] Hector Castaneda pers. Comm. El Salvador
[195] Interview with Maria Ines Miranda (Chile, Latin America)
[196] Visit to Ejido Noh Bec (Mexico)
[197] 250kw diesel generator would use 320 liters of fuel (at a cost of 500USD) during an 8 hour shift if operating at half of peak capacity. http://www.dieselserviceandsupply.com/Diesel_Fuel_Consumption.aspx This would mean that fuel cost would exceed that pay of all staff at a typical mill.
[198] Interview with Eduardo Melo, Arauco (Chile)
[199] Interview with Regina V Massai and Jose Catala, Masisa (Chile)
[200] Interview with Maria Ines Miranda. (Chile, Latin America)
[201] Interview with Regina V Massai and Jose Catala, Masisa (Chile)

In some countries there is extensive capacity for product development in the timber sector[202],[203],[204].

Large companies are prepared to actively support product development and testing using their production and research facilities[205].

"Masisa has a focus on adding value to commodity products – a problem in forestry is the scale of the business (to small for us)"[206]

Findings: Feedback and observations concerning local wood markets

The Fair Wood model depends on making full and efficient use of the whole tree trunk. If only part of the tree can be sold then it is not possible to run a profitable timber business. For this reason it is important to verify that local markets exist for the parts of the tree that are not suitable for export markets. This includes much wood that can be sold as good quality products on the domestic market.

Finding M1: Interest in placing native forest wood into production in (small-medium size) sawmills that traditionally only (or mainly) sawing plantation wood.

In Chile many pine and eucalyptus sawmills expressed an interest in including native timbers in their supply chain[207]. This desire was particularly strong if this native timber comes from smallholders with FSC certification[208],[209],[210]

It is of note that Chile has an established national market for native timbers based on a long tradition and a former important export market.

Finding M2: Existing local markets generate low commercial value for community/smallholder forestry

Timber prices are depressed by unfair competition from illegal and unethical users[211],[212]. This affects log prices on both the domestic and export market[213],[214]. Even where wood is legal informal actors don't pay taxes, VAT or social security fees[215]. Unethical buyers don't pay for all of the timber they extract[216].

[202] Interview with Cite Madera, Peru (Sandra Koc Mori, Jessica M. Guerrero, José Ugarte Oliva). (Peru)
[203] Interview Maria Jose Echegaray, FIA. (Chile)
[204] Interview with Susanna Herera, INFOR. (Chile)
[205] Interview with Maria Ines Miranda. Fair Wood Connections. (Chile)
[206] Interview with Regina V Massai and Jose Catala, Masisa (Chile)
[207] Interview with Pamela Dias, Forestal Selva Valdiviana. (Chile)
[208] Interview with Luis Bastidas, Foresa (Chile)
[209] Interview with Isabel Onate ProBosque. (Chile)
[210] Interview with Mauricio Bruna, Procer. (Chile)
[211] Interview with Darlindo Pechisso, DNF (Mozambique)
[212] Interview with Nils von Sydow, Levasflor (Mozamique)
[213] Report on visit to Calleria Community. (Peru)
[214] Interview with Marioldy Sanchez, AIDER (Peru)
[215] Interview with Maria Ines Miranda. (Chile, Latin America)
[216] Report on visit to Pueblos Mancomunados (Mexico)

Timber exporters pay less for the sawn timber than they do for the round wood[217] so that there is a strong disincentive to carry out value added processing that would employ people.

In many markets illegal timber volumes exceed legal timber volumes by a large margin[218],[219]. In addition, there also exist informal markets falling between legal markets and the large scale illegal markets (protected by political influence and corruption). These informal markets account for most of the timber traded locally in many countries[220],[221].

Since sawn timber prices are low this is reflected in low log prices in these markets. Sawn timber prices are low due to the lack of a demand for quality, strongly linked with an inability or unwillingness to pay the extra amount for quality.

Lack of access to relevant markets (and consequently continual low incomes) results in disappointments putting the interest for forest protection, responsible forest management and forest certification on risk. Forest Communities feel disappointed. They have made efforts and expected improved access to better paying markets (resulting in a better livelihood and a better future)[222],[223],[224],[225]

Finding M3: Government Procurement is an important market but overly demanding and difficult to access for small producers.

Government procurement particularly for school-desks and seats is an important market that can contribute significantly to business development[226]. However the often very large size of orders (>10,000 desks) means that small suppliers cannot meet the demand on their own and favours large manufacturers[227]. In addition, government procurement often demands the use of timber from a particular tree species when timber from other species can do the same job as well or even better[228].

In most cases government procurement give no preference to timber from responsible sources or communities[229],[230].

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[217] Ekman S-MS, Wenbin H and Langa E. 2013. Chinese trade and investment in the Mozambican timber industry: A case study from Cabo Delgado Province. Working Paper 122. Bogor, Indonesia: CIFOR.

[218] Mackenzie C. 2006. Forest governance in Zambezia, Mozambique: Chinese takeaway! FONGZA http://www.open.ac.uk/technology/mozambique/sites/www.open.ac.uk.technology.mozambique/files/pics/d72272.pdf

[219] Report on visit to Calleria community. (Peru)

[220] Interview with WWF Tanzania and visits to roadside furniture manfuacturers. (Tanzania)

[221] van Hensbergen H.J. and F. Njovu. 2015. The role and future of guidelines, codes of practice and certification systems in the forest sector to support the greening of the building and construction sector in Zambia. Zambia Green Jobs Program. ILO. DOI: 10.13140/RG.2.1.3280.6486

[222] Interview with AIDER staff. (Peru)

[223] Interview with Mjumita. (Tanzania)

[224] Interview with Justicia Ambiental, Maputo (Mozambique)

[225] Interview with Maria Ines Miranda (Chile, Latin America)

[226] Report on visit to Pueblos Mancomunados. (Mexico)

[227] Stakeholder visit TEMIC, Dar es Salaam. (Tanzanai)

[228] Interview with Nils van Sydow, LevasFlor.(Mozambique)

[229] Interview with Darlindo Pechisso (Mozambique)

[230] Interview with WWF Tanzania, Kahana (Tanzania).

Finding M4: There is a demand for quality sawn, kiln dried wood in the cities which is not currently met from local smallholder supplies.

In many developing countries with established tourist industries there is a large demand for good quality sawn wood for building hotels etc[231],[232],[233],[234],[235]. However, this wood is often supplied from imports or from plantations[236],[237]. This demand also extends to the wealthier sectors in local society and expatriate communities[238],[239].

Local smallholder producers are unable to compete with established suppliers because of the demand for a flexible and speedy supply[240].

Some small scale suppliers are able to produce good quality products in local markets[241] although the majority is poor.

Timber and timber product prices in capital cities are in some cases high due to collection of 'informal payments' by regulatory authorities during transport[242],and due to high rates of profit taking by middlemen[243].

[231] Report on visit to Noh Bec. (Mexico)
[232] Interview with Reforestamos Mexico.
[233] Interview with Severin Kalonga (Tanzania)
[234] Interview with Nils von Sydow. (Mozambique)
[235] Interview with Darlindo Pechisso. (Mozambique)
[236] Interview with Sergio Madrid, CCSMC. (Mexico)
[237] Interview with Nils von Sydow. (Mozambique)
[238] Visit to high quality furniture shop at Slipway, Dar es Salaam. (Tanzania)
[239] Interview with Darlindo Pechisso. (Mozambique)
[240] Interview with Mr Kalonga, Sawmill Owner. (Tanzania)
[241] Stakeholder visit to TEMIC, Dar es Salaam (Tanzania)
[242] Interview with Mr Kalonga, sawmill owner. (Tanzania)
[243] Interview with Maria Ines Miranda. (Chile, Latin America)

Feedback from downstream dialogues and research

A central theme of the Fair Wood concept has been to link small/medium sized timber processing enterprises with buying customers. These customers are expected to be found both locally in the producer country, but also on export markets. One additional assumption has also been that export customers are likely to act as first buyers out, since it is expected to be difficult initially to find customers willing to pay a fair price for timber on local markets that are often plagued by illegal competition. The export customers are then expected to help establishing relations with serious local customers.

The downstream research has been divided into two tracks, with the first one focusing on running dialogues with potential buyers of wood on export markets. The objectives of these dialogues have been to:

a) Present the Fair Wood concept and get immediate feedback from companies on how they perceive our approach
b) Learn from companies what they see as important demand criteria in wood purchasing, to inform how to develop a relevant and strong support process for entrepreneurs and timber supplying organizations.
c) Develop relations with the companies and find potential supporters who are interested in joining the program and buying wood from smallholders in arrangements that enable start-up of new businesses.

The second research track used a broader approach, aiming at increasing the knowledge of the current market environment for hardwood, both on local and export markets. The need to conduct this research was not part of the original project plan, but has emerged as a response to a need to better understand the marketing context for hardwood products. This research is included in the following section, *The market environment for hardwood from smallholders.*

Findings: General reaction on the presentation of the Fair Wood concept

In each meeting with a company we started by presenting the background of the organizations in the partnership and the Fair Wood concept. One purpose of these presentations was to learn more on whether the companies appreciated our approach in general, or if there were obvious flaws that needed correction.

Finding E1: Companies showed appreciation of the Fair Wood concept.

Our impression from the meetings with the companies are that most of them appreciated the approach of our initiative. We got explicit confirmation from the respondents in some

meetings that they liked our presentation of the FW concept. [244], [245], [246], [247], [248], [249], [250], [251] Five companies (Amsterdamsche Fijnhout, H&M, JM, Kährs and Åhléns) also joined the Fair Wood Showcase event in September, which we believe also demonstrates a positive reception of the concept.[252]

In the interviews, we also got examples of arguments and comments which were perceived as particularly interesting in relation to the Fair Wood concept:

a) The value of promoting best practice related to forest management (for example silviculture) and wood processing (for example precision sawing).[253]
b) Appreciation of the idea that consumption of wood could support development of local communities and improvement of forests.[254]
c) Building a strong CSR-profile around the Fair Wood concept as a means to strengthen the company brand. [255]

Obviously, the companies that we met were not equally impressed by our presentation, for various reasons. For example, Deutsche Werkstätte didn´t think the market valued sustainability aspects as highly as we argued in our presentation. In the meetings with companies Precious Woods and Van den Bergh Hout, concerns were more related to their perception that FSC-certified hardwoods in general are struggling to be competitive.

It is also important to stress that even though most companies gave positive feedback, many of them also asked questions on practical aspects of the project, and to what extent success could be expected for the initiative Typical questions circled around themes such as whether smallholders/communities and SME sawmills could guarantee steady deliveries of high-quality wood. These questions many times fed naturally into discussions on demand criteria.

Findings: Comments from companies on demand criteria

In order to provide relevant support to SME sawmills to develop their marketing and production capacity we need to improve our knowledge of potential customers' demand criteria. In the interviews we therefore asked questions on quality topics that we know are relevant for the wood industry. More specifically, our research focused on the following set of demand criteria:

- Delivery capacity
- Quality aspects relating to sawing and drying
- Wood properties

[244] Meeting with Geoffrey Howe, American Homebuilders.
[245] Meeting with Stephane Derr, Steel Case/EMEA
[246] Meeting with Tomas Ekström, Kinnarps
[247] Case Report, Axxonen Properties
[248] Meeting with Ulf Johansson and Mikhail Tarasov, IKEA
[249] Meeting with Arjan de Jong and Jeroen Veldthorsst, GWW Houtimport
[250] Meeting with William Tu, Kelding Enterprises
[251] Meeting with Ingrid Ivars, Vestre
[252] Fair Wood Showcase, "The Corporate Impact Case"
[253] Meetings with Geoffrey Howe and Mikhail Tarasov.
[254] Meetings with Madeleine Ericsson and Anita Falkenek.
[255] Meeting with Stephane Derr, Steel Case

- Requirements on dimensions
- Forest certification and legal compliance.

Finding E2: Wood buyers require certain volumes to establish a commercial relationship

All the interviewed companies stressed the importance of the suppliers' capability to deliver wood at a relevant scale. The volume corresponding to this level differed between the companies, and depends on variables such as sourcing strategy, product, company size and choice of market segment. Below we present the four most transparent demand criteria on volume that came up in the meetings.

For IKEA, it´s important that wood supplies can match the demand from their Tier 1 product suppliers.[256] These suppliers are running large-scale manufacturing processes, to reduce production costs. Volumes associated to such production processes are big, and can easily exceed 25000 cubic meters of sawn wood per year. Volumes like this are not suitable for smaller wood suppliers, unless there exists an opportunity to aggregate output. For this purpose, IKEA is currently running projects in Vietnam, developing support for smallholders growing acacia. The support includes improvement of forest practices, enhanced access to certification and direct access to IKEA´s product suppliers.[257],[258]

For MSP Group, who supply construction companies in Australia with materials and building products, the minimum scale of delivery is determined by the purchasing department´s capacity to manage contracts.

"It is vital that a supplier can deliver a minimum of 5 containers[259] of sawn wood per month. Suppliers who can´t reach this threshold need to cooperate with other suppliers, and aggregate the output. That´s what I have suggested today when I talked to suppliers at the fair."[260] – Craig Nagel, MSP Group

In the case of Kährs, a manufacturer of wooden floors, volume aspects are more determined by the nature of the production process. For example, the factory production, which must reach a certain scale, in order to reach a competitive cost level.

"I would say we need a supplier to provide us with a minimum of 3 containers/month in order to get a viable business case for a flooring product. It takes quite a long time to reach this level, a couple of years, before you have a fully tested and proven product."[261] *– Bruce Uhler, Kährs*

[256] Tier 1 suppliers are those companies that are responsible for delivering final products, like chairs, shelves, beds etc.
[257] Meeting with Ulf Johansson, Mikhail Tarasov and Anna Nilsson, IKEA.
[258] http://csr-asia.com/csr-asia-weekly-news-detail.php?id=12649
[259] A container in this context means a standard 40 feet container, which translates to approximately 30 cubic metres of sawn wood. This in turn requires 100 cubic metres of logs input to the mill..
[260] Interview with Craig Nagel, MSP Group in dialogue after meeting in Valdivia with Chilean SME sawmills supplying roble, 160908.
[261] Dialogue with Bruce Uhler, Fair Wood Showcase, Ekolsunds castle visit.

Finally, Van den Berg Hardhout, who is a wood trader and wholesaler[262], said wood purchasing needs to reach a level of 1 container per month. This minimum threshold reflects the minimum supply needed to supply a customer base, without running out of stock.

Finding E3: Sawmills must be capable of handling shipping and logistics of products.

In the interviews with two of the retailers, H&M and Åhléns, we learned that wood processors must be capable of serving these companies' suppliers directly.[263] This will require the timber processing entrepreneurs to adapt to these supplier´s demand criteria on logistics. Exactly what these requirements are will require additional research. However, it is probably important for sawmills to develop marketing skills as early as possible, and to build a capacity to handle logistics. Our own experiences from the case studies was that there are many pitfalls associated with shipping. Transports can easily be delayed and customers need to be informed and prepared for this. Also, the administration of shipping and customs documentation needs detailed attention. Sawmills must also have the capacity to load containers with a forklift, otherwise unloading becomes infeasible and even impossible. Unloading of containers is often very stressful, with a time window of maximum 1 hour.[264]

In our case studies and in the dialogue with the company Pettersson Rudberg we learned that before a final customer decides to place an order, designers and architects need test samples. This need arises early in a product/project development phase. For this to work, sawmills need to develop practical arrangements with some sort of a warehouse solution, and maybe also to establish a relation with a downstream agent.[265],[266]

Finding E4: Delivered wood need to fulfil specific criteria on sawing and drying

Discussions on demand criteria relating to sawing and drying was particularly present in the dialogues with companies involved in delivering and installing wooden floors. For Axxonen, high quality means very consistent moisture content and very small variation in measurements. The human eye is very good at spotting very small gaps, but to manually correct the parquet strips (which is doable) while installing them is too time consuming and costly. Axxonen said that they once had to replace a floor for a customer and after that they changed their floor supplier to prevent it happening again. The current supplier offers an accuracy of +/-0,1 mm on length, width and thickness, and +/-0,05 on right angle accuracy. On moisture content, they offer customer specific drying in 0,25 percentage points, normally between 6 to 8 % (in Sweden).[267]

Similarly, for Kährs, requirements for sawing and drying are critical demand criteria;

[262] Supplier of timber for outdoor projects at various scales from cladding individual houses, to large wooden bridges.
[263] Meetings with Madeleine Ericsson, H&M and Anita Falkenek, Åhléns.
[264] *Fair Wood Case studies – Use of wood from small-scale producers in installations and manufacturing, 170130.*
[265] Ibid.
[266] Meeting with Morgan Rudberg, PetterssonRudberg
[267] FW Case studies – Use of wood from small-scale producers in installations and manufacturing, 170130.

"We make the final cutting and adjustments ourselves, since we haven´t found any supplier capable to live up to our demands on tolerances and angle accuracy." – Anders Lidberg, Kährs.

For that reason, Kährs buy thicker wood pieces, which they then themselves saw and process in the final stage of the production of surface lamellae.[268] But even for these thicker pieces, suppliers must be able to deliver with an accuracy of 0-2mm, while moisture content must be in the range of 8-12 %.[269] To reach this quality level is probably a good idea for an SME sawmill, since it will help accessing customers with higher demand on quality.

Finding E5: New species seems to be appreciated, but it´s important to have credible information that can verify the wood properties

The people interviewed often have a positive attitude when talking about unfamiliar wood species, and most agreed that new species should represent an opportunity. Six companies explicitly referred to an "exotic look" as something positive.[270]

"Our customers are many times smaller carpentries, who are looking for unique looks of wood. We are happy to expand our assortment to meet this demand." – Rick Kamphorst, Amsterdamsche Fijnhout

"We don´t need more of the same species that we already sell. It´s actually good to be able to present new and exciting species." – Albert Oudenaarden, Van den Berg Hardhout

To introduce new species, however, companies confirmed they need credible and verified data on wood properties. This became evident in our dialogue with GWW, when there was an immediate interest to learn more on some of the East African species that we brought with us. In the meeting we could quite quickly determine the durability class of most of the samples. [271]

"*Testing wood always involves some kind of (evaluation against a) Dutch timber standard. It is a collaborative effort to test new species. We are five traders who cooperate on this, together with NGOs, IDH, FSC etc. We all invest in the wood testing and share results*." *- Arjan de Jong, GWW*

In our case study[272] we tested to use the Chilean species *roble* in an outdoor fountain at United Spaces since it according to the literature[273] was "very resistant" to decay. The panel boards on the fountain was inspected a few weeks after the installation and we found out that the boards had extensive discoloration from growth of mold. We later found out from a

[268] Interview with Anders Lidberg, Head of product development, Kährs.
[269] Raw material specification, 3-strip,
[270] PetterssonRudberg, Kährs, Axxonen, United Spaces, H&M, Van den Berg Hardhout, Amsterdamsche Fijnhout
[271] Interview with Arjan de Jong and Jeroen Veldthorsst, GWW Houtimport
[272] *Fair Wood Case studies – Use of wood from small-scale producers in installations and manufacturing, 170130.*
[273] Scheffer, T.C. and J.J. Morrell. NATURAL DURABILITY OF WOOD: A WORLDWIDE CHECKLIST OF SPECIES. Forest Research Laboratory, Oregon State University. Research Contribution 22. 58p

SP test[274] that the roble from our sawmill was not at all durable and probably would be classified as “nonresistant or perishable”. The fundamental difference from the literature has not been further investigated, but possible explanations could be that that the literature’s testing (from the seventies) was made from old trees in pristine forests, whereas our wood comes from younger trees in secondary forests where the growing conditions are different. It was also a small sample and it is possible that the samples included sapwood even though clear instructions were given to supply heart wood.

Regardless of the cause, our case report clearly confirmed the need for customers to have access to test results verifying wood properties for new species from varying growth conditions and age of tree. This information should also include knowledge on how the wood performs in relevant environments. For manufacturing companies, it is also relevant to access information on wood processing aspects.

Finding E6: Trading companies generally want larger dimensions than final customers.

An important topic for us was to learn more about was requirements on dimensions of purchased wood. This is relevant since many smallholder only can provide smaller dimensions during the first years of production, since forest resources many times are in a bad shape. Smaller dimensions can be used, but this often requires certain attention in the design and manufacturing processes.

For the trading companies, it is essential for new suppliers to deliver large dimensions. Typical standard dimensions requested for planks would be in the range of 25-60 mm thickness, 120-200 mm in width and 2000-3000 mm in length.[275] Visits to two warehouses of traders[276] showed that much of the stored volume consisted of wood in large dimensions. At one of these visits, there was a long discussion about what part of the assortment that could be relevant for smallholder suppliers. It turned out that some categories of poles might be suitable, but for most trading products the possibilities to use smaller dimensions was limited.[277]

When we discussed dimensional aspects with buyers further down the value chain, the response was somewhat different. In the dialogue with PetterssonRudberg we learned that they leave the decisions to the chosen manufacturer when they have developed a new product.[278] This was also the case when discussing design of products with H&M[279] and Åhléns.[280] Similar practices are used by companies in the real estate industry, but here it´s

[274] https://www.sp.se/en/units/wood/qualityandtesting/Sidor/default.aspx
[275] GWW, Van den Berg Hardhout, Kelding Enterprises
[276] Vandenbergh and GWW
[277] Interview with Arjan de Jong and Jeroen Veldthorsst, GWW Houtimport
[278] Meeting with Morgan Rudberg, PetterssonRudberg
[279] Meeting with designers and Madeleine Ericsson, H&M
[280] Meeting with Anita Falkenek, Åhléns

more common to use local carpentries for the production of smaller series and on-site construction of interiors and exteriors.[281] [282]

In the dialogue with PetterssonRudberg we also discussed in depth how the design of a new piece of outdoor furniture could be adjusted to improve log recovery. We chose an outdoor bench as the study objective. The goal of the exercise was to see which design features were most important to change to maximize recovery of sawn wood from the delivery of miombo wood used in our case study. We found out that utilization was mostly impacted by the length of the sitting board. Also, use of finger jointing and similar techniques have a great potential to reduce the need of large dimensions.[283] This showed the potential of being part of the early design phase for creating opportunities for smallholder-based wood, and the potential if all actors in the downstream product development process were informed of the importance of small dimensions.

Finding E7: A strong commitment for FSC-certification doesn´t always reflect a commitment to support smallholders.

When identifying companies that be believed where suitable to interview, one search parameter was to find those who explicitly support forest certification as defined by FSC. The reason for this was that we made an assumption that these companies would be relatively more receptive to the idea of supporting the Fair Wood project, and that they would also consider starting sourcing wood from new projects.

In the interviews, we asked what the companies´ commitment to source FSC-certified wood Out of the 25 companies that were included in the downstream dialogues on export markets, 10[284] expressed a commitment to reach 100 percent FSC-certified. Another 10 of the companies said they preferred FSC, but could also accept other certifications such as PEFC.[285] In neither of the groups could we see a clear pattern that a strong commitment for FSC co-varied with an interest to support a Fair Wood program. Thus, our assumption could not be supported. One reason for this is that big companies who source big volumes of wood simply must devote a lot of resources to fulfil this commitment.

"For IKEA it is a major challenge to reach our goal to source 100 percent FSC. To achieve this will require a lot of attention from us." – Mikhail Tarasov, IKEA.

Part of the marketing research carried out by this project also consisted of visits to different European FSC national offices to find out their response to the Fair Wood concept. These meetings provided us with some insights on what role Fair Wood could have in the future within the FSC community. The FSC offices saw the Fair Wood concept as a potentially important value add-on to either present ongoing projects where tropical timber was being sourced or as a benefit to their members, in particular to members in the economic

[281] Meeting with Olof Herold, JM.
[282] *Fair Wood Case studies – Use of wood from small-scale producers in installations and manufacturing, 170130.*
[283] Meeting with Morgan Rudberg, PetterssonRudberg
[284] BAM Group, Kinnarps, Bovalls, H&M, IKEA, Åhléns, Van den Berg Hardhout, Amoretti Doors, Interholco, Precious Woods
[285] PetterssonRudberg, Steel Case, Kährs, JM, Riksbyggen, Amsterdamsche Fijnhout, Vestre,

chambers, who seek new opportunities to responsibly source tropical timber. Other international FSC network partners were also enthusiastic about the Fair Wood concept as a potential value add-on providing complementary sustainability in FSC value chains.[286], [287], [288]

Finding E8: Legal compliance is important for non-tradeing companies acting as direct importers

Most companies that we talked to didn´t highlight legality as a major issue. In two cases, we got comments indicating the importance for new suppliers to have capabilities to handle legal aspects of exports:

"It´s important that suppliers can assist me with the proper documentation on legality. The new Australian legislation is really tough."- Craig Nagel, MSP Group

"We can handle direct purchasing of wood from a legal perspective. But it is great if we have a counterpart who claim the legal responsibility in relation to EUTR." - Bruce Uhler, Kährs.

Regardless of how a SME sawmill choose to solve the aspects of legality, they will need to develop solutions that are accepted by the export customers.

FINDINGS: Feedback from companies on interest to support the Fair Wood project

Another assumption that we set out in the beginning was that companies who did support the general approach of the Fair Wood concept, would also be interested in establishing commercial relations as a support to get sawmills and smallholder/community forest groups to get started. We also assumed that buying companies would be positive to support schemes aiming at creating more enabling conditions for SME sawmills, and to make the start-up process for them more realistic. We also asked open questions to investigate the idea that buying companies would probably prefer to work in networks together with other downstream companies, rather than acting alone. In this section, we finally also include findings that have emerged spontaneously, relating to general expectations from downstream companies on the Fair Wood project.

Finding I1: Some companies expressed an interest to start evaluating wood for a potential launch of products/projects

When asking companies directly if they were interested in starting to use wood from smallholders, 8 companies out of the total of 25 were positive to this. When asking the questions, we also presented representative sample pieces of wood from miombo forests, plus samples of roble and rauli from chile to illustrate how wood from real, future suppliers could look.

The following concrete concepts were the ones that were discussed with the eight interested companies:

[286] Filed visit to national FSC office in Denmark
[287] Field visit to national FSC office in the Netherlands
[288] Telephone conference with national FSC office in UK

- H&M: Use of wood from miombo species in decorative wooden boxes for storage in kitchen/bathroom.[289]
- Kährs: Use of wood from miombo species in engineered parquette flooring.[290]
- JM: Use of wood from roble species for facade exteriors in a housing project.[291]
- PetterssonRudberg (for Carl Andersson&Söner): Use of wood from miombo species for a table and an outdoor bench.[292]
- GWW/Van den Berg Hardhout: Use of wood for fencing poles and planks from miombo species. For this application, the wood must be of durability class 1 though.
- MSP Group: Use of roble for interiors and construction works in housing projects.

Added to this, real products were developed as part of our case studies. These products were a line of bathroom cabinets and parquette flooring for two real estate projects (Axxonen Properties) and two on-site constructed bars for an office hotel (Unites Spaces).[293]

Finding I2: Some companies were positive to the idea of granting some sort of a "special lane" for wood from smallholders

When asking questions on how buying companies could act to create a more enabling business environment, seven out of the 25 companies expressed some sort of concrete ideas how to support small, new suppliers. All ideas recognized the need to create some sort of "special lane", for which the demand criteria could be configured in a way that was possible for a thought SME sawmill to fulfil.

In the meeting with IKEA, one possibility to include smallholders and small-scale wood production was linked to an idea to create a special lane to warehouses via specific products manufactured at smaller scale.[294] A comparison was made to an existing partnership program called "Next Generation" with the objective to support production of artisan, limited edition-products made by social entrepreneurs, but also local partnerships linked to individual stores. Initially the program started with three partnerships with producer groups in India. In FY 2016 four new product launches were made, and a further expansion is planned for FY 2017 and 2018. [295]

In our dialogue with Kinnarps, similar ideas were being discussed. Here, the idea was more oriented towards providing support to individual sawmills and entrepreneurs. The logic of the support was more leaning on a corporate social responsibility-approach, although in practice this is very similar to the solution proposed by IKEA.[296]

From the dialogues with the real estate companies we learned that their business model is to manage a constant flow of projects, where each project always has elements of uniqueness. This makes it easier to handle the inflow of smaller volumes of wood from SME

[289] Meeting with Madeleine Ericsson + head of procurement and several designers. H&M
[290] Meeting with Anders Lidberg, Kährs
[291] Meeting with Olof Herold, JM
[292] Meeting with Morgan Rudberg, PetterssonRudberg Design
[293] *FW Case studies – Use of wood from small-scale producers in installations and manufacturing, 170130.*
[294] Meeting with Ulf Johansson, Mikhail Tarasov and Anna Nilsson.
[295] IKEA Group Sustainability Report 2016, page 74.
[296] Meeting with Tomas Ekstrom, Kinnarps.

sawmills. In a real estate project, it is also easy to communicate specific features of the building, which is being done constantly in sales processes.[297] [298]

Finding I3: Buying companies seem appreciate the idea of working together in networks

Beside entering into commercial relationships with suppliers we were also interested to learn what kind of collaboration format the downstream companies as group would prefer. Our assumption early in the project was that they could be interested in joining some type of network. This assumption was very much based on WWF:s previous experience from organising buyers groups as part of the Global Forest and Trade Network, aiming to integrating the concept of responsibly forest management with large-scale purchasing of wood.[299] Another observation supporting our assumption was the proliferation of other company networks focusing on integrating various sustainability aspects into business operations[300].

In our dialogues, we find some evidence that supported our assumption. JM suggested that it would be a good idea to create a network with big construction and real estate companies in Sweden/Europe. They also offered to initiate a dialogue with relevant such companies, for example Skanska.[301]

Similarly, H&M proposed the idea to develop a collaboration with their retail peers as part of a future collaboration:

"We often work together (within the industry) with various issues. For example, we can collaborate of coordinating sourcing to find joint solutions, rather than everyone are working on their own." – Madeleine Ericsson, H&M.

Finally, we also found support for the network idea from some of the manufacturers. For them, it is valuable to meet potential buyers of manufactured products, but more importantly find channels to discuss what products to develop, in order to find demand.

"As a small manufacturer, we need to find customers early on, in order to invest in the development of new products. It´s a great idea if we could have some sort of meeting forum with final users and end customers." – Inger Bovall, Bovalls Dörrar

"We need to find customers for our products to make our investments in sustainability viable. Now we are encouraging our suppliers to become FSC-certified, but we need to find the customers too." – Vincent Amoretti, Amoretti Doors.

[297] Meeting with Olof Herold, JM
[298] Meeting with Karolina Brick, Riksbyggen
[299] http://www.wwf.se/v/skog/forest-trade-network/1123123-global-forest-and-trade-network
[300] See for example "We Mean Business", which is an European alliance of company networks addressing various topics relating to climate change, https://www.wemeanbusinesscoalition.org/about
[301] Based on a dialoge with Olof Herold at the Fair Wood Showcase Event.

Finding I4: Companies express various needs of support in facilitating the process of starting to use wood from new, small suppliers

Some important observations were made over the course of the project, that all relate to the expressed need of support from companies when starting to use wood from small, new suppliers. This support stretches from small, everyday things like getting wood samples sent to architects/designers and carpenters[302], but also to get advice on surface treatment and estimation on volume needed for production. [303]

On a more advanced level, there is sometimes a need of manufacturing prototypes. This was the case when we assisted Axxonen in evaluating the possibility to start using miombo wood in massive wood flooring. We made three versions of floors in chanfuta and msasa, which all were appreciated. By showcasing these floors, we advanced the buyers perspective on the actual possibility to start using new and not so familiar species of wood.[304]

We also got hints that assistance will probably be necessary coordinating production at the suppliers providing the final product (for example floors, furniture etc). This is particularly relevant when there exists a need to secure a minimum level of wood utilization.[305]
From some companies that had expressed an interest to get more involved, we also got direct questions if it would be the Fair Wood program's role to act as a responsible supplier of the wood.[306]

In all, these observations indicate that buying companies often need at least some sort of facilitator, that can make various parts of the business development process run smoother.

Finding I5: Companies want the backup of a strong brand

During one session of the Fair Wood Showcase event – The Corporate Impact Case – a panel of companies was invited to discuss challenges and potential opportunities they saw with the Fair Wood concept. Answering a direct question in the end of the session they all unanimously meant the Fair Wood project needed a strong brand to become successful.[307]

Even though there wasn´t time to publicly discuss the underlying reasons right there and then, the clear and undisputable statement is interesting to follow up.

Talking to Åhléns a couple of weeks later gave some additional pieces of information. For them, a strong brand mean that stated environmental and social benefits that come from Fair Wood must always be 100 percent credible. [308]

"For us it is fundamental that all certifications that we use to back up our recommendations to our customers in our system "Bra Val" are trustworthy and credible. We don´t have the

[302] Meetings with Paula Ericksson, Axxonen and Katarina Strauss, interior designer of United Spaces
[303] Dialogue with architects from JM on how to use roble for exterior use.
[304] *FW Case studies – Use of wood from small-scale producers in installations and manufacturing, 170130.*
[305] This topic was relevant in the dialogues with H&M and Petterssonrudberg.
[306] Meeting with Åhléns, H&M, Kährs
[307] These comments came from the participants from JM, Kährs, H&M, Åhléns and Amsterdamsche Fijnhout.
[308] Meetings with Paula Ericksson, Axxonen and Katarina Strauss, interior designer of United Spaces

resources to double-check the systems we lean upon, so we only choose those that we really can trust. Fair Wood must also live up to this standard." – Anita Falkenek, Åhléns.

Another aspect of the idea of a strong brand was also apparent in the dialogue with Amsterdamsche Fijnhout:

"It´s good that you try to recruit and engage a lot of companies. But personally, I also believe strongly that Fair Wood needs to reach out to consumers as well. It´s important to get them interested and involved in order to build the story "from the ground". – Rick Kamphorst, Amsterdamsche Fijnhout.

It´s probably a good guess that companies want a Fair Wood program to have a strong, positive association among consumers and citizens, so that companies who join also can benefit from this and account for support as an investment in the company´s own brand.

Findings: The market environment for hardwood from smallholders

As we have been working with the research project we have also collected information to better understand the market environment for hardwoods. More specifically, we wanted to improve our knowledge on what the threats and opportunities would be facing timber processing enterprises and supporting timber producing organizations. This in turn led us to start investigating what is currently happening in the marketing environment for tropical hardwood.

The conducted market research does not follow a specific model. It is, though, inspired by established theories by Michael Porter on forces impacting the competitiveness of a certain industry.[309] Based on this perspective, the following questions are addressed:

"What are the important industry opportunities and threats that can be observed?"

"What are the capabilities and limitations of existing and potential competitors, and their probable future moves?"

The following observations form a first draft hypothesis, which needs to be tested by a more comprehensive industry analysis relevant for smallholder hardwood producers. The presented observations are based on meetings with companies and industry experts combined with desktop research.

Finding H1: Softwood-based production concepts is the driving force of the wood industry

- Despite being dependent on slow-growing boreal species and forests, the overall efficiency of softwood-based production systems seems to be superior compared to hardwood-based production systems. **This superiority is based on the relative higher wood recovery rate**, which in turn is driven by the possibility to produce a multitude of solid wood- and fibre products.[310]

- Investments in R&D, product- and technology development is substantial and increasing. Several new product lines, such as CLT-solutions for housing, lignin-based materials and advanced chemicals and fuels will likely further increase the competitiveness of the softwood-based part of the wood industry.[311]

- Softwood lumber is used in many applications competing with hardwoods in developing countries, indicate competitiveness in quality and price.[312] Interview with potential buyers of domestic hardwood in Tanzania and Mozambique confirmed the strength of foreign softwood-based competitors. The same trend can be seen in

[309] For a theoretical perspective on our analysis, we refer to Michael Porter´s classical work *"Competitive Strategy"*, Free Press, 1998. See introduction + pages 1-33.
[310] Meeting with Mikael Hannus, Head of innovations at Stora Enso Biomaterials, 2016-05-05
[311] http://www.skogsindustrierna.se/aktuellt/nyheter/2017/06/treesearch--en-unik-satsning-for-nya-material-fran-skogen/
[312] http://www.uni4marketing.se/subPage1.asp?nodeid=30

Colombia.[313] In parallel we can observe an increase in the export of sawn lumber from major producing countries such as Chile[314] and Sweden[315].

Finding H2: The established hardwood industry is in decline

- Available statistics clearly indicate that hardwood exports to European markets are in decline.[316] This is particularly true for exports from Africa.[317] However, it should be noted that there are big differences between markets. In Europe, for example, the German market is declining rapidly[318], while the markets in UK[319] seem to be more resilient.

- New initiatives to support the hardwood industry confirm a state of crisis. This for example clearly articulated as an argument for launching the European Sustainable Tropical Timber Coalition:

  "The European Sustainable Tropical Timber Coalition was launched as an urgent response to the decline of the EU tropical timber market. But why a 'coalition'? Because its supporters see the whole supply chain having a role, responsibility and interest in reversing this downward trend, and believe market-wide effort is vital for success.

  The alliance of public and private sector and NGO backers behind the STTC is concerned that EU tropical sector's shrinkage could on one hand ultimately deprive specifiers, end users and consumers here of a technically high performance, diverse construction and manufacturing material. Critically, it could also disincentivise tropical suppliers from introducing sustainable forest management.

  International recession exacerbated the situation, but the contraction of EU tropical timber sales has been long-term and due, it is widely agreed, to a number of embedded market factors. Image has been one problem. While often due to misperception, tropical timber has become popularly associated with illegal logging and deforestation. There has also been lack of market awareness of the availability of sustainably sourced timber from tropical forests."[320]

- Interviews with leading integrated tropical hardwood companies clearly indicate a concern for the future, and add to the impression that the hardwood industry is in a deep crisis:

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[313] Meeting with Armando Cervantes, Wood trader, 2016-09-08.
[314] Interview with several representatives from Pro Chile, confirming the interest of increased demand
[315] http://www.skogsaktuellt.se/artikel/53402/okning-av-export-av-sagade-travaror-i-varberg.html
[316] Centre for the promotion of Imports from developing countries (CB), *"CBI Trade Statistics: Timber in Europe 2016"*. Available at https://www.cbi.eu/sites/default/files/market_information/researches/trade-statistics-timber-2016.pdf, 2017-06-28.
[317] Presentation made by Nils Olaf Petersen from GD Holz at the STTC conference in Rotterdam, 2016-06-23
[318] Ibid.
[319] UK Timber Trade Federation (TTF), *"Statistical Review 2015"*. Available at http://www.ttf.co.uk/Search/Default.aspx?q=statistical%20review, 2017-06-28.
[320] http://www.europeansttc.com/why/

"We must develop new products, for example CLT-solutions for the housing industry, to stay competitive. Currently we lack the funding for making these investments."[321]

- On a micro level, leading integrated suppliers of sawn hardwood, such as Precious Woods, confirm that it is a great challenge to offset some of the harvested species:

  "By law, our company in Brazil must harvest many different types of wood. This constitutes a great challenge: Because some types of wood have very low volumes, not all woods can be processed and sold. Our ongoing task is therefore to establish and promote unused or underused species on the export market and to examine their areas of application."[322]

Finding H3: Increased competition from hardwoods from the north and new substitutes

- The wood industry in general is rather conservative by nature, and tend to stick to familiar species. An example to illustrate this is the global flooring industry, where the use of oak now represents 80 percent of total use in surface layers. A couple of years ago the same figure was 60 percent. [323]

  "Take the wood industry for example…They claim they want to innovate, and want to try new species. But in the end they stick to familiar species such as oak. I think 80 percent of all the wood used now is oak…."[324]

- Plantation hardwoods such as acacia and eucalyptus has for a long time strengthened their market position. Interviews with IKEA during the project indicated that this type of wood is seen as an opportunity in the future.[325] In Chile we met several producers delivering high-quality interior wood products made of eucalyptus from plantations.

- New materials such as bamboo and rattan is also being used more in wood products. Bamboo in particular is being marketed as a responsible alternative to wood. [326] [327]

- Coming up in very recent years, modified softwoods is a new substitute for hardwood that will add to the fierce competition. Examples of such brands are OrganoClick[328] and Kebony[329].

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[321] Interview with Ulrich Grauert, Interholco, 2017-05-06.
[322] Precious Woods, Annual Report 2016, page 11. Available at http://www.preciouswoods.com/domains/preciouswoods_com/data/free_docs/AnnualReport_EN_PdfWeb_16_Final.pdf, 2017-06-28.
[323] Intervju med Anders Lidberg, Kährs, 2016-07-07
[324] Intervju med Johan Ingvarsson, CEO of KG List, 2017-02-08 at the Stockholm Furniture and Light Fair.
[325] Meeting with Ulf Johansson and Mikhail Tarasov, 2016-08-16.
[326] http://www.ecoplanetbamboo.com
[327] http://www.eco-bamboo.com,
[328] http://organoclick.com
[329] http://kebony.com/sv/

- The response in the market to modified softwoods seem to be very positive. This was confirmed in a meeting with Vestre, manufacturer of outdoor furniture for public spaces:

  "We now only use modified softwoods in our products. It´s quality performance is outstanding, and superior to other hardwoods. For us it is important to have a consistent quality, which is more difficult to get with traditional hardwoods."[330]

  The strength of the modified softwoods was also confirmed by one of the interviewed traders.

  "I believe modified softwoods are superior to hardwoods. Even for waterworks, where the industry requires durability class 1, they probably perform better. Still, they may have a weaker environmental performance from production, but in the long I think they will be hard to beat".[331]

[330] Interview with Ingrid Ivars, marketing director of Vestre, www.vestre.com
[331] Interview with Rick Kamphorst, Amsterdamsche Fijnhout.

Key findings from dialogues with potential funders & and finance actors

Based on the initial Fair Wood concept and the proposal to Sida, there are two types of financing that will be needed. One is for the development of a future support program, and to carry out training activities and advisory services in project countries. These efforts could be summed up as "technical assistance". It should be noted though that we here also include activities focusing on market development in export and local markets, which is not usually included in the term technical assistance. In the research project we wanted to investigate what type of actors that might interested to act as funders of a Fair Wood program.

The other type of financing is for the investments of upstream entrepreneurs, smallholder forestry and timber processing enterprises. Typical investments would be buying harvesting and processing equipment, drying kilns, vehicles for transportation and other capital goods necessary for running operations. There will also be a need for working capital for the purchase of professional services relating to marketing, holding stock, logistics and workforce training amongst others.

The Fair Wood perspective is that entrepreneurs should be prepared to pay back on loans and equity investments so that the support activities do not undermine accountability and long term business sustainability of producers. However, there has also been a recognition of the barrier to access financing at reasonable terms in many of the targeted markets. For this reason, a "startup financing facility" connecting entrepreneurs to various types of financing, local and international, was a part of the initial Fair Wood concept. One important objective was to research and seek potential future finance partners for such a facility, and to learn how they could provide capital for investments in machinery, marketing, training etc.

FINDINGS: Availability of funding for a Fair Wood program

In the meetings with potential funders we wanted to learn about two things. First, we wanted to learn from their reactions from our presentation of the concept, and get a preliminary indication whether they saw it as attractive to finance a Fair Wood program or an adaptation of it. Secondly, we wanted to deepen our understanding what funders see as critical finance criteria, and more particularly how these applied to forestry initiatives.

Finding F1: Both international and national financing actors are positive to the Fair Wood program concept

We made a Fair Wood program presentation to eleven potential funders.[332] All expressed sympathetic comments to some extent. Seven potential funders also expressed an interest

[332] The total number of potential funders is not fixed however, since it depends on how you define the budget for a support system. See also finding "Many funders and investors seek collaborations with experts and experienced personnel to improve technical facilitation capacity."

to further discuss the possibilities to fund a program.[333], [334], [335], [336], [337], [338], [339]. The interest related in half of the cases to support of an international supporting organization and in other half to provide support for national projects on the ground.

Finding F2: Financing actors operating at national level provide funding on a relevant scale for support activities.

One relevant criteria for the government aid agencies relate to scale. For a project to become eligible, it is positive if it can reach a scale that makes it possible to administer econimically. Exactly what constitutes a relevant scale differs between funders. In our dialogue with DEFRA, we were informed that they were looking for projects with budgets of minimum 20 million GBP.[340] For the FAO, we estimate the same scale for projects funded by the Green Climate fund.[341]

We also had dialogues with financing actors operating at a national level in Chile and Mozambique. In Chile, the counterpart was CORFO who is responsible for providing financial support for innovation and industry development, and they expressed an interest to fund a national forestry development initiative with 3-5 million USD, via a collaboration with the Inter-American Development Bank. This funding is given as a "soft loan" with very favorable conditions, where for example a local Mapuche community organization could be the applicant. The funding could be viewed as an investment in a timber producing organization, with a lot of flexibility to use the money for the development of a local technical support facility, including measures for marketing. Thus, this is a typical example illustrating when funding of support activities blends into financial support for investments. [342] (This example is discussed a bit more below in the section "New institutions providing investments as a grant".)

In Mozambique, dialogues with a local representative from the World Bank indicated a relevant scale of an application should be in the same range, 3-7 million USD.[343] Here the funding is directed via the forestry department of Mozambique.

The design of the original proposal of a Fair Wood program included a budget roughly amounting to 12 million Euros, which indicates that the financial support that is accessible at a national level in the countries mentioned above might be more appropriate to aim for, rather than applying directly from aid agencies. This would depend on aggregating funding from several national sources. It may also be possible to include smaller scale bilateral funding in this mixture.

[333] Meeting with Sarah Nicholson, DEFRA
[334] Meeting with Christina Conolly, DFID
[335] Meeting with Walter Knaussberger and Crystal Davis, USAID
[336] Meeting with Doug McGuire and Ludwig Liagre, FAO
[337] Meeting with André Aquino and Tracy Johns, World Bank
[338] Meeting with Jose Undurraga and Aldo Cerda, CORFO
[339] Meeting with Geoffrey Mwanjela, WWF Tanzania
[340] Meeting with Sarah Nicholson, DEFRA
[341] Meeting with Doug Mcguire, FAO
[342] E-mail correspondence with Aldo Cerda, CORFO.
[343] Dialogues with Andre Aquino, World Bank representative in Mozambique

Finding F3: Carbon emission reduction is high on the agenda among development aid agencies.

For some of the aid agencies it is important that supported projects can be linked to schemes aiming at reducing carbon emissions from land use change, i.e. deforestation and degradation. In the case of DEFRA, they saw an opportunity for a Fair Wood program to apply for grants from a recently started forestry fund. The fund also had criteria on reducing climate impact.[344] DFID also stressed the importance of reducing climate impact.[345] The World Bank referred us to the Forest Carbon Partnership Facility, the Forest Investment Program and the Bio Carbon Fund, which are all consolidated under the Forests Climate and Finance Program.[346] For all these funds, it is vital to show how projects contribute to the implementation of REDD+, i.e. show how degradation and deforestation can be avoided.[347] FAO told us they were about to receive the status of becoming an accredited project manager for the Green Climate Fund, and saw opportunities for cooperation. Obviously, such a project must fulfill the fund criteria on climate change mitigation and adaptation.[348]

Finding F4: Support from government and multilateral aid agencies for projects with focus on native/natural forest management and wood value chains is not common

When sharing in depth information on how forestry and forest management could contribute to improve the state of forests we realized there is a difference in perception and understanding of the concept of forest management. Support for native/natural forest timber operations is not common and is stigmatized both nationally and internationally. For example, in the meeting with USAID, forestry for timber sourcing in native forests was referred to as "extractive". After some dialogue on the features of the Fair Wood concept, the tone became more positive. But the comment is interesting, and illustrates the challenge of communicating the concept of management of native forests as something positive (environmental, economic and social aspects). [349]

Another aspect of this theme is the widespread promotion of tree planting. For the Forest and Farm Facility, as an example, forestry is almost exclusively related to small-scale planting of trees on wood lots or agroforestry, where other products are in focus such as fruits, nuts, honey etc.[350] Forestry experts at FAO confirmed that they would like to widen the organization's focus to also include forest management for timber and timber processing.[351]

Finding F5: Meetings with nationally oriented organizations show that they want to develop a wood industry built upon native forestry.

[344] Meeting with Sarah Nicholson (DEFRA)
[345] Meeting with Christina Conolly (DFID)
[346] Meeting with Tracy Johns.
[347] One example of a definition of REDD+ can be found at https://www.forestcarbonpartnership.org/what-redd
[348] Meeting with Doug McGuire.
[349] Meeting with Walter Knausberger.
[350] Meetings with Jeffrey Campbell and his crew. (FAO FFF)
[351] This position was expressed in several meetings during a visit at FAO:s head office in Rome with Jeffery Campbell, CEO of the Forest and Farm Facility and some of his colleagues.

In the meetings with organizations working on the ground, as well as representatives of national initiatives for improving forestry the dialogue was more focused on the core objectives of Fair Wood interventions. For WWF Tanzania, several components in a Fair Wood program were noted as a potentially interesting complement to ongoing community forestry projects in Kilwa and Tunduru, which are currently being run by a coalition of actors including MCDI.[352]

An ongoing dialogue with CORFO, which is the Chilean agency for supporting innovation and industry development, clearly confirmed that native forestry is something that the country wants to develop. (Though now after the devastating forest fire, the support has been directed solely to restarting the plantations). This interest rests upon several needs; the need to promote economic development in indigenous and rural communities, the need to diversify the timber industry and the need to create more enabling conditions for improving degraded native forests.[353] Regarding the goal of supporting industrial development, we received several testimonials of interest to access export markets[354], and to include sawmills and other wood processing in future initiative.

For Mozambique, local representatives from the World Bank as well as a representative from the national forest department[355] confirmed the need to improve the competitiveness of the national timber industry, as well as to improve the state of the native forests. As in Chile, the importance of including existing companies in a development approach was stressed. The motive for this was the need to build national and local knowledge on how to develop the industry.[356] We interpret the inclusion of existing SME sawmills in various support schemes as an opportunity, provided that they live up to criteria for inclusion.

FINDINGS: Availability and conditions for timber processing entrepreneurs and timber producers to access credits and equity capital for necessary investments

In the meetings with potential investors and credit institutions we wanted to learn more about how SME sawmills and associated timber producing organizations are perceived from an investment perspective. More specifically we wanted to learn what criteria such entities must meet, in order to access financial capital from different types of investors. The investor categories that we researched fall into three categories; impact investors, investors providing investments as a grant and providers of micro credits and equity.

Investor category 1: Impact investors

The term “impact investor” is used as a label for a wide array of investors with the common denominator that they are willing to take higher risk with their investments, in order to also generate positive external effects such as climate change mitigation, reduced deforestation, poverty alleviation etc. Typical investors included in the category would be family companies and foundations, but also to some extent pension funds and similar financial institutions.[357]

[352] Meetings with Geofrey Mwanjela (Tanzania)
[353] Meetings with Jose Unduraga and Aldo Cerda, CORFO (Chile)
[354] Meetings with Evelyn Rakos and other representatives from Pro Chile
[355] Meetings with Andre Aquino and Darlindo Pechisso. (Mozambique)
[356] Fair Wood Showcase, Session with Mozambique participants
[357] This text is based on the presentation made by Michiel Bakker at the fair Wood Showcase event. Michiel Bakker is a professional impact investor who is also a WWF UK supporter.

Finding F6: It is difficult for SME sawmills and timber producers to meet the investment criteria of impact investors.

At the showcase event in September, Michiel Bakker made a presentation[358] that included a summary of investment criteria that are being applied by impact in general:

1. There must be a clear investment case to attract investors, including a solid business model.
2. A Governance structure must be in place in the company/organization seeking capital
3. The organization seeking investments must provide financial projections, that make it possible to forecast returns.
4. There is also a need to show an impact assessment, verifying the positive, non-financial effects that the investment is expected to generate.

The comments from the panel[359] at the showcase indicated that the general investment case associated to SME sawmills and timber producing organizations is weak on all four of these criteria.

Our meeting with the asset managers of a layered impact fund focusing on forestry in developing countries[360], the Arbaro fund, concluded that the investment case associated to SME sawmills and timber producing organizations didn´t fulfil the investment criteria of the fund. First of all, Arbaro's investment rate of return requirement is in the range of 12-18 percent, which is not realistic to expect from investments/or credit notes relating to SME sawmills or timber producers. Secondly, Arbaro saw great difficulties in building a "pipeline" of potential investments that could be aggregated to a portfolio of suitable volume.[361]

Finding F7: Focus from impact investors is either on plantation forest or non-timber eco-system services

Meetings with investors gave clear indication that native forestry *per se* is not on the radar of any impact investor. The layered impact funds and impact investors are currently looking at traditional plantations and/or aggregated small-scale plantations. They do not seem to be interested in smallholders focusing on management of native forests.[362]

At a meeting with one of the leading European impact investors, Hedblom Capital, we got a frank comment on our prospects to access finance;

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[358] Ibid

[359] Beside Michiel Bakker, the panel also included Fraser Brown, Net-Positive Solutions and Leila Swärd Ramberg from Impact invest Scandinavia

[360] A layered impact fund mix capital from private investors and aid agencies in a way that decrease the risk for private investors, which enable the fund to increase the risk level of the portfolio investments. For more information, see for example *"Impact investing at Finance in Motion"* 2014, page 5-9. Available at https://www.finance-in-motion.com/fileadmin/user_upload/06_publications/Impact_Investing_at_Finance_in_Motion_small_.pdf, 2017-05-30.

[361] Meetings with Marco Kaiser, Finance in Motion

[362] Ibid.

"There is no impact investor in Europe that would invest in native forestry. They all go for plantations, that´s the only type of investments for us now in the forestry sector."- Mariano Udank, Hedblom Capital.

As part of the research, we screened three[363] impact investment funds, that we believed had an investment focus that could include native forestry. However, no such investments could be found. The main focus of the funds was various forms of agroforestry, complemented with efforts to promote nature conservation and empowerment of local communities.

Added to this, it is also interesting to note that some investors that we approached don´t invest in forestry at all, like Swedfund.[364]

Investor category 2: New institutions providing investments in the form of grants or soft loans.

Since 2014 several new initiatives have been developed focusing on increased public investments in forestry and agriculture. These display a different approach to investments which possibly are more relevant to a Fair Wood approach, since the goal is more to support the development of a new industry.

Finding F8: Sawmills and timber producers may have a chance to access capital from a new generation of investment initiatives.

Contrasting the impact investors, we believe there might exist an opportunity for SME sawmills and timber producer organizations to seek investments from these initiatives.

One example of new investment approach that may represent such an opportunity is the initiative/fund Partnerships for Forests (P4F). It is funded by UKAID/DFID, who has contracted the UK-based consultancy Palladium, and McKinsey & Company for implementation. P4F seeks to develop investment models; *"…in which the private and public sector and communities can achieve improved returns from sustainable forestry and sustainable land use…"*

Programmatically, P4F comes out of both UK's high-level commitment to, and support for, the New York Declaration on Forests; and the commitment to reduce Greenhouse Gas (GHG) emissions from the land-use sector under REDD+. Palladium has developed a framework for evaluating enterprises based on enterprise readiness to deliver timber, NTFPs, or environmental services to market. [365]The funding model of P4F is to provide investments as a grant, but applicants need to leverage the investments. They are encouraged to secure a minimum of 25% in matched funding on top of the requested grant amount.[366]

Another example in line with this track is the previously mentioned possibility offered by the Inter-American Development Bank, where indigenous communities can access soft loans to develop local business, including native forestry.

[363] These funds were the Althelia Climate Fund/Althelia Madagascar Fund (www.althelia.com), the Eco Business Fund (www.ecobusiness.fund) and the Moringa Investment Fund (www.moringapartnership.com).
[364] Meeting with Niclas During
[365] Meeting with Bruce Karbarle
[366] https://partnershipsforforests.com/what-we-do/frequently-asked-questions/

Investor category 3: Small-scale providers of credits and equity

A third group of providers of financial capital are various institutions targeting small and medium size enterprises, providing them primarily with micro-credits, but also equity. During the project, we met with two such entities. The first one was responsAbility from Switzerland, and the second was Oikocredit, headquartered in the Netherlands.

Finding F9: The small-scale credit institutions that we met showed an interest to finance relevant sums in sawmills.

Oikocredit started 42 years ago as a cooperative, and is now present in 33 countries. The organization is for profit, but with a clear triple bottom line objective. Today the returns are 2%, which is a rate decided by the members. There is internal cross-subsidizing between ventures that are up and running and those that are starting up. Loans are in local currency if the revenues in the business are in the local currency. 85% of the financing is loans and 15% is equity investments, in all totaling 200 MEUR. When providing equity, Oikocredit demand a seat on the board. The sectors that Oikocredit finance today are Agriculture, Health and Renewable energy.[367]

In a meeting in February 2017, we met with representatives from Oikocredit. After conducting a presentation of the ideas with Fair Wood, all three showed an interest for the concept and said that this is a typical type of business that they would want to support. They were particularly interested in the fact that locally controlled natural forest was supported. They were interested in providing loans to SME sawmills in the range of 1-1,5 MEUR, but no equity. For equity, the operation must be bigger to motivate the time and effort of engagement. For Oikocredit to provide loans to timber processing entrepreneurs they would have to start up a new sector focus, aside of their current three focus areas, which could be a possibility. [368]

In September 2016 we also had a meeting Per Hagensen from the organization responsAbility, who in many ways resembles OikoCredit. This meeting was much shorter than the one with Oikocredit, but the reaction was also very positive.

Finding F10: Private direct equity investments are rare, but could be a future opportunity

An interesting category of capital providers are the so called “business angels”, who in many industries are essential for the development of startups. In the tropical wood industry, these investors seem to be rare. During the project, we have met with some business angels, for example Max Jonsson, who has invested in the sawmill company LevasFlor in Mozambique. This type of individual investors are few today, but could be an important investor category in the future.

[367] For more information, see www.oikocredit.coop.

[368] Meeting with Irene van Oostwaard, CFO/COO OikoCredit, Lotte Thelen, Credit operations officer, Credit dept, OikoCredit and Per Söderberg from the Swedish church.

FINDINGS: Feedback from organizations supporting smallholder timber value chain projects

Moving from the funding to the implementation environment, the research project notes three organizations that occupy essentially the same space as that pursued by the Fair Wood partners: Rainforest Alliance; Verde Skove/Forests of the World; and Green Wood / Fundacion Madera Verde. All three of these organizations are working with smallholders to develop and market tropical hardwoods for sale in high-value markets.

Finding O1: Project monitoring is essential to claim environmental/social progress

Both GreenWood and Rainforest Alliance strongly emphasized the importance of doing baseline surveys of community well-being (and forest cover), if wanting to make the claim to be supporting livelihoods (and reforestation);

"There simply is no substitute for gathering this data at the outset."[369]

Finding O2: It´s important to work with projects that have access to production-ready forest resources

Verdens Skove / Bosques del Mundo (Forests of the World), whose teams have worked in Honduras for over 15 years and who this year are starting up projects in Bolivia, underlined the importance of the state of forests in accepted projects. In their experience, to attract companies and develop a solid market connection, the forests and products need to be at a production-ready stage. That said, it is good to have forests at different stages of maturity. Creating market demand is the biggest universal challenge, but there are also place-based challenges. They suggested that organizing south-south exchanges or capacity building workshops is one way to build the knowledge network. South-to-South learning is also being carried out by WWF, e.g. between Tanzania and Nepal.

Finding O3: Fair Woods main advantage is linked to market-making

All three organizations saw the highest added value of a Fair Wood program being market-making, and linking knowledge of Nordic furniture, flooring, and 'advanced residential and industrial design' sectors. Furthermore, they stated that there is much more to do in developing the post-harvest portion of the supply chain, and to achieve adequate sawing and drying.

[369] Skype interview with Ben Hodgdon, Rainforest Alliance

FINDINGS: Feedback from a Broader Set of Actors

In addition to the interviews and field visits conducted, two consultations were also convened and a major Showcase organised to obtain feedback from a broader set of development-, private-sector-, rights-based- and conservation-oriented actors. Here the most significant comments received from these actors are presented.,

Market development

Finding B1: Questions remain about the ability to kick-start a specialty wood market, and to supply that market with adequate high-value products.

There is a clear difference in 'market maturity' between North American and European respondents. Participants at the Stockholm Fair Wood Showcase took it as a given that demand for fairly-produced, certified-sustainable wood products could thrive in the eco-conscious markets of Northern Europe. Skepticism about the market viability of smallholder wood was much more pronounced amongst American respondents. More research should be undertaken to determine why; theories to test would include FSC's lower profile in North America, a lower commitment to 'sustainable sourcing' amongst American companies, and the dominance of standard-dimension wood-product commodities in North American wood markets. Several respondents suggested that the most important piece of evidence they would look for before investing in Fair Wood would be "legally enforceable volume purchase agreements between producers and 'first-mover' buyers".[370],[371],[372]

Finding B2: The relationship between the Fair Wood concept and Forest Stewardship Council is not immediately clear.

Some of the interviewees were confused by what they saw as perceived ambivalence toward FSC in this research project. Some asked if a Fair Wood concept would in fact be 'free riding' on the certification standards created by FSC without incurring the costs of certification: why, they asked, would a Fair Wood concept go to the trouble of observing the FSC's comprehensive standards, but then not want to take advantage of the FSC 'brand'? From this we learned that potential partners and buyers generally saw value in the FSC brand for quality assurance purposes, while at the same time they acknowledged that FSC's marketing and outreach work leaves much to be desired. Furthermore, these representatives did not fully comprehend the value of using a certification standard as a tool to improve management and performance level, whilst not necessarily having to go through the burden and cost of third-party certification. This is only viable if the market is willing to pay the extra cost or is a necessity as a license to operate on certain markets.[373],[374]

[370] Stakeholder consultation California
[371] Stakeholder Consultation Washington D.C.
[372] Showcase Conference Stockholm
[373] Stakeholder consultation California
[374] Stakeholder Consultation Washington D.C.

Findings on Gender in Forestry

G1: While women have been historically invisible in timber value chains[375], gender equality is emerging as both a cross-cutting and fundamental component of sustainable development and effective responses to climate change.

Women have been effectively invisible in timber value chains due to a combination of factors including socio-cultural norms (which typically position women in low value or unpaid, informal work). Funders (e.g. Sida, Green Climate Fund) are increasingly focused on gender equality as a cross cutting issue which is fundamental to sustainable development and to climate change. In fact, the Green Climate Fund requires gender equality policies as part of the screening criteria for eligibility.

G2: It's complicated, and highly context dependent. There are potential partner organizations that have gender expertise on the ground for mutually beneficial engagements.

Gender is a social construct which is highly contextual (varies according to any combination of key normative, socio-political and structural factors[376], fluid (not fixed)- and intersectional (cross cutting). It requires a networked approach (e.g. partners); a combination of interventions targeting multiple scales, and a long time horizon to realize changes. Identifying and working with the right partners is critical to not only build on what has already been achieved, but to use FW USP wrt, for example, female entrepreneurs, to further advance the whole system by focusing upstream. *Organizations such as CARE in Tanzania have invested in gender equality at the strategic and operational level.*[377]

G3: Establishing gender awareness can be critical to success- and achieving success takes time.

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[375] See this CGIAR meta-analysis: https://www.bioversityinternational.org/fileadmin/user_upload/research/research_portfolio/Forest_and_tree_diversity/Brief_Gender_FTA_value_chains.pdf*; see also* http://www.bridge.ids.ac.uk/updates/bridge-gender-update-sustainable-development-goals-gender-and-indicators*; or* https://www.weforum.org/agenda/2015/09/8-reasons-why-gender-equality-will-make-or-break-the-sdgs/*; or* http://outreach.stakeholderforum.org/index.php/previous-editions/cop-21-paris/edition-2-climate-and-gender/11899-the-green-climate-fund-and-gender-how-to-get-from-innovative-mandate-to-meaningful-implementation*).*

[376] See https://www.bioversityinternational.org/fileadmin/user_upload/research/research_portfolio/Forest_and_tree_diversity/Brief_Gender_FTA_value_chains.pdf*; see also* Gender, Forest, tree and agroforestsry Value chains, evidence from Literature CGIAR October 2014, Harhab, Ingram, Eias , Basnett
Mainstreaming Gender in REDD+ - kar
Forests, Gender and Value Chains, CIFOR Infor Brief February 2012, Shackleton, Parmgarten, Kisana, Husselman, Zidap, Purnomo, Irawati, Farzan and Melati

[377] *see, for example:* http://careclimatechange.org/wp-content/uploads/2015/05/Tanzania_REDD_GenderBrief.pdf accessed 15 January 2017; http://www.care-tanzania.org/learning/wezesha-strategy: http://www.care-tanzania.org/images/Documents/Abridged-GEWE-Sub-Strategy.pdf).

What we know from years of gender mainstreaming is that it is not a one-off exercise. In Mexico and Tanzania, there have been concerted national efforts to achieve gender equality and women's economic empowerment anchored in international law and national laws and regulations.[378]

Establishing gender awareness must be an iterative, ongoing and multilevel strategy that applies to Fair Wood partners and recipients, and the FW team itself. This has direct system design (e.g. situation assessments, data collection, monitoring and evaluation); labor equality; and operational implications (e.g. guidance or templates for designing meetings and recording sex disaggregated information on who was present, participating and engaging directly in decision making); ensuring female translators are present to facilitate women only conversations, etc.

G4: Countering discrimination can be addressed at the policy level.

Researchers posit anti-discrimination regulations and equal labor rights support for collective action are not predicated on gender equal foundations in value chains: rather they can facilitate the establishment of such. Collective action initiatives require substantial initial support, and are most effective with support from the local ecosystem of actors and institutions. Partner organizations may have gender focal points that could be accessed for advice, or best case scenario, collaboration or coordination. Silvicultural, milling or business skills training, or other capacity building/ trainings could be tailored for women audiences.

The risk is that while short term changes can bring positive benefits to women, sometimes they can precipitate negative consequences, such as increases in gender based violence or other forms of discrimination. To mitigate for these risks, it is critical to engage those who will be impacted in gender mapping- particularly around perceptions around specific types of changes; as well as designing indicators that can open a path to progress that is less likely to result in negative consequences.

G5: Forestry is male dominated in some places.

In Ejidos in Mexico the shareholding is allocated to the head of household who is male in 80% of the cases this means that the members association meetings are strongly male dominated[379]. However in the communal landholding of Pueblos Mancomunados the decision making system includes all residents born on the land[380].

Men dominate in 'dangerous' work in sawmills[381] and the forest[382] however women are more likely to be employed in furniture manufacturing, particularly in finishing[383].

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[378] The Mexican national governments five-year plan- from 2013 to 2018 has for the first time incorporated gender as a cross cutting element. Also see http://careclimatechange.org/wp-content/uploads/2015/05/Tanzania_REDD_GenderBrief.pdf accessed 15 January 2017 for an international and national synopsis of gender relevant policy instruments for Tanzania

[379] Report on visit to Ejido Noh Bec. (Mexico)

[380] Report on visit to Pueblos Mancomunados. (Mexico)

[381] Observations at Pueblos Mancomunados sawmill and manufacturing plant, observations at sawmills in Zambia and Zimbabwe.

[382] Visit to Ejido Noh Bec (Mexico)

[383] Visit to Pueblos Mancomunados factory. (Mexico).

Forest work is dangerous largely due to poor technical design[384], poor risk management[385] and poor housekeeping[386],[387] and management of the working environment. This is detrimental to women's opportunities.

G6: Opportunities exist for women in Forestry and timber processing businesses.

A recent RRI report[388] finds that of the 28 countries with adequate constitutional clauses for equal protection, "twenty recognize customary law as a legitimate source of state law, or acknowledge customary rights, customary practices or traditional customs…" This is a critical finding, in that challenges to customary law or practice could potentially be brought in state level courts. RRI authors also found that community based tenure regimes motivated by a rights-based focus afforded the greatest gender equality protections; those motivated by conservation afforded the least. Those motivated by use/extraction afforded less protections than those organized primarily around rights, but more than those focused primarily around conservation.

In Tanzania half the members of the village resource committee in Nainokwe were women.[389] The furniture manufacturer in Dar es Salaam was a female owned business[390].

Women are well represented in many government forest agencies and NGOs in developing countries[391],[392],[393],[394].

G7: Funding Agencies require commitments to gender equity.

The Green Climate Fund requires gender equality policies as part of the screening criteria for eligibility[395].

[384] Observation at Pueblos Mancomunados sawmill. (Mexico)
[385] Observation at Ejido Noh Bec sawmill. (Mexico)
[386] Observation at Temic furniture factory (Tanzania)
[387] Observation at roadside furniture manufacturer
[388] Rights and resources institute: A Comparative Analysis of National Laws and Regulations Concerning Women's Rights to Community Forests - See more at: http://rightsandresources.org/en/publication/power-and-potential/#sthash.XgTP7Dgz.dpuf
[389] Report on visit to Nainokwe (Tanzania)
[390] Report on visit to Temic (Tanzania)
[391] Observations at Forest and Beekeeping Division in Tanzania
[392] Visit to National Forest Research Centre (Mozambique)
[393] Visit to Mjumita (Tanzania)
[394] Visit to Reforestamos Mexico.
[395] https://www.greenclimate.fund/documents/20182/319135/1.8_-_Gender_Policy_and_Action_Plan.pdf/f47842bd-b044-4500-b7ef-099bcf9a6bbe

Discussion of findings and their implications for a revised program

In this section, the aim is to discuss the changes and additions to the program design implied by the key findings from the research. The discussion starts by addressing the implications for the different core components of the program. Following this the discussion focuses on implications for scale and scope, organization and financing of the program.

The first focus of the discussion will be on the four "facilitation components" of the program. These components include the facilitation activities necessary for implementation of the value chain pilot projects:

- **Participatory assessment and co-planning**
- **Support to smallholders**
- **Support to wood processors**
- **Support to customers (manufacturers and final customers)**

Thereafter the discussion will focus on the "central support components" of the program. As a support to the value chain pilot projects and for supporting the creation of a self-sustaining market for smallholder-based native wood the central support components are part of the program:

- **R&D of forest management regimes for different types of tropical forest**
- **R&D of wood and energy production systems for indigenous tropical wood**
- **Monitoring and evaluation of the pilot projects (environmental, social and economic sustainability)**
- **Financing facility for timber processing entrepreneurs**

Following this a cross-cutting theme of the program design is discussed, namely that of

- **designing for women's equal involvement and empowerment in this traditionally male-dominated sector.**

Finally, the discussion will center on two central aspects of the program:

- **Organization of the program**
- **Scope and scale of the program**

Based on the discussion of these components and aspects of the program, the program has been revised and the result is presented in the following section. The discussion here will present the learnings and reasoning behind the design changes.

Assessment and facilitation components

Here we discuss what the findings imply for the components of the value chain pilot projects. This includes the "participatory assessment and co-planning" component and the three support components– for the main actors of the value chain of a project: Smallholders, Wood processors and Customers (manufacturers and final customers). The comments and implications are structured according to these four components. These components are

bundles of activities that are project-specific. Export customers, however, can be part of joint activities and "partners" of the total program, but will still have defined roles in terms of product development and sourcing in one or more specific value chains.

Participatory assessment and co-planning

The intended outcome of this component is a positive informed decision to enter a pilot project with alignment of local project participants (smallholders and entrepreneur team) and local supporting organizations around the pre-requisites for and success factors of a new smallholder-based native wood value chain.

This component starts with the joint planning of the component with the regional supporting organization/counterpart and then first assessments are made of the following factors:

- Suitable forest sites and smallholder groups
- Suitable timber processing entrepreneurs
- Potential regional and export markets for wood and energy
- Suitable local implementation partners

After this, co-planning is done with the local project owner and stakeholders of the value chain pilot project, based on the assessment results.

The research has deepened the understanding of what to consider in the execution of this component. The major learning relates to governance, the nature of the processing entrepreneurs and selection criteria for customers in the pilot projects.

Organising for business

A general observation is that even when communities are organized in terms of forest tenure rights and community governance, this is still far from being organized in a way suitable for operating a business. The business of forest management and timber supply has its intrinsic logic for efficiency and profitability, which must be respected. Several organizations are presently working on developing models for community-owned business. The risk of excluding potential clients on the basis of their lack of preparedness for business is easily made, but this we believe would be a mistake. The program should be prepared for a wide variety of situations and actively influence preparedness through partnerships with local organizations. In the assessment, the program must however take time to ensure that partner organizations understand and share the objectives of the program.

One assumption of the program is to start where tenure rights are secured for the local smallholder or community. The research finds that this is not so simple. The assessment will need to verify the security of tenure at the level of both the individual, the individual within the community and the community level. (In some cases of customary land tenure individual rights are not sufficiently recognized. This is particularly the case where forest is held as communal open access land.)

Selection of processing entrepreneurs

In the initial program the idea was to find "a new generation of sawmill entrepreneurs". This was based on the assumption that existing native timber processing entrepreneurs are too ingrained in the traditional industry to have the capacity to change. We assumed that

achieving the necessary standards of production and communication to satisfy quality and sustainability-demanding customers would be easier for new “social” entrepreneur teams. However, two types of existing entrepreneurs changed our view on this. One type is represented by two native wood processors who also are long time concession holders in Mozambique. They expressed interest and understanding of the program and of sourcing from communities with forest rights (if this could provide them with a secure supply of timber). The other type is represented by two softtimber processing entrepreneurs in Chile who expressed interest in developing new lines for making native wood products, with the belief that this could be a good business opportunity. They also showed understanding of the sustainability dimension of such an operation.

This underscores the importance of a wide search coupled with careful selection, based on the entrepreneur’s motivation for and realistic reasoning about starting up a high quality and high sustainability business.

There are clear advantages to the use of already established entrepreneurs for the project start-ups since they have already demonstrated business management abilities and may have at least some of the necessary infrastructure as well as knowledge of local markets. What is required is that such entrepreneurs commit to changing their operations to conform to the requirements of the Fair wood value chain model.

Selection of downstream partners.
During the assessment and co-planning phase a first assessment of potential regional and export markets for wood will be made. The goal here is also to find companies interested in participating in a pilot project. In the research of how to design an efficient facilitation process, the conclusion was reached that the companies should exceed a threshold in potential running purchase volume. The reason for this is threefold:

- If the proof of concept phase is positive then the TPE (Timber processing enterprise) will have interest from a customer that on its own creates a business case that motivates investment in necessary upgrading of the operation.
- The sawmill producer needs a certain minimum turnover in order to cover investment and fixed costs.
- In the research, it was found that almost as much work is needed for facilitation of small scale buyers as big ones. The stated support needs from small and big companies are practically the same.

The implication is that for targeting outreach to companies, the minimum volume requirements in the value chain should be about one container per month. This however doesn’t mean that the program should not interact with smaller companies, but should find a less resource intensive way to involve them.

Support to smallholders

The basic content of this component is the support to local forest rights-holders in forest management planning, operational training and support in business organization and skills. The research confirmed the general lack of this capacity, but also gave input to some new considerations for program design.

Support structures fail to include long-term value optimization. In most investigated countries systems for government support in forest management are absent or ineffective. Therefore, the only support provided is often through NGOs. NGO-supported forest management plans are based on important issues such as minimising negative environmental and social impacts of forest operations. However, the equally important issue of optimising the long-term value of the forest and its products through silviculture is usually not included.

The visited forests were in various states of degradation due to the commonly known causes, such as burning for small-scale agriculture, hunting or coal production, and illegal or irresponsible logging. Due to these degraded baselines, there is a high potential for silviculture to simultaneously increase social, environmental and economic benefits.

This situation of course has varying historical and economic reasons that won't be discussed here. What the research implies in terms of development of the program is that this situation needs to be addressed more broadly than just to the value chain actors in a pilot project. There is a need to develop and provide general silvicultural support through extension services to provide rational management schemes for forests of most types that support multiple benefits. In some cases these management schemes exist whilst in others they still need to be developed.

Cooperation with national agencies and institutions
In the initial program the position in relation to local governments was not dealt with. It can be concluded from the findings that there is a general interest and enthusiasm for this concept from local institutions and agencies. This is based on perceived opportunities for fulfilling various agendas of developing an economic sector, restoring forests and poverty alleviation of forest communities. In some cases, government agencies expressed the interest of building national capacity as part of the pilot project

An implication of this learning is to be open to including an additional goal of the pilot projects to support the development of a national or regional support entity; where there is already government, multilateral or NGO interest in this. This entity would have the mission of spreading sustainable industrialization and economic development based on innovation and entrepreneurship in the native forest sector. During implementation of the pilot project this entity could participate, receive and further develop the knowledge produced in the program, with the aim of spreading this to other smallholder groups and timber processing entrepreneurs further on. This entity can be part of – or funded by - the government, or an organization with a matching mission.

Spreading the concept of management of natural forest
An implication for the program design is to take actions to actively and broadly anchor the concept of 'active'[396] management of natural forest, and its potential benefits, with forest departments, government agencies, institutes and local stakeholder organizations.

[396] This is different from the passive management often found in which it is simply assumed that the forest will look after itself and where often the only objective for the forest is to 'not interfere'.

Even within trained professionals there seems to be a widespread paradigm disconnect between the management of natural forests and the management of plantations. No forester would attempt to manage a plantation without considering the silvicultural interventions necessary to optimise the production of the desired mix of valuable timber assortments from the stand. Yet at the same time these foresters will take on the management of natural forests without the idea that similar silvicultural interventions could be used to improve the social, environmental and economic performance of natural forests. For this reason, this anchoring should also be directed toward foresters and forest professionals.

Forest management based on supplying several lesser known species
In the visited sites, species known in the traditional commodity markets and popular in the local markets had often been depleted to the extent that they were hard to find and prices had increased. Timber supply based on these species can in many cases not be an economically or environmentally sustainable operation. Therefor forest management planning and marketing of the timber to wood processors needs to be based on several 'new to market' species that are probably less known or even unkown. This must be considered in the design of project support to the smallholders.

Support to wood processors

The support component targeted to the timber processing entrepreneurs participating in the pilot projects originally included the following facilitation activities:

- support for high value timber processing
- Training and Support for the sawmill entrepreneur teams in entrepreneurship, business planning, startup and management.
- Support for Local business and market development
- Support for Export market development
- Support for securing financing of necessary investments

The research aimed at investigating whether a positive business case is possible for the timber processing entrepreneurs. According to the program hypothesis such a business case would be based on targeting quality-demanding customers in regional cities or in export markets. This strategy serves to break away from pure dependence on local markets that are often stuck in a low cost-low quality state, and plagued by illegal competition. For achieving a successful business, the research has uncovered some implications for the content of these support activities in the following aspects that will be discussed below:

- Legality
- market positioning in terms of sustainability and quality,
- the capacity of developing direct relations with customers and
- marketing a variety of species volumes and dimensions.

Support for legality
In addition to legality being a cornerstone in building stable and reliable societies in developing countries, the issue is of enormous importance for export markets in Western countries and increasingly so in countries that supply these markets with manufactured wooden products. However, the reality of the situation on the ground is that legal forestry is often not sustainable forestry and that regulations often act to make forest management at

best uneconomical and at worst destructive. The complexities of legal compliance are at a level almost unimaginable for a European forester. If legality is to be a requirement, then producers require significant support in achieving and verifying compliance with overly complex and widely dispersed laws and regulations. The implications of this finding are twofold:

- Need to support legal compliance of the smallholders and timber processing entrepreneurs. This probably requires the development of national legal support toolboxes and training for all supporting organizations.
- Influencing national legal and regulatory development. We were frequently met by the message that forest sector regulations where under redesign and that a Fair Wood program could act as a lever in influencing these. [397]This influence requires understanding of who is funding whom to work on policy and compliance improvements- or more generally improving governance through accountability and transparency measures.

Sustainability positioning

When looking at the potential market opportunity for natural wood from smallholders one must acknowledge the weak current position;

First; softwood is favored for its' combination of strength, light weight and relatively low cost (due to fast growth in intensively managed stands) in volume uses such as construction material. The various hardwoods in these countries have so far not been developed as high volume construction wood, but there is potential for research of this for different niches of products where different species could prove suitable.

Second; For the common hardwood uses such as flooring, decking, furniture and exterior wood, competing alternatives are expanding their market share. Some examples of these new alternatives are wood-imitation laminates, modified softwoods and bamboo.

Third; Because of forest degradation the trees available to the smallholders often don't have the intrinsic competitive advantages of the outstanding physical properties that historically made tropical hardwoods popular (moisture resistance, dimensional stability, exotic colors etc). In terms of these properties the species available now are often on par with common temperate hardwoods such as beech, oak, ash, birch etc.

Fourth; The existing commodity market for tropical wood doesn't provide an opportunity for smallholders because of the focus on large dimensions, popular species and knot-free perfect properties of the wood. These types of logs are rare in their forests.

Fifth; Many customers have a negative perception of smallholder timber based on bad experiences in the past of the quality and reliability of supply from wood processors connected to smallholders forests.

Finally, there is little evidence that new initiatives on enforcing legal sourcing of wood in itself will become a positive demand driver that will benefit small producers of hardwood.

[397] One function of a pilot project is showing that an economic sector is possible if the regulations are conducive to forest business.

Obviously, these initiatives are necessary, but the market effect so far is rather that downstream actors allocate sourcing to "safe havens" rather than betting on new, untested sources. An example of this is the increased use of bamboo and hardwoods from the North such as oak. The general focus of sustainability-committed companies to ensure 100 percent responsibly sourced wood is in line with these observations.

Even if the quality dimension was upgraded (see paragraph below), this still wouldn't necessarily create a strong position in export markets. For export customers, quality and delivery are seen as 'hygiene' factors – that make the product at all purchasable.

Having acknowledged and addressed all this; What then could be a strong feature that would act as a competitive advantage? During the research, some different approaches were tested in dialogues with the customers. The approach that proved most promising, was the unique combination of features that a product has: The fact that the wood comes from restoration and improved management in natural forests. If it can be guaranteed that responsible forest management has now been implemented this means that the use of this wood supports the improvement/restoration of the natural forest. In this way, the weakness is used as a strength.

Three findings that support the feasibility that such a differential can provide a competitive edge:

- **Deep green:** We now see final users of wood – real estate and retail companies in particular - expressing a genuine interest in developing "deep green" innovations linked to furniture, interiors and construction products. This was not the case only a couple of years ago. Viewed in a broader context, this reflect how the companies pick up elements from the long-term stable consumer trend, so-called "Lifestyle of Health and Sustainability (LOHAS)"[398]

- **Responsiveness:** Final users are in fact ready to meet the suppliers half-way on some critical aspects. Many clearly understood the need to adjust purchasing specifications enabling the use of smaller dimensions. Furthermore, there is a willingness to create market circumstances that make it possible to deliver smaller volumes in a start-up phase. In all, we see these expressions as positive signs of genuine support.

- **Beyond certification:** Several interviewees expressed enthusiasm for going beyond legal or certified. Some expressed excitement for the possibility of going beyond not having a negative impact, to being able to say that they are part of a positive momentum, a net-positive impact. An example is the real estate developer in the case study that featured this type of statement in their annual report as a result of their involvement in the project.[399] They installed wood from smallholders in

[398] The current estimate is that LOHAS consists of about 100 million people worldwide and that approximately 20% of the population in Europe may be labelled LOHAS consumers. See https://www.lohas.se/about-lohas/

[399] "The big "eco-positive" difference we can make is if we use wood from producers in the global South! Axxonen Properties verkar för detta genom att nu introducera trä från certiferade skogsbruk med starka sociala åtaganden i våra projekt.", Annual report 2015, Axxonen properties AB

Curacautin and Mozambique and communicated this as “Eco-positive real estate development”.

Obviously, making such claims will require a credible concept for verification and communication, as well as support from well-known and respected institutions that can help verify the claim. This in turn will probably require the engagement of high-profile NGOs and science institutions with a recognized commitment for forest issues.

Based on this idea the authors have as part of this project generated the idea of a “forest-positive” concept. This concept outlines how the verification of positive effects can become efficient, cost-effective and create sufficient credibility for companies to claim positive long-term effects today. This concept is just an embryo at this stage and in need of vetting and further co-development with experts in the relevant areas (forest management, certification, sustainability marketing etc). See appendix X for an outline of the “forest-positive concept”.

This activity could hopefully serve the purpose of a future system for much simpler ecological effect calculations (than the Redd+ examples the authors have seen), and this would in turn serve to spread the understanding of the opportunities for economic and environmental benefits from active forest management, as well as the corporate interest in supporting forest restoration/improvement through sourcing from these forests.

Quality supplier positioning locally

For export markets, ‘quality of supply’ is a basic hygiene factor required for tropical timbers to compete with temperate hardwoods and with the increasing supply of modified softwoods. This was a basic assumption of the program and was confirmed in the research. However, one of the central questions in the research was; are there market opportunities for quality native hardwood locally or in the region. Local markets exist everywhere and the demand for solid wood products at local, regional and national level is generally high. However, these markets are currently satisfied by low cost low quality products since there are no alternatives.

One hypothesis of the program is that there is a latent demand for high quality, that today is met through sourcing from big plantations in the region or abroad. This was confirmed in the research. The major cities are developing and the upscale construction projects (hotels, malls, offices, residential housing) demand hardwood for the different uses – flooring, doors, interior décor, furniture etc. These projects demand precision cutting, dimensional stability and often quick delivery. This practically rules out the current local natural wood sawmills as suppliers, as they don’t have this capacity. As examples, in Mozambique, we found that hardwood for high-end construction projects was sourced from plantations in South Africa and in Chile hardwood for furniture came from Europe, while in Mexico hotels in Cancun on the edge of the forest are supplied with local hardwoods sourced from Mexico city 1000km away.

Based on this, we believe that a local high quality wood producer can develop a local customer base over time. It will take time to overcome the widespread skepticism toward local natural hardwood. A producer will have to build trust successively through successful

deliveries. Quality in this sense includes all aspects of product (precision, well-dried, basic further processing to components) and delivery (volume capacity, flexible, on-time, palletized), and this would provide a competitive advantage by itself in the local market. Research is still needed to prove this to be true – in terms of potential volumes, prices, contract sizes and lengths etc.

Direct relations to customers
In the original program, it was assumed that Fair Wood would develop a unit that would act as an intermediary between the timber processing entrepreneurs and export customers. This was based on the assumption that the TPE's would be small startups and that big export customers did not want to deal with small suppliers directly. In this way, a dependency on a new actor ("The Fair wood fund") was built in to the program. Some findings are believed now to give the possibility of revising this.
First as stated above the TPE's don't necessarily have to be startups. There are sometimes established businesses that can find the Fair Wood value chain model to be an attractive new business line. Also, they don't have to be small. All forest sites researched in this project have big enough resources to potentially support an operation producing 10.000 m3/year of kiln dried wood. These findings mean that a wood processing operation in the program can and should aim at reaching a level that can support an in-house capacity to market and communicate to export customers directly.

Also, we learned that several customer companies are willing to accommodate new suppliers within reasonable limits. This entails such things as sourcing smaller batches, varying dimensions, longer delivery times and new species.

Companies however express frustration with dealing with the hassle of sourcing in terms of verifying legality and sustainability. The program has planned to provide support in this. But in the long run this support is something the TPE must be able to provide. It will be a key capacity (that provides a competitive advantage) to be developed during the pilot project.

Marketing a variety of species, dimensions and volumes
Given the degraded and depleted state of many forests, the TPE must be prepared to market a variety of unknown species, smaller and varying dimensions and small batches until restoration efforts have improved the state of such forests. As discussed above we believe sustainability-committed companies are prepared to think new in terms of species, dimensions and volumes. But this places high demands on the TPE in terms of communication. To make this a reality the TPE must provide excellent information on these "new" species and be able to explain the advantages of, and provide support for, this new way of sourcing as well.

In addition, traditional pricing models must be questioned. Tropical hardwood from natural forests has traditionally been a luxury product commanding premium prices. We believe the sustainability advantage commands a premium but not sufficient to put this wood in a different class from common northern hardwoods or the new competition from modified softwoods. As examples, the most common species in the sites we visited in southern Chile (roble, *Nothofagus*) and the Miombo woodlands of Tanzania and Mozambique (msasa/miombo, *Brachystegia*) are not "known" and very little exported. If priced *on par*

with oak or beech, large volume export could potentially be possible, e.g. for flooring, cupboards, shelving etc. Such volumes would secure a predictable and profitable base for operations at upstream mill level.

Support to customers (manufacturers and final customers)

In the initial program support to customers in the pilot projects was stated to consist of the following activities:

- Support for supplier matchmaking and sourcing issues
- Support for product development
- Support for sustainability communication

This was based on contacts with several customers during market research prior to writing the proposal. In this research project the aim was to verify and further develop what support is needed from customers. Some things to keep in mind in the following discussion of the support to customers:

- We are focusing on two different type customers down stream the value chain, with different needs: Manufacturing customers (Manufacturers) and Final customers, i.e. the customers of the manufacturers.
- Also, the conclusions here are based on the customers that showed interest in sourcing from smallholders. Thus, traditional tropical hardwood traders are not targeted here, as the research showed that they are not interested in the small dimensions and volumes available from these sites.

Support needs of manufacturers and end users.

The first conclusion from the interviews and case study is that both manufacturers and final customers express the need for consultancy support in sourcing and developing suitable applications for this wood. The final customers in the real estate and retail sectors, as well as most of the manufacturers, have not sourced in this way before in terms of species, dimensions, volumes, sustainability claims or direct sourcing.

For the manufacturers, there is a need of support for efficient sourcing in terms of wood dimensions for different products. If there is no guidance, there is a high risk that standard dimensions are sourced resulting in wood utilization in the chain being unnecessarily low and costs high. For manufacturers, there is also an expressed need for help with due diligence of sustainability and legality.

Finally, one general observation is that the manufacturers often do not have the capacity to sell the sustainability value to final customers. Their sales representatives are typically trained to talk to e.g. purchasing directors of real estate companies about traditional hard aspects of the products. They need support in communicating the soft differential of supporting forests and smallholders, which can be the unique selling point for the product to a marketing manager or CSR manager of the final customer.

For the retail customers, the need for support was expressed to investigate their current supply chains to see where and how this wood could come in. The supply chains are complex often with many production steps in Asia, where the power to influence the producers varies.

For the final real estate customers, there is a need of support in the initial development of applications and product designs. Also in the next stage, they (and their architects or design directors) often need to see prototypes of these ideas. The of this implication for the program is to have designers and carpenters who are ready to provide support in the client acquisition and prototyping process.

Together in a "movement"
In several dialogues the customers expressed the desire to be together with other customers in sourcing this wood. One manufacturer expressed this as wanting to be "in a movement". At first the hypothesis was that they would like to be first movers in their respective sectors and thus want to use the wood as an advantage over competitors. However, the response was more in favor of being together with peers in a program like this. In several cases, the participants gave contacts to competitors they thought we should talk to.

It seems to us that the sustainability values of sourcing this wood is not thought of so much as a competitive advantage for the customers, but more as a general supplement to the offer to keep in step with the trend in consumer values. For real estate companies and retailers, the potential use of this wood represents a small part of the total business and thus is not so sensitive. For manufacturers, we believe the desire to be together is simply that they don't want to be alone in doing something new with potential risks, and don't have the capacity to market the new sustainability values themselves.

Endorsement from credible institutions
In all dialogues with customers the story of this initiative and the potential value of sourcing this wood led to exchanges of "world views". In all cases, even for sustainability directors, this was stated to be a new learning about the situation in the natural forests in the global South. Our belief is that this new learning provides an attraction to be part of the program, the feeling of empowerment to learn of a possibility to concretely engage in a big development challenge. However, this attraction of a new opportunity is also paired with a feeling of risk. In several cases the interviewees requested support from credible institutions in various ways, e.g. if this could be part of FSC-certification or Fair trade certification. There has been mention of the need for a "brand", and requests of having academic institutions be part of the initiative. All in all, the analysis demonstrates that these reactions show a general need for endorsement and verification that this engagement is the "right" sustainable and ethical action. This endorsement and verification we believe can be designed in different ways, as long as it is perceived as credible and powerful. The implication for the program is twofold:

- All value chains must be FSC-certified (or part of a verified progress program)[400] during the project period, as a basic level of risk management. (Several customers also recently have decided on 100% FSC policies)
- To strive to have several internationally respected organizations/institutes be part of the program in some capacity – as active founders, advisory board, sponsors or just (passive) endorsers.

[400] It can be that the costs of a certification inspection can only be met after there is some type of off-take agreement.

Central support components

As a support to these pilot projects and for supporting the creation of a self-sustaining market for smallholder-based native wood some central support components have been part of the program idea:

- **R&D of forest management regimes for different types of tropical forest**
- **R&D of wood and energy production systems for native tropical wood**
- **Monitoring and evaluation of the pilot projects (environmental, social and economic sustainability)**
- **A financing facility for timber processing entrepreneurs**

These central components are meant to build the knowledge base and content necessary for effectiveness of the primary facilitation components.

The research activities have not led to a need of reassessing of support components at a general level. However, the content of the components has in some instances shown a need for revision.

One question is if these support components should be temporary for the program period or be permanent facilities to support a future scaling number of smallholder-based value chains and support the strength of this new market.

R&D of forest management regimes for different types of tropical forest

In all countries visited, there was stated interest from various national agencies and institutes to build a national capacity for support of smallholders in managing the native forest. It is evident that there is frustration over the situation of forest degradation, smallholder poverty and that there are no economic incomes from the natural forests. In several cases, the Swedish forestry sector was mentioned as an example they wanted to learn from. The challenges are of course big and variable in terms of the legal-, regulatory- and general business environments of the forest sectors in these countries. Apart from this, one difference between temperate and boreal forests, is that there is a challenge in finding researched and tested systems and interventions for management of natural tropical forest types that deliver desired objectives.

There is also a lack of understanding of the potential of forest management including active silviculture for improving degraded natural forests in economic and environmental terms. However, during the project, interaction with several local and international forest experts confirmed the existence of potential for different forest types and baselines in the different countries. However, government representatives lacked awareness of this fact. When presented with this potential there was much enthusiasm for developing this knowledge at a national level and to develop support to natural forest managers.

Nationally co-funded International collaboration

The conclusion from a program perspective, is that we believe research forest management systems will be an addition to pilot projects welcomed by relevant governments and who could possibly find co-funding for this activity. For efficiency, this research could be integrated internationally. Some measures are not specific of forest type and in some cases the different countries share the same forest types. Also, research would be much more relevant and valuable if integrated with the pilot projects and with the monitoring and

evaluation of these. If the findings of the research can be implemented and the effects monitored then knowledge build-up and practical relevance will be optimized.

General forest management systems and estimated impacts
We see the potential for a specification of objectives for such research. Above we concluded the need for a USP (Unique selling proposition) for smallholder-based wood in international markets, and the potential for this to be the claim of forest improvement. Research could, besides facilitating learning and development, create the verification framework for such a claim and thus enable the use of this USP. This idea is briefly outlined below:

1. Generic forest management regimes for common forest types (primary and secondary) in a fairly intact state are developed. Such forest regimes should be designed with a range of social, environmental and financial objectives in mind. The forest management regime should include a priori estimates of their expected impacts in relation to key indicators. These estimates should be validated by relevant respected authorities (experts, NGOs, research organizations).
2. Assessment of resource condition and adequacy in project forests and identification of desired objectives with rights holders. Identification of indicators for resource and non-resource objectives.
3. Creating a proposal of a forest management plan based on FM regime for the forest type, base line and balance of objectives. This would include estimates of effects if FM plan would be implemented.
4. Estimation of baselines for indicators not already included during the planning phase and development of monitoring system/scheme for such indicators.
5. Monitoring of relevant indicators to provide feedback for external communication and for internal adaptive management.

Timber processors and timber buyers can use these expected results of the forest management and later on the results of the monitoring to support their claims of *Forest positive* resource use.

For more on this idea see appendix 3: Development of the “Forest-positive concept”. Note that this idea is still in its infancy and the viability and practical implementation must be discussed and vetted with experts. It is included in this report with this purpose in mind.

R&D of wood and energy production systems for native tropical wood

Originally the program included support for sawmill entrepreneurs and personnel in all aspects of operations, including by-products utilization. This support included the development and field testing of a complete innovative pilot mill for concept development, tests, demos, training and for use by startups.

The need for this R&D activity has been confirmed in the research project. As described in the findings there is a complete lack of competitive wood and energy production systems that are optimized for natural smallholder-based wood in the visited sites. There is no R&D in the visited countries and very little internationally, to the knowledge of the authors. Development of small-scale sawmill and drying equipment is done today within a limited number of companies. There is a need to consolidate and develop this knowledge and to

develop a range of integrated innovative systems for different situations. See appendix 12 for more on the technology potential in relation to wood and energy production in rural tropical settings.

In the few contacts that were taken during this project with academics and experts wood processing technology [401](sawing, drying, bio-energy) there was much interest to engage in the program. A question is what scale such R&D component could and should have and who the participating actors should be. This must be further researched. The design of such a component must be co-developed in dialogue with organizations that have the right contributing resources, interest and access to potentially co-fund.

Monitoring and evaluation of the pilot projects (environmental, social and economic sustainability)

Monitoring and evaluation is an important part of the initial program. Two findings from the research give input to the design of this function. One challenge is how it can be used as a tool for raising gender awareness in the smallholder-wood value chain. This will be further described in the following section. Here we will mention the implication based on the need for a sustainability USP described above.

It is now realized that monitoring needs to fill an important role in addition to that in the initial proposal of input to internal learning and development. As stated above there is a need to provide a the sustainability value to the customers as the USP for the material. The unique value outlined in this discussion is the combination of the smallholder origin (with its promise of improved livelihoods) and of responsible forest management resulting in with forests increasing their environmental benefits.

For reasons of market credibility there must be an independent verification of the monitoring and evaluation of these claimed effects. This independent review system assesses the relevant data from the pilot projects and verifies the social, environmental and economic effects of the change in forest management regime.

During and after the pilot projects the claim of net positive is evaluated and revised. The continuous revision is based on the independent verification of the monitoring and evaluation of the pilot projects, as well as from continued research and input from leading institutions. See appendix 3 for more on the idea of how monitoring can support the marketing of wood from the pilot projects.

Financing facility for timber processing entrepreneurs

In the initial program one component was the launch of a “Fair Wood fund”, meaning a connected funding organization that would invest in timber processing enterprises. This was based on the assumption that there were no possibilities to find financing even with a positive business case in these locations. However, the research findings have led us to think differently now. Some actors we met were intrigued by the type and size of investments that would be of interest for entrepreneurs in a Fair Wood program (Oikocredit, FAST) and new

[401] Luleå tekniska högskola (drying tech), Fortum energy (bioenergy), SP Trä (drying tech), Logosol (sawing tech), Pamoja Cleantech (bioenergy), bioenergy entrepreneur X

initiatives seem to be coming that seem like possible future partners for Fair Wood (Partnerships for forests etc.). Also, there are local actors with an interest in investing in local startups and banks-loans perhaps backed by credit guarantees from development funders. However, the Fair Wood focus on locally controlled forestry and natural forests excludes the clear majority of impact funds, layered impact funds and DFI's (who only will look at plantations). Also, most private investors aren't familiar with this sector and certainly not the value chain innovations of a Fair Wood program.

In the discussion, this has led to two implications. First the realization that proof of concept is needed before any scaling of financing is possible. Second, the hypothesis of building a start-up financing facility founded on a network of small-scale institutions interested in native forestry.

Proof of concept
In order to gain access from small-scale credit organizations and private investors, the proof of concept based on the pilot projects must demonstrate success in relation to the following criteria:

- Functional model for organization of forestry and timber production
- Competitive small-scale production of high-quality wood products
- Market access
- Environmental, social and economic benefits

Some additional findings that have implications for the design of the support activities in relation to supporting financing to the entrepreneurs are the need to develop a credible business case and how this strongly motivates a lean start-up approach:

More focus needed on developing a viable business case. There has been a lot said about the lack of financing for small forest enterprises, as a main barrier to development (See the ILCF-guide). We have visited several seminars and workshops with the subject of how to find/attract investment to locally controlled forestry/forest enterprises. From the findings in this project we would say that this focus isn't necessarily wrong but should be preceded by the quest for investible business cases. As previously described several actors, impact investors and micro loan institutions, stated an interest in investing in this sector but a lack of viable cases to invest in. This viability is based on a credible account of the existence of markets willing to pay and of capable entrepreneurs to develop these markets. Both these dimensions must be developed before investment can be attained.

The need of a business case motivates a lean approach. The above conclusion underscores the relevance of the lean enterprise approach of a Fair Wood program. In this way starting early to develop samples and prototypes together with buyers serves to prove concrete demand for products before big investments in processing equipment are made.

As we have described, investments in machinery are often not optimal because of both lack of knowledge of alternatives and of expertise on optimal configuration given the type of timber supply and the target products and markets. It is thus not enough to have direct market contact and basic business capabilities. This must be complemented by learning of

the complex characteristics and tradeoffs of designing a wood processing factory as well as leading edge equipment alternatives in the market for small/medium scale processing.

Gender equality and women's economic empowerment

Gender equality must be integrated into the program for a variety of reasons; which include the usual ethical ones but also recognizes the important and increasing role that women are playing in natural resource management and in business in many countries. For this to happen the program will include a range of actions and policies that ensure that women are included at all levels.

Sex-disaggregated data collection

One of the first, and most important steps, is to bring women out of the shadows in the timber value chains and begin counting them. Requirements for sex disaggregated data collection, development of gendered indicators, and an engendered monitoring and evaluation process applicable to the whole of the value chain- silviculture, milling and trade will fulfill this need not only for the pilot projects, but for the broader research community as well[402].

Design for equal participation in decision making

Facilitating women's presence, participation and engagement in decision making is another way to counter the invisibility phenomenon. Factors to consider when designing inclusive consultations and other meetings include, inter alia, time of day, providing for child care, mixed sex and single sex meetings (e.g. women specific focus groups), participatory methodologies. Training designed specifically for women- especially in "upstream" or leadership positions is critical. Otherwise women can be set up to fail is if they are not afforded the same access to training and support afforded men.

In the RRI-report mentioned above, voting and leadership in local governance is one of the 8 indicators used in the analysis that is deemed "most inadequately protected" across the board. Of the 80 Community based tenure regime units analysed, only two were deemed to have sufficient statutory protections for voting rights and leadership.

Quotas and quorum are two mechanisms that can be employed to "level the playing field" as is the case with FECOFUN in Nepal which recently amended their constitution to require one female chair or vice chair, and one female treasurer or secretary general. Quorum mechanisms require x# of women to be present during decision making to mitigate against tokenism.

Be the change you wish to see.

Rather than seeking the perfectly gender equal circumstance, utilize pilots to demonstrate the possibilities for shifting gender relations in value chains focusing especially on countering discrimination and collective action[403].

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[402] See, for example The Business Case for Mainstreaming Gender and REDD

[403] https://www.bioversityinternational.org/fileadmin/user_upload/research/research_portfolio/Forest_and_tree_diversity/Brief_Gender_FTA_value_chains.pdf;

Policy design

Countering discrimination can be addressed at the policy level. Note that researchers posit anti-discrimination regulations and equal labor rights support for collective action are not predicated on gender equal foundations in value chains: rather they can facilitate the establishment of such. Collective action initiatives require substantial initial support, and are most effective with support from the local ecosystem of actors and institutions. Partner organizations may have gender focal points that could be accessed for advice, or best case scenario, collaboration or coordination.

Design of gender equal operations

Silvicultural, milling or business skills training, or other capacity building/ training could be tailored for women audiences. Also in the support to upgrading of the wood processing business, there are opportunities to design gender equity. One example has been developed during the project as part of the case study, where a "gender equal mill" concept has been developed for LevasFlor, Mozambique, see appendix 25: "Proposal for integrating gender equity in the upgrade of the LevasFlor mill".

Mitigate risks

The risk is that while short term changes can bring positive benefits to women, sometimes they can precipitate negative consequences, such as increases in gender based violence or other forms of discrimination. To mitigate for these risks, it is critical to engage those who will be impacted in gender mapping- particularly around perceptions of specific types of changes; as well as designing indicators that can open a path to progress that is less likely to result in negative consequences. Investments in collective action for women (such as savings and investment circles, professional training and development targeting women's strategic needs and interests) can also serve as a risk mitigation strategy.

Organization of the program

Much of the project description centered on building of the Fair Wood "Fund" or "foundation" – a new organization that would have the role to organize the project and deliver comprehensive technical support to all actors in the pilot projects. This reflects where the team was in terms of concept development at the time of writing the proposal. A central question was how to develop the right type of (new) actor with the capabilities to deliver a novel type of program that could support several value chains to establish a sustainable new market for smallholder-based wood.

Several dialogues with international and national actors have demonstrated that there are several roles and activities in the program (for enabling and supporting the pilot value chains) that can be filled by external actors. Examples range from having the local pilot project "ownership" to technical assistance in forest management and wood processing, as well as local monitoring of the project. This has led to a discussion of the virtues of involving many different actors in taking active roles in the project versus creating an organization that "owns" and manages the project. The former necessarily means losing some control[404]

[404] We note on the other hand that some loss of control is inevitable when working at long distances even within the same organization so that this may not necessarily be a negative factor but simply requires that more precise instructions and a higher level of monitoring is required for all cases.

and of course a risk of concept drift. However, this can be dealt with by well-designed governance and communication in the project. The authors now consider that the benefits of local anchoring and spreading of the concept through many organizations gives potential advantages in terms of future scaling opportunities and the sustainability of the introduced enabling factors in the business environment.

In short, we have revoked, at least initially, the idea that a new single organizational entity needs to be created for implementing the program. Instead we propose that a program can be founded by an alliance of existing organizations - appointing representatives to a *program committee*, and that the necessary central activities of the program such as coordination and communication can be done by a *board of directors,* which is appointed by the program committee. This would be a temporary organizational arrangement for the length of the program (5 years).

This board of directors would not create an organization of their own, but coordinate the program through existing organizations: technical assistance facilitation consultancies, local project "owners", local facilitation partners (NGO's or consultancies), International and local research organizations etc. In this way, we are proposing a temporary *program organization,* not a new separate organization, as we envisioned initially.

Scope and scale of the program

Initially the assumptions were to implement six pilot projects over five years in the three southern continents of Africa, Latin America and south-east Asia. During this time, the R&D components and the finance facility for entrepreneurs would be implemented, as well as the monitoring and evaluation. There is nothing from the research indicating that these assumptions are worse than anything else. But the reasoning behind how this will be decided is now different. As described in the previous section the program is now seen as centrally coordinated, but implemented and founded by multiple actors.

Also, we now see that this program can be built step-wise from the bottom up. The goal can still be the same in terms of scale and scope, but it should be built opportunistically with local and international project funders and partners. In the following section this reasoning is described.

Centrally coordinated program or singular projects?

One question is if there is a need for a Program at all? Can't this intervention idea be implemented solely through facilitation of separate pilot projects, with no central coordination? If the idea of a program is that all activities are co-dependent in terms of planning, coordination and management, this could become complex and perhaps difficult to fund. However, several factors described above point to advantages of scale, resource sharing and cross learning of a program:

- Downstream market development - we have strong feedback that customers want
    1. to be part of a bigger "movement", in the sense of having the security that other companies are also investing in this from a sustainability and marketing communication viewpoint. They want to feel they are together with other peers in this.

2. security of future supply and potential scaling of volumes, which to us means that having several alternative suppliers is a selling point.

- Research and development of wood and energy production systems based on the targeted natural forests (indigenous hardwood species from non-managed sites) aiming for high-end wood customers and local energy needs
- Research and development of *general forest management regimes* for the targeted forest types and baselines and calculated environmental effects of these regimes. This is something that will provide a vital communication claim/statement for the customers: That their sourcing supports forest improvement. See above and appendix 3 for more explanation of this idea.
- Central development and coordination of monitoring and evaluation - this ties into the above component. To have the same indicators and evaluation system, and have it endorsed by leading organizations, is a strength for building the communication (for the customers).
- Central development and coordination of a financing facility for the timber processing entrepreneurs and smallholders. For example, our discussion with OikoCredit shows that they are potentially interested in opening up a new support "department" for these ventures. This rests on there being several cases and the hypothesis that these will increase in the future.
- Lastly, we believe that there exist possibilities of funding that targets the whole program. It could be customer companies for example that want to be part of the "movement", as stated above. Or it could be development funders that see this program as a whole as addressing their forest restoration, climate, poverty, and or local entrepreneurship agendas.

The conclusion at this stage is to apply an entrepreneurial mind-set in planning and implementing this intervention. This means to have the full program as a goal from the start, but to design all steps as building blocks that can be individually funded and implemented. In this way, the development of the program is flexible. New pilot projects and support components can be added based on new contacts and dialogues with stakeholders and funders. Communicating the vision of the full program will not be seen as promising too much, as long as it is stated as a “vision”.

So, in short, we see as a goal or vision, a program built on a number of pilot projects and the "support components" mentioned above. All these pilot projects and support components should be implemented by various actors, most suitable for each respective activity. The different activities can be separately implemented and financed. As the components are added the need for central coordination of this program will grow, and the resulting organization would be a temporary program organization.

Presentation of a revised program

This section presents a revised program, based on the implications in the analysis of the previous section. Please keep in mind that this is one example to illustrate where the analysis can lead. There are however many conceivable designs based on the learnings of this project. In accordance with these learnings, the final design must be the result of deep dialogue with local project owners, value chain participants and funders.

The following presentation follows an adapted version of the business plan components, as put forth by Kathleen R. Allen in Launching new ventures.[405] The components that are presented here are the following:

- Objectives, scope and theory of change
- Primary stakeholders and unique values
- Operations
- Organization
- Technology
- Resources needed for implementation and resulting budget
- Funding model

Objectives, scope and theory of change

The intended goal of the program is to show with concrete examples that a new forest industry sector is possible – an industry based on creating a high value out of the timber resource in natural forests of the global South. A further goal is that this value is shared with the local communities sufficiently to motivate their active sustainable management of the forest. For this new industry to be commercially viable it is necessary to break away from prevailing unsustainable value chains and the traditional commodity wood market.

A new value chain concept

A new value chain concept has been developed over the past years with these goals in sight. This value chain is here denoted *the "Forest-positive" wood value chain.* This value chain is qualitatively different in several aspects compared to the traditional commodity timber value chain. These differences are interdependent and together form the basis for a clear differential and a competitive offer to advanced customers. For an overview of the characteristics of this intended value chain and the differences compared to the conventional value chain, see appendix X. A brief overview of the key elements of the *Forest-Positive wood value chain* is included here:

1. *New market opportunities* to increase short and long term benefits for smallholders and communities motivating long-term investments in protecting and developing the native forest resources
2. *Locally controlled forests* - support to smallholders and communities to become successful and responsible managers of their native forests and important suppliers of local and regional industries
3. *Improved forest management* to increase long term incomes for the smallholders and communities
4. *Excellence in sawing, drying and upstream wood utilization* - local and regional small-medium size sawmill industries develop necessary technical capacity and market

[405] Launching new ventures – an entrepreneurial approach, Kathleen R. Allen, 2002

integration to produce high quality products with high recovery rate and meet high standards for efficient logistics (just in time delivery etc.)

5. *Short supply-chains and transparency* to facilitate direct communication in order to make product development possible, to enable most efficient use of the tree and to keep transaction costs to a minimum
6. *Improved wood utilization downstream* – manufacturers and commercial end users use technology and applications with higher material efficiency, e.g. permitting sourcing of customized smaller pieces
7. *Competitive advantage of" Explicit Origin":* Improved chain of custody and certification down to each group of smallholders/communities secures that the wood buyers and the final consumers know exactly where the wood comes from.
8. *Competitive advantage of "Forest-positive"*: The verifiable claim that wood sourcing has a net positive impact in terms of forest restoration/rehabilitation is used in marketing and to influence environmental rating systems for buildings as well as public and corporate sourcing policies.

Objectives

The aim of this program is to create new and competitive value chains for wood products from more or less degraded natural forests in the South that supports:

- protection and restoration of rich and resilient forest ecosystems
- local peoples' control over- and value retrieval from their forest
- modern and scalable entrepreneurship that builds societies

These new value chains will be created through facilitated customer-integrated innovation processes. This means the facilitation of co-innovation of the main actor pairings in the wood value chain: End customer-Manufacturer, Manufacturer-Wood producer and Wood producer-Forest rights-holder. Taken together these innovation processes are anticipated to create value chains that are competitive with the prevailing local- and export wood value chains as well as with those of other competing materials.

Theory of change

Briefly our theory of change rests on the following causal sequence:-

- Smallholders will look after their forests better if they are able to obtain values from them that exceed alternatives and are able to provide them with satisfactory livelihoods
- Timber is the highest value product that can be taken from the forest and if managed properly will be able to support satisfactory livelihoods (when taken in combination with other value streams).
- Entrepreneurs will be attracted to timber processing if there is an assured supply of raw materials and if there is a market for their production which is profitable.
- By establishing communication in the value chain it is possible to significantly increase the profitability of timber processing for all actors. More of the tree can be used to provide a greater range of higher value products to the market.
- There are buyers prepared to engage and to pay fair prices for timber products of good enough quality (supply quality and timber properties).

- There is an added value for smallholder timber from the tropics that can be realized by manufacturers who are then prepared to commit to the smallholder value chain.

The program will support a limited number of demonstration projects, that are being run jointly with national partner organizations, for a limited time. By showcasing successful projects - in cooperation with downstream sustainability-leading companies and national partners with an interest to support the development of a native wood industry – the program will function as a catalyst. The pilot projects will demonstrate how:

- Forestry and small-scale wood processing can add revenue streams to local communities thus providing incentive for improvement of forest ecosystems.
- Wood from community/smallholder-based forestry can be a competitive input to manufacture of furniture, interior and exterior products.
- Small-scale native forestry based value chains can be an attractive business case

Scope and delimitation of the program

The scope of the program is, as stated above, to facilitate the emergence of new value chains for wood products based on natural forest controlled and managed by local forest rights-holders. This program is designed to be as slim and resource-efficient as possible and still be effective. This means defining the scope carefully so that activities are aligned and reinforce each other. Below is a table of what is included and short notes on the rational for these choices.

Factor	**Focus of program**	**Rational**
Forest resource	Natural forest and small plantations under local control, (that give short term incomes that support long term management of natural forest)	Improved management of natural forests has an untapped potential for supporting improved livelihood for local communities and at the same time contribute to biodiversity, water protection and climate adaptation and mitigation
Geographic locations of producers	Sites where natural forest is under threat of, or in a state of, degradation. Sites that have a sufficient endowment of natural forest to start a sustainable timber business.	The program goal is forest improvement and at the same time forest must be production-ready.
Tenure	Local communities and or smallholders have secure long term control of the forest – or are assessed to gain such control through the interventions in this program. Operators or concession-holders must make credible commitment to support locally controlled forestry by developing new supply chains	Sites with no local forest rights or control and no short term realistic prospects of acquiring such are outside the scope. Outside operators at best providing jobs to local people is not sufficient to be included in the program.

	including wood from smallholders and communities	
Products	Wood and Energy	Non-timber forest products such as fruit, nuts, wildlife, eco-tourism etc. and Payment for Ecosystem Services (PES) are outside the scope but will be considered and coordinated with in planning.
Qualities and types of products	Wood: High quality products, meaning at the least: precision cut and artificially dried pieces. Possibility of further processing into blanks, components or finished products will be evaluated and encouraged. Energy: At the least bio-energy for drying kilns and when relevant coal or pellets for local market. Goal of achieving electricity generation for micro-grid or stabilizing input to local mini-grid.	Only low value wood products, such as green wood or standard dimensions, will not drive industrial development or change of local wood markets. Sole focus on wood, not including energy, will not provide a viable business case for the timber processing enterprise
Volumes	Goal of reaching 1.000 m3 to 10.000 m3 output of kiln-dried wood within the program timeline.	Higher volumes assumed to already have capacity for change. Lower volumes will not drive sustainable industrial development and are not viable business cases.
Local institutional capacity	National capacity to harbour, further co-develop and disseminate locally the competence developed during the program. Supporting the building of such institution and/or capacity will be included in the program.	Without national capacity and interests the possibility to scale the pilot projects into mainstream business are limited
Geographic location of markets	Both export markets (Europe and US) and local markets (regional cities)	Only focus on oversea export or only focus on local/regional markets will not make optimal use of all the different wood properties/qualities supplied from the native forest difficult or impossible
Wood customer sectors	End users from the real estate sector and from big retail chains and their preferred manufacturers of doors, floors, kitchens, interior and exterior decoration and furniture. Complementary local and regional customers	The key issue is the mix of different dimensions and qualities making it possible to use all the parts of the log combined with reasonable volumes making long term marketing efforts and product development possible

Customer demanded qualities	Precision cut, kiln dried and timely reliable delivery. Prepared to co-develop with producer to accept varying dimensions and properties to increase total resource efficiency. Willing to work with lesser known species	The investment in high quality machinery and kiln drying, make this segment of the market relevant. Customers' needs must fit with the outcome of the forest management plan. For standard products, the sawmill might not be competitive.
Customer demanded volumes	End users and manufacturers each represent potential to order volumes of wood or wood products equalling demand of one container per month kiln-dried sawn wood.	Too small volumes do not pay investment in marketing and product development
External energy customers	Local city and/or industry that needs electrification or electricity input to existing grid. Consumers of coal or pellets.	Fire wood is normally not a relevant assortment

Primary stakeholders and unique values

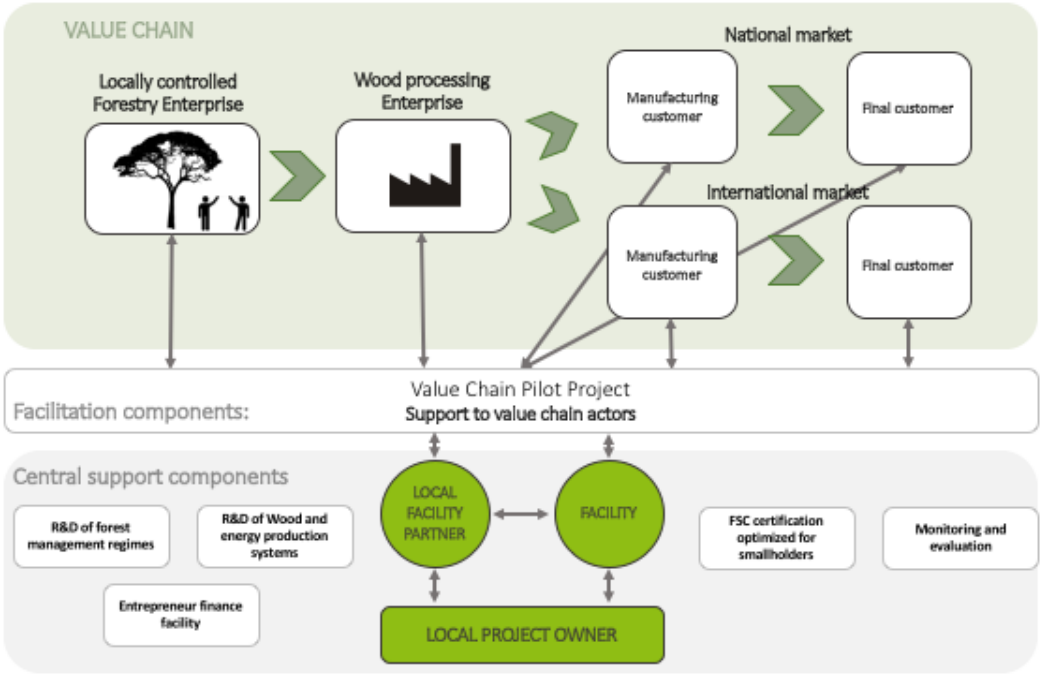
For the program to be in demand and thus feasible to implement it must provide clear value to all involved stakeholders. This promotes us to here give a summary of what those values are for each stakeholder. In focus here are the "primary" stakeholders - those who are part of the value chain and directly targeted in the program:

Stakeholder	**Support component**	**Value**
Forest smallholders/ community	Multi-value optimizing sustainable management of natural forest. Connection to fair paying buyer / value chain	Increasing timber-based economic value over time. Protection and development of the forest resource for future generations
Timber processing entrepreneurs	Design, training for and implementation of quality wood and energy production systems. Matchmaking with fair paying customers. Product development together with advanced customers.	Customers that want to pay for quality, sustainability and smallholder origin. Competitiveness through quality, sustainability and product development. Scalable business – growing with wood suppliers and customers
Manufacturing customers (flooring, furniture, kitchen, doors, exteriors, etc)	Matchmaking with suppliers of wood. Matchmaking with final business customers. Product development process.	Reliable quality supplier A new offer based on sustainability. Increased likelihood of success of new product line. New, scalable and sustainable sources for attractive raw material
Final business customers (Real	Matchmaking with manufacturing customers.	Concrete sustainability action connected to core operations.

estate developers, hotel chains, Retailers, builders' merchants)	Product development process.	Increased likelihood of success/fit of new product line. New, scalable and sustainable sources for attractive raw material

Operations

An overview illustration of the program activities is provided below. The program consists of the implementation of a number of "value chain pilot projects" and development of five "central support components" over five years.



Value chain pilot projects

Value chain pilot projects have several characteristics that make this a preferred method:

- "The whole system in the room" - Involve all actors in the value chain as well as vital service providers and stakeholders
- Select the right actors and individuals - Problem owners and solution providers who are positive to the change, and build critical mass together
- Test and revise – Fast, low risk and more accurate innovation process
- Build proof in small steps and then scale

The core activity of the program will be to start and run projects that will facilitate the startup of new value chains. Value chain actors, i.e. timber producing organizations + sawmill entrepreneurs join a project after a thorough joint assessment with the technical facility and the local facilitation partner. Each project follows a generic process that will be adapted to local conditions. Each project will also be supported by a national partner, who will typically be an organization with commitments in line with the program founders.

This facilitation processes include comprehensive support in the following dimensions:

- Responsible forest management
- High quality production of wood and energy

- Marketing and business development
- Product and process co-development with customers
- Certification

A phased approach

Instead of going straight from a positive assessment to a launch project the value chain startup process has been divided into three steps: “Business concept development”, “Proof of concept” and finally “Launch”. The goal of the first step is to research and develop viable business concepts for the timber processing entrepreneur and supplying smallholder group, based on the basic factors of the value chain: forest resource, market, production etc.
The goal of the next step is to test the feasibility of these upstream business concepts by developing prototypes downstream with real major customers. The rational for this design of the pilot project is to:

- Secure that the participating actors develop realistic and well-understood business concepts before investing time and effort
- Minimize risk and cost for the project owner, facilitators and funders
- Know what is being tested: To be able to evaluate clearly the parameters of the business concepts is crucial for achieving the goal of developing a national support platform for a native forest industry

If a positive business concept cannot be attained at the end of the first phase for both actors (smallholder group and timber processing entrepreneur) then the project must stop and go back to revisit the basic assumptions and factors of the value chain design and business concepts. See appendix 17: Overview of the pilot project facilitation process, for a detailed process description of the phases of the process.

Overview of the value chain pilot project phases:

Phase	**Intended outcome**	**Outputs**
Pre-assessment	Decision to enter an assessment and co-planning phase	Pre-assessment report
Assessment and co-development	A positive decision to enter a value chain pilot project. Alignment of local project owner and local supporting organizations.	Assessment report Project plan
Business concept development phase	A timber processing entrepreneur and forest rights-holders group decide to enter a start-up project based on the business concept opportunities identified.	Business concepts for a group of forest rights-holders and for a prospective timber processing entrepreneur
Proof of concept phase	Decisions by the participating pilot entrepreneur and smallholder group to invest in and implement the new business concept, and by the participating pilot customers to enter long term sourcing contracts	Three product prototypes are developed for local and export markets, which provide a base for the new value chain The “forest-positive wood”-concept is adapted to work as a practical marketing tool for the specific forest site and involved value chain actors

Launch phase	Successful value chains established: Product lines launched successfully, Long-term fair paying contracts between the actors SFM implemented	Support in this phase is still to be defined based on dialogue with value chain stakeholders

Variations

In this presentation, many assumptions are made that likely will need to be revised and operations adapted. Hence, a pilot project must be open for and flexible to adapt, as long as the project goal and objectives are not compromised. Some assumptions likely to be revisited are those concerning participating value chain actors and the speed of the customer prototyping processes:

Variation of value chain actors in the project - The basic assumption of participating actors are the four types: Smallholder group, Timber processing entrepreneur, Manufacturing customer and Corporate end user. Some examples of variations where different approaches may be needed are:

- A manufacturing customer with own sawmill capacity, thus shortening the value chain by one actor
- A manufacturing customer integrated with a retail business targeting private consumers

Variation in speed of prototyping process - The same timeline is here assumed for all prototype processes, but an obvious variation could be that one process is much faster than another. Some examples of why this could be the case:

- A manufacturing customer already has an interested corporate end customer for a product
- A timber processing entrepreneur already has interest from existing customers for native wood products.

An awareness note here: Just because actors can get a contract and produce fast doesn't prove that a pilot value chain is competitive. Implementation and evaluation of the project components such as sawing and drying quality, customized production, Forest-positive message and verification are necessary to ensure long term competitive advantages that will build a solid base for the new industry.

Central support components

The program includes five central support components. These components are meant to act as support to both the up- and downstream actors in these new value chains and in the long run as tools to support a self-sustaining market and industry for natural wood from responsibly managed locally controlled forests. They are all in different stages of ideation and development and are meant to be co-created and co-implemented with various constellations of suitable partner organizations. Below these are briefly presented.

Monitoring and evaluation (M&E)

For the pilot projects to have the intended effect of collectively creating a self-sustaining market for smallholder-based natural wood (scaling of customers, local projects, local and international funding) the program will need to show tangible environmental, social and economic results.

This component will focus on identifying robust indicators regarding environmental, social, finance and market indicators that can be used to monitor and evaluate intervention effectiveness. The relevance and applicability of the indicators will be confirmed with the stakeholders of the pilot projects, including smallholders, entrepreneurs and customers and local communities, as well as relevant NGO's and national agencies. Furthermore, the monitoring results will need to be reviewed by affected stakeholders including program committee, board of directors and advisory board to learn and identify adaptive measures depending on deviations. All data should be, when relevant, sex-disaggregated.

The M&E system will need to work closely with communication activities so that results are not only disseminated internally and to funders but also to a broader public. It will be the role of the M&E system to deliver relevant information based on the assumed and tested interest of specific target groups. One specific example is the The "Forest-positive" claim, which is central to the market differential of smallholder native wood, and says that forests (almost always from a degraded baseline state) will increase their environmental benefits from implementing active forest management regimes.

Development of FSC-certification optimized for smallholders

FSC is the leading and most respected forest product certification scheme. FSC has over the past years realized that smallholders must be included in the market to a much higher extent. Several promising ideas to level the playing field for smallholders, in terms of raising efficiency, lowering cost and increasing market awareness, have lately been developed but not yet tested or launched. A market creation project for smallholder wood is a good fit for FSC to develop and implement these innovations.

R&D of Forest Management regimes and effect calculations

This component has the following outputs:

- Generic platform for SFM in different forest types, baselines and management situations (to make it faster/easier to develop locally adapted handbooks and guidelines for SFM). This will include standards for internal auditing
- Generic platform for Best Management Practice in different forest types, baselines and forest management situations (to make it faster/easier to develop locally adapted handbooks and guidelines for BMP)
- Support for efficient organization of smallholders/communities for the business of forest management and timber supply

The verifiable claim that sourcing a specific wood product has a net positive impact in terms of forest restoration/rehabilitation is used in communication by the value chain actors, and to influence environmental rating systems for buildings as well as public and corporate procurement policies. This claim entails that the change in forest management compared to a status quo baseline will lead to net positive ecological benefits in terms of carbon sequestration, biodiversity, soil, water, storm protection, etc. In summary, this change can be named forest "restoration", "rehabilitation" or "improvement" depending on the baseline state and the nature and magnitude of the change. Previous market research by EIF shows that such a credible claim would be an attractive marketing advantage for actors in the value chain. The challenge for the value chain actors is thus how to communicate, quantify and validate this claim.

R&D of Wood and energy production systems

A viable business case for native timber processing enterprises rests on access to high-paying advanced customers and high utilization of the timber resource. This in turn means optimal configurations of high precision sawing, kiln-drying and energy production – often at small to medium scale in semi-rural settings.

Various high-quality and robust equipment and enabling technologies today exist, but there is no place for entrepreneurs to go for practical help in system design, configuration and support. To unlock the values of the native forests these systems must be researched, tested and entrepreneurs supported in finding optimal systems for their situation.

Entrepreneur Finance facility

There will be necessary investments for the upstream entrepreneurs - smallholder forestry operations and timber processing enterprises. The perspective in the program is that private entrepreneurs should be prepared to pay back on loans and equity investments so that the program support does not remove accountability and long term business sustainability. However, there is a recognition of the barrier to access financing at reasonable terms in many of the targeted locations. For this reason, a “financing facility” connecting entrepreneurs to various types of financing, local and international, is a part of the program.

Organization

In this section, the different actors that are thought to be included in the program are presented. Ideas on specific organizations that could represent each category of actors have been put between brackets at the end of each section, but should only be viewed as illustrative examples.

Founding of the program: The founders of the program are thought to be organizations with a stated commitment to support the market inclusion of community based forestry enterprises in the Global South. Examples of such organizations could be international NGOs who see small-scale forestry as a tool for improving forest ecosystems, and the local communities who depend upon the same. Another category of program founders could be commercial organizations with a goal to increase the output of more sustainable wood products. A third category of founders could be science-based organizations with an interest to advance global strategies aiming at halting deforestation.

The Program committee includes representatives from each founding organization. These representatives are responsible for appointing members to the program´s board of directors. The program committee defines the specific objectives of the program. It also provides a framework for the program with a set of statutes, which clarifies and codifies roles and responsibilities of various actors included in the organization. (WWF Sweden/UK and World Resources Institute represent potential founding organizations.)

Board of directors(BOD): The BOD is responsible for developing a work plan and a budget for implementation of the program, including a fundraising plan. An important task is also to appoint a technical facility responsible for carrying out and coordinating the practical parts of the program. The work plan should include an initial part where potential value chain

candidates and projects are being evaluated. The BOD has the final call on which candidates and projects should be included in the program, as well as organizing an appropriate monitoring system. Finally, the BOD is responsible for the financial governance of the program, possibly with the help of independent auditors.

Advisory board: If deemed appropriate, the program committee or the BOD could also appoint an advisory board with experts that can support the launch and execution of the program. Typical support could be to give advice on the fundraising strategy, to give a second opinion on inclusion of projects or to propose improvements of the program.

National partner/Local project owner: For the pilot projects to have a catalytic function, they need to be well connected to organizations with an interest to further advance the development of a community and smallholder based forest industry. Such organizations could be both NGOs and Government entities. The practical role in projects would typically be to assist with funding, but also start building capacity nationally that could improve the business environment for timber organizations and timber processing entrepreneurs. Example of capacity building could be deployment of technical/educational institutions, establish and scale up successful organization models for timber production and promote investments in infrastructure. (Examples of potential national partners from the research project are WWF Tanzania/MCDI and CORFO, Chile)

Technical facilities: The technical facilities consists of practitioners and experts capable of launching pilot projects and carrying out the support processes. As a precursor to the pilot projects, the technical facilities also conduct assessments of potential value chains/projects and present these for the BOD. As part of the support process in a pilot project, a technical facility can sub-contract one or more facility partners in the different project countries to communicate and run support processes on the ground. A facility can also sub-contract various service providers for specific support of the value chain actors. In practice, the technical facilities will carry out a lot of the practical program work.

Technology

A Fair Wood program will encourage and support the clients to implement new and innovative systems and technologies in management of the forest and in the processing of the wood.

Technology in forest management

One of the key elements of the Fair Wood concept is the introduction of silviculture into the management of native forest. By introducing soil preparation, planting, weeding, pre-commercial thinning and pruning, social, ecological and economical objectives will be actively supported resulting in improved long term status of the forest.

To increase productivity and to avoid heavy lifting and other dangerous operations, safe equipment and best management practice (BMP) should be introduced. Strict health and safety instructions must always be followed and necessary training implemented.

There are several IT-based tools introduced during the last decades to support forest management and trustworthy chain of custody. This include for example the use of digital maps and global position systems (GPS) as well as different laser scanning methodologies.

Recently drones have been introduced in forest management, possibly a very useful tool in management and monitoring.

Technology at the sawmill

The concept presented, based on “lean startup”, seeks to avoid high capital investment and unnecessary risks before wood supply and market opportunities are confirmed. Instead expansion is expected to be organic, “growing with the log suppliers and the customers”. Other key aspects of the concept are high value recovery (to utilize the maximum value of each log) and just in time delivery of high quality sawn wood products developed in co-operation with industrial customers (for example; exact dimensions, selected colors and agreed moisture content).

Unfortunately, neither of the two prevailing technical solutions; old large-scale sawmills and “low-budget” small-scale sawmills, fit into the proposed Fair Wood business model. Major problems with these are low value recovery, low standard on health and safety and poor dimensional stability.

Instead, small-scale high quality sawmill machinery and further processing equipment is a necessary and vital enabler of program goals. With focus on high value recovery, quality and customer satisfaction – rather than “high volumes at lowest cost per unit” - the program will support the introduction of innovative technology for “precision sawing” (resulting in exact dimensions), artificial drying to customer requirement and further processing to blanks, components and final products processed in a modern joinery/prototype workshop equipped with small scale high quality machinery.

The “small-scale and high-quality” strategy delivers several competitive advantages;

- ✓ Small initial investments – low risk before wood supply and market is confirmed
- ✓ High quality of the final products secured by correctly maintained and properly adjusted by well-trained employees
- ✓ When supply of logs and demand by customers are confirmed expansion can be based on parallel lines
- ✓ Spare parts can be available at the site to minimize stop-time and reduce risk for delays in delivery
- ✓ All services and repairs can be done by the sawmills’ own personal to minimize costs and stop-time and to secure continuous and pro-active maintenance.
- ✓ Attractive and safe working conditions improving access to qualified personnel and supporting the Fair Wood gender strategy

Resources needed for implementation and budget

For the scale of program discussed above the necessary resources and resulting budget is roughly outlined in the table below:

Amounts in thousand EUR	Resources needed	Total	% of total	Year 1	Year 2	Year 3	Year 4	Year 5
Total		**11 274**		**1 728**	**2 140**	**2 805**	**2 805**	**1 796**
Development of support components (by different actor constellations)								
Sums		***4 810***	***43%***	***1 119***	***968***	***1 029***	***1 029***	***666***
General FM-regimes and ecological effects	1 Facility expert 50% Y1 + 4 3rd party experts 50% Y1-Y5	1271	*11%*	303	242	242	242	242
Wood production systems	1 Facility expert 50% Y1 + 2 3rd party experts 50% Y1-Y5	666	*6%*	182	121	121	121	121
Timber by-product Energy systems	1 Facility expert 25% Y1 + 2 3rd party experts 50% Y1-Y5	635	*6%*	151	121	121	121	121
FSC-certification optimized for smallholders	3 3rd party experts 100% Y1-Y5	1 452	*13%*	363	363	363	363	0
Monitoring and evaluation system	2 3rd party experts 50% Y1-Y5	605	*5%*	121	121	121	121	121
Entrepreneur finance facility	1 3rd party expert 50% Y3-Y5	182	*2%*	0	0	61	61	61
General program activities								
Sums		***2 420***	***21%***	***484***	***484***	***484***	***484***	***484***
Co-development and co-ordination of a Fair Wood program	1 Director 100% Y1-Y5	605	*5%*	121	121	121	121	121
High level training of Project owners, Facility partners and policy makers	1 Facility staff 100% Y1-Y5	605	*5%*	121	121	121	121	121
Communication (Web, PR, external industry events)	1 Facility staff 100% Y1-Y5	605	*5%*	121	121	121	121	121
Fundraising and partnership management	1 Director 100% Y1-Y5	605	*5%*	121	121	121	121	121
6 Value chain(VC) pilot projects								
Sums		***4 044***	***36%***	***125***	***688***	***1 292***	***1 292***	***646***
Pre-Assessment	1 Facility staff x 5 days + 2 3rd party x 10 days / project	36	*1%*	36	0	0	0	0
Assessment & Planning	2 Facility staff x 10 days + travel + 2 3rd party x 10 days / project	131	*1%*	65	66	0	0	0
VC Concept development	3 F staff 30% + 3 local 3rd party 30% per project - 1 year duration	1 292	*11%*	0	646	646	0	0
VC Proof of concept	3 F staff 30% + 3 local 3rd party 30% per project - 1 year duration	1 292	*11%*	0	0	646	646	0
VC Concept launch	3 F staff 30% + 3 local 3rd party 30% per project - 1 year duration	1 292	*11%*	0	0	0	646	646

Please note that this an example to illustrate what a project could look like designed according to the program described in this section. For more elaboration and comparison see next section: “Summary of program changes as seen through the budget lens”

Funding model

The total financing model for the program is a phased approach where first several pilot projects are decided on and funded by national agencies or organizations supporting native smallholder forestry. In the second stage the strategy is that that these project owners jointly with the facility apply for matching funding by international development funding actors. To this effect, the team has started discussions with Sida, DEFRA the World bank and FAO so far. This strategy is will be discussed and co-developed with project owners and partners.

In sum, there are four basic factors of the funding model:

1. National project owners provide funding for activities on the ground -> The program will to some extent be the summary of chosen projects
2. Participation fee for downstream customers (who receive value as sustainability leaders)
3. Initially seek (50 percent?) financial support from non-governmental supporters (NGOs, companies, philanthropists, churches).
4. Non-governmental funds can later be matched with (50 percent?) support from government or multilateral aid agencies

Summary of the program changes - as seen through the budget lens

All implications for program design discussed above necessarily has implications for the budget of the program. The program has during the project time undergone two processes of planning and budgeting. One took place in June 2016 in response to a request from DEFRA, who wanted to include a Fair Wood program in their shortlist for future support. At this time, the first trips had been made (Tanzania and Mozambique) which gave input to more specification of the upstream support in the pilot projects. But aside from this no significant changes were made to the initial budget.

The other planning and budgeting process took place in the final stage of the project (February 2017). This budget is based on a fully "Revised Fair Wood program", which was presented in the section above. Thus, this budget reflects all changes to the program described above.

Summaries of the initial budget is included below. Comparing this with the new budget in the previous section it becomes clear what the partner team see as necessary changes based on the findings and analysis of the research project.

Budget summary for the initial Fair Wood Program, June 2016

Amounts in Thousand EUR	Total	% of total	Year 1	Year 2	Year 3	Year 4	Year 5
Total	**13 510**		**2 970**	**2 895**	**2 770**	**2 450**	**2 425**
General central organization costs	**6 990**	**52%**	**1 520**	**1 370**	**1 700**	**1 200**	**1 200**
Program development costs	**770**	**6%**	**120**	**150**	**400**	**50**	**50**
Assessment component	100	1%	20	40	40		
Marketing component	110	1%	50	50	10		
Sawmill entrepreneur component	250	2%	50	50	50	50	50
Forest manager component	310	2%		10	300		
Organization development costs	**770**	**6%**	**250**	**170**	**150**	**100**	**100**
Governance	170	1%	100	20	50		
Monitoring and evaluation	250	2%	50	50	50	50	50
Partnerships	350	3%	100	100	50	50	50
Central operations	**5 450**	**40%**	**1 150**	**1 050**	**1 150**	**1 050**	**1 050**
Program management	500	4%	100	100	100	100	100
Marketing and customer support	1 500	11%	300	300	300	300	300
R&D Wood processing, energy etc.	700	5%	200	100	200	100	100
R&D Native Forest man	500	4%	100	100	100	100	100
Fundraising and partnership management	500	4%	100	100	100	100	100
Participant outreach	250	2%	50	50	50	50	50
Monitoring and evaluation	250	2%	50	50	50	50	50
Project (and foundation) management	1 250	9%	250	250	250	250	250
Country-specific costs	**4 650**	**34%**	**950**	**1 025**	**800**	**950**	**925**
Country-specific central organization costs			Sum	*Sum*	*Sum*	*Sum*	*Sum*
Sums	**1 800**	**13%**	***425***	***425***	***200***	***350***	***400***
Assessment of projects	150	1%	75	75	0	0	0
Training of partner team	300	2%	200	100	0	0	0
Co-operation w partner team	700	5%	100	150	150	150	150
Test samples and prototyping	650	5%	50	100	50	200	250

National partner team costs			*Sum*	*Sum*	*Sum*	*Sum*	*Sum*
Sums	**2 850**	**21%**	***525***	***600***	***600***	***600***	***525***
Country 1	950	7%	175	200	200	200	175
Country 2	950	7%	175	200	200	200	175
Country 3	950	7%	175	200	200	200	175
Country 4	0	0%	0	0	0	0	0
Certification component	**1 370**	**10%**	**400**	**350**	**220**	**200**	**200**
Research Innovation and feasibility	125	1%	125				
Std dev and implementation	295	2%	100	175	20		
Communication	950	7%	175	175	200	200	200
Fair Wood Entrepreneur Fund	**500**	**4%**	**100**	**150**	**50**	**100**	**100**
Dev of Fund organization	200	1%	100	100			
Fair Wood Fund management	300	2%		50	50	100	100

As can be seen there some budget changes that are systemic and some that reflect minor development. Here are comments to aid the understanding of the budget changes – how it sometimes does and sometimes does not reflect the revisions of the program:

- **Single vs Multi-actor:** The first budget has all costs except costs for the national partner teams, certification development and Entrepreneur fund development, internally in one “Central organization”. This amounts in total to 65 percent of the total program cost. In the revised budget, there is no “new organization” to be developed and all activities can be done by different actors or actor constellations. This includes also development and coordination of the program. This means that “Organization development costs” (6 %) are not taken up in the revised budget.
- **Central functions of the program:** Coordinating, managing and fundraising the program is about the same, 19% of the total costs initially, as compared to 21% in the revised budget.
- **“High level training of project owners, Facilitation partners and policy makers”:** This budget line, (5%), was also included in the initial budget but broken up into “Training of partner teams” and hidden in the “Marketing and Customer support” line.
- **Value chain pilot projects:** Total estimated costs for the pilot projects are almost the same, 36%, compared to 34% in the initial budget. This however does not reflect some significant changes in the pilot project planning, namely: 1. Less marketing support upstream as the assumption now is higher capabilities of the participant Timber processing entrepreneur. 2. Involvement of manufacturing and final business customers early in every individual pilot project. The cost for one pilot project is still calculated at ca 650’ EUR and implementation time ca 4 years (of course this will vary depending on many factors).
- **Monitoring and evaluation system:** Monitoring and evaluation has increased from 2 to 5 percent. In total, development of monitoring, indicators, verification, evaluation and reporting has increased in importance as it now is integrated with the unique market positioning of the final products.

Appendix 1: RBM-chain of the research project

In the RBM-chain below the Inception phase project has been divided into Activities and Outputs from these activities. As stated earlier the main goal of the inception project is to prepare the way for a successful implementation of the Fair Wood project. This is where *outcomes* will result in the form of benefits to smallholders and forest restoration. So for related outcomes and impact see the RBM-chain in the full proposal (appendix 1).

Activities 1-3: Research and consultation	**Outputs: Knowledge and contacts**	**Activity 4: concept development**	**Outputs: Program design concepts**	**Activities 5-6: Planning and funding**	**Outputs:**
Activity 1: Consultation with international expertise on central concepts of the FWF Ca 20 interview dialogues: • Development organizations • Finance actors • Research institutions • Multinational companies working with local farmers 1 Stakeholder consultation workshop 1 Partner workshop	• Communication package adapted to different stakeholders (to be used throughout all project activities) • Expert advice and feedback on central design concepts of the Fair Wood Fund organization, support program and the FWF-project • Internationally anchored and supported Fair Wood Fund project • Relations to enabling actors in terms of knowledge, networks and funding • Funding for the FWF-project from a mix of private and public actors • Communication package 2.0 adapted to different stakeholders (spec to funders and partners)	**Activity 4: Concept development, based on research findings.** Mainly consolidation and analysis of research results and development work based on this. Further consultation and feedback will be sought from a selected mix of actors from the research activities. The development work will focus on the following areas: • Local engagement strategy when implementing a FW program • The FW program relationship to and agreements with Sawmill entrepreneurs and smallholders • Strategies of the FWF for women's empowerment • Role of the FWF • Organizational models for smallholders in a FW program • Organization of the FWF-project, including advisory board	Inter-nationally anchored and detailed blueprint of the FWF and its operations.	**Activity 5: Detailed planning, and budgeting of the FWF-project**	The Fair Wood project planned, funded and ready for implemen-tation
Activity 2: International market and value chain research. Ca 60 Interview dialogues: • Tech providers • Manufacturers • Corporate end users • Retailers 2 Consultation workshops	• Knowledge of international market interest and demand criteria • Knowledge of leasing possibilities from tech providers • Knowledge of pre-paying possibilities • Knowledge of market actors interest in co-funding the project • Relations to potential buyers, funders and tech providers				
Activity 3: Local research on value chain and entrepreneurial conditions: **3.1 and 3.2: Research in 2 Countries:** • Research and contacts • visits • ca 2X15 in person meetings • workshops **3.3: Case study of value chain workings from South to North**	Knowledge of local conditions: • Market – constraints, existing actors, needed functions and changes • Sawmill entrepreneur – business environment, drivers • Smallholders as suppliers – capacity, organization, drivers • Barriers and opportunities for smallholder-based value chains • Structural barriers towards women's participation, and opportunities Relations to central and enabling actors in potential project locations				

Appendix 2: Context analysis of the initial program

(Please note: This context analysis was drafted in the spring of 2015. Since then several developments have taken place. This analysis is still basically valid, but needs updating.)

Recognizing the Challenges

Recently 130 governments, companies, NGOs, and civil society groups signed onto the New York Declaration on Forests, and its call for a halt to deforestation and to restore 350 million hectares by 2030[406] - A response to international concerns that the world's natural forests are disappearing with negative effects on conservation values, ecosystem services and local peoples livelihoods.

The most updated FAO-FRA statistics, from 2010, estimate that the world's natural forests are being deforested at a rate of 13 million hectares per year.[407] However, recent satellite image analyses indicate that the deforestation rate may be underestimated in humid tropical forests.[408] In any event almost all forest loss and forest degradation is taking place in the global South - often in forest lands that if preserved could deliver long-term livelihood opportunities to poor and vulnerable communities.

It is estimated that, if business as usual continues, up to 170 million hectares will be lost (from 2010 to 2030) in WWFs 11 priority biodiversity hot spots ranging from Latin America to Africa and South East Asia. Drivers of primary deforestation are attributed to expansion of livestock, agriculture (small or large scale), infrastructure and sometimes extraction of charcoal and firewood.[409] The potential for management of the forests to provide long term economic, ecological and social services is not sufficiently recognized. Forest smallholders/communities in the South often lack the rights, means and incentives to protect, restore, replant and manage forests. Furthermore, there is often a strong vested interest by outside actors to control the forest resource in order to seek short-term profits and therefore also an interest to conserve the current institutional set up. Hence, suffering poverty, communities instead seek shorter-term opportunities that contribute to forest degradation and deforestation. But even with secured tenure rights, forest smallholders/communities in the developing world are largely excluded from value chains and rewarding markets. They are caught in a "poverty-deforestation trap".

In addition, many current solutions to mitigate loss of forests are not effective since they do not build on the range of opportunities that forests provide, do not sufficiently integrate local smallholders/communities, often lack effectiveness and do not have long-term sustainability. Many interventions build on short-term strategies and have insufficient capacity to deliver transformational change. Consequently, many smallholder/community forest projects today lack realistic and sustainable exit strategies, leading to high risk of collapse once donor funding ends. As an example timber is oftentimes the most valuable resource in forests, but timber

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[406] http://www.undp.org/content/undp/en/home/presscenter/events/2014/september/23-september-united-nations-climate-summit/Land-Use-and-Forest-Action-Area-Online-Pressroom/

[407] Global Forest Resources Assessment (2010) Main report Food and Agriculture Organization of the United Nations Rome

[408] Do-Hyung Kim et al; (2015) Accelerated Deforestation in the Humid Tropics from the 1990s to the 2000s. Geophysical Research Letters doi: 10.1002/2014GL062777
Hansen et al (2013). High-Resolution Global Maps of 21st-Century Forest Cover Change. Science, 342, pp. 850-853

[409] WWF Living Forest Report: chapter 5 – Saving Forests at Risk
http://wwf.panda.org/about_our_earth/deforestation/forest_publications_news_and_reports/living_forests_report/

harvesting and processing are rarely considered at the forefront in strategies to alleviate rural poverty primarily because the poor are often marginalized from these activities due to regulations, lack of access to appropriate technologies and elite capture.[410] Furthermore, often the overriding objectives of external agencies are static interpretations of conservation and protection, from which timber harvesting is excluded, which may have little resonance with local interests or simply displaces harvesting impacts to other adjacent areas.[411]

To access many of today's wood export markets, especially premium markets, third party verification and certification to sustainable forest management criteria have emerged as a prerequisite, especially for tropical wood. This is further boosted by legal regulations in the EU and U.S. to ban imports of wood products of illegal origin.[412] However, forest certification has in the past been difficult to access and retain amongst smallholders/communities in developing countries. Albeit there are examples of smallholder/communities managing certified forests, it can be argued that its contribution to poverty reduction so far has been limited.[413] In contrast, wood with origin from industrial forest ventures, which often have adequate technical and financial capacity, have been able to benefit from certification and access to demanding and high value markets much more than smallholder/community wood producers.

This has by some led to the false perception that smallholder/community forests and the management of these are prone to permanent donor dependency and will never become viable for other types of financing and business development – A perception that risks cementing the bias of the financial sector towards large scale industrial agriculture and forestry. Locally controlled forests are simply not seen as viable investments due to high transaction costs, risks and the failure of investors to recognize and understand the opportunities.

Seizing the Opportunities

But there is another way to analyze and draw conclusions from the past and present. Between 2002 and 2012 forest land designated or owned by communities increased dramatically from 21% to 31%.[414] This has led to an increasing number of communities with the potential to responsibly manage the forest resource for long-term benefits. This trend is poised to continue and hence including local people in the equation to preserve and restore the world´s forests will increasingly prove to be a key to success.

Also there has been an increase in international recognition that the focus on locally (smallholder/community) controlled forestry must be enhanced. As an illustration; the topic

[410] Sam &Shepard; (2011) The United Nations Forum on Forests Secretariat UNFF9: "Forests for People, Livelihoods and Poverty Eradication"

[411] Blomley, Tom. 2013. Lessons Learned from Community Forestry in Africa and Their Relevance for REDD+. USAID-supported Forest Carbon, Markets and Communities (FCMC) Program. Washington, DC, USA.

[412] EU Timber Regulation, U.S. Lacey Act.

[413] Macqueen, D., Dufey, A., Gomes, A.P.C., Nouer, M.R., Suárez, L.A.A., Subendranathan, V., Trujillo, Z.H.G., Vermeulen, S., Voivodic, M. de A. and Wilson, E. (2008) Distinguishing community forest products in the market: Industrial demand for a mechanism that brings together forest certification and fair trade. IIED Small and Medium Forestry Enterprise Series No. 22. IIED, Edinburgh, UK.

[414] WHAT RIGHTS? A Comparative Analysis of Developing Countries' National Legislation on Community and Indigenous Peoples' Forest Tenure Rights Rights and Resources Initiative, May 2012. http://www.rightsandresources.org/documents/files/doc_4924.pdf

of FAOs State of the World´s Forests report 2014 was "*Enhancing the socioeconomic benefits from forests"* and two of the key messages were;

- *To meet rising and changing demands, sustainable forest management must include more efficient production* and

- *Providing people with access to forest resources and markets is a powerful way to enhance socioeconomic benefits"*.

Organizations working with forest smallholders/communities are beginning to understand the importance of supporting the development of equitable value chains from the forest to the consumer, including entrepreneurship and market development. Proper utilization of the wood resources by smallholders/communities combined with local processing industries to access local, regional and international markets is recognized as a major opportunity.

This implies introducing management of forests for timber, which can be seen as a threat to conservation of biodiversity and securing forest carbon storage and sequestration. There is however a growing body of evidence that with proper support, smallholders/communities can responsibly manage forests whilst maintaining these values. In fact, some studies show that communities are better at preventing deforestation than formally protected forests.[415] Furthermore, there are vast areas of already deforested land with great potential for reforestation and landscape restoration to the benefit of smallholders/communities and carbon sequestration if linked to properly functioning markets. [416]

In parallel there are successful examples where smallholders/communities' sustainable forest management has improved livelihoods and created sufficient incentives to protect the forest. Market-based approaches have great potential to connect forest communities with outside markets and networks.[417] However, from a sustainability perspective, it is also crucial to utilize the full range of value chain options from *one* forest. A quality focus throughout the value chain has the potential to increase both ecological values and economical value to the smallholder.

Estimates from Chile show that with the right support for increasing processing and market efficiency the value of wood from smallholder/community forest management can increase 10 to a 100 fold whilst simultaneously decreasing the ecological footprint pressure on the forest ecosystem[418]. In designing or evaluating support measures it is important to have the full perspective of where these gains in value can stem from:

1. Forest management increases production of roundwood quantity

[415] Bray et al; (2008). Ecology and Society 13(2): 56
Porter Bollanda et al; (2012), Forest Ecology and Management Volume 268, Pages 6–17
[416] World Resource Institute; (2011), A World of Opportunity for Forest and Landscape Restoration.
http://www.wri.org/resources/maps/global-map-forest-landscape-restoration-opportunities
[417] Sam &Shepard; (2011) The United Nations Forum on Forests Secretariat UNFF9: "Forests for People, Livelihoods and Poverty Eradication"
[418] Increase in growth and proportion of higher value logs, see:

- Grosse H. & Quiroz J (1999) Silvicultura de los bosques de segundo crecimiento de roble, raulí y coigue en la región centro sur de Chile. In Donoso C. & Lara A. (1999) Silvicultura de los bosques nativos de Chile.
- Utilización de los bosques nativos en Chile: pasado, presente, futuro1996 Donoso, Claudio; Lara, Antonio Armestó, In Juan J; Villagrán, Carolina; Kalin Arroyo, Mary. Ecología de los bosques nativos de Chile. Santiago, Universitaria
- Antonio Lara; Cristian Echeverría; Claudio Donoso Zegers (2000) Guía de ensayos silviculturales permanentes en los bosques nativos de Chile World wildlife fund. Instituto de Silvicultura de la Universidad Austral de Chile Valdivia.

2. Forest management increases roundwood quality and thus market value.
3. Customer adapted sawmilling reduces waste in the sawmill and increases value of sawn timber.
4. Improved technology sawmilling increases quality (dimensional stability, cracks, rot, etc) and reduces waste.
5. Value added processing of residues increases value by for example pelleting of sawdust and finger jointing of short pieces.
6. Customer adapted sawmilling reduces waste for the customer in the manufacturing process and thus increases profitability.
7. Transparent value chains makes product development possible generating new business opportunities for wood from smallholders
8. Transparent and fair value sharing, such as a fair trade premium to the smallholders and sawmill workers

In confirmation to above there has been an international awakening of the role of communities as forest custodians in recent years. Some examples of initiatives at the forefront that are important to learn from and build on include the International Land and Forest Tenure Facility[419] that works to mobilize resources for securing local forest tenure, the Forest and Farm Facility[420] that works to build partnerships & policy support, and Forest Connect[421] that facilitates market linkages.

One theme that has emerged as a consequence of this focus is the need for investment in locally controlled forestry in order for smallholders to reach self-sufficiency based on participation in value chains and markets. This theme has been explored by the Growing Forest Dialogue initiative who in 2012 initiated eleven wide-ranging dialogues involving investors, rights-holders, governments, donors and others on this topic[422]. One of the main conclusions from these dialogues put forth in the "Guide to investing in locally controlled forestry" is that local entrepreneurship in the form of forest based small and medium sized enterprises (SME's) is the missing but necessary and viable entity for channeling investment:

"..the answer to building sustainable economies in forests lies in the formation of a thriving SME sector, in which the rights-holders themselves hold a meaningful stake. SMEs are the 'missing middle' of many developing economies, and unlike either microenterprises or large-scale land investment, they can provide improved access to goods, services, quality employment opportunities, and markets. They are a way for forest communities to overcome isolation, build self-reliance and stand their ground in the political and economic institutions, thus shaping their own destiny, that of their descendants and of the forests."[423]

Hence, there is now an increasing awareness of and interest from the forest oriented donor community in the option of investing in locally based forest SME's, albeit the understanding of "investment" in this context still often stays on an abstract level. Not only donors but also

[419] http://www.rightsandresources.org/how-we-create-change/by-global-initiative/strategic-initiatives/international-land-and-forest-tenure-facility/
[420] http://www.fao.org/partnerships/forest-farm-facility/en/
[421] http://forestconnect.ning.com
[422] http://www.iied.org/forests-dialogue
[423] page 13, Elson, D. (2012), *Guide to investing in locally controlled forestry*, Growing Forest Partnerships in association with FAO, IIED, IUCN, The Forests Dialogue and the World Bank. IIED, London, UK.

investors and companies[424] are showing clear signs of interest in supporting smallholder/community forest management and entrepreneurship. Furthermore, there is a proven market interest to source more fair and sustainable wood, if quality criteria can be met[425]. Also, the development of wood processing technology has evolved to a state where robust scalable industry designs can now efficiently produce wood that meets required quality levels in advanced domestic and international markets.

Another important evolution of late is the recognition amongst members of the Forest Stewardship Council (FSC) of the need to facilitate access to certification and markets for smallholders/communities. FSC already has many elements to facilitate improved access to FSC certification for smallholders/communities, e.g. group certification and indicators adopted for Small or Low Intensity Managed Forests (SLIMF). FSC has developed a Smallholder Support Program with their own portal on the FSC website[426] where supporting materials and information are gathered, and is also exploring a Small and Community Label Option (SCLO) to distinguish smallholders in the marketplace in order to help them find new markets for their products.[427]

However, many hurdles still exist and at the FSC 2014 General Assembly five important motions were passed with relevance to forest smallholders/communities[428];

i. Motion 11: Review of the FSC Certification System to adapt FC to small forest holders throughout the world
ii. Motion 58: Evaluation and reorientation of certification of non-timber forest products (NTFP)
iii. Motion 65: Priority of small-scale and low-impact community forest use of intact forest landscapes wherever appropriate, including conservation, protected areas and ecosystem services.
iv. Motion 83: Development of a Forest Certification Standard adapted to the realities of Indigenous Peoples and Traditional Forest Communities
v. Motion 88: To improve the FSC market strategies for small producers and communities

FSC has responded strongly to this call for action, acknowledging directly in the new Global Strategy 2015-2020 a renewed focus and commitment to developing solutions that benefit those who depend most directly on forests and, in April 2015 has launched a 3 year initiative to comprehensively redesign smallholder certification standards and verification systems, including a high-degree of participation by those who will use the systems.

[424] E.g. African Rift Valley Plantation Company at ILCF North-South Dialogue meeting 2014 in Helsinki, Finland
Teak plantation Perum Perhutani involvement in smallholder project in Indonesia.
Plantation company Arauco assisting in technical smallholder wood processing in Curacautin, Chile.

[425] Three studies have been conducted in recent years with involvement from two of the project partner organizations:
1) *Identifying potential international markets for certified timber from five species found in the community forests in Tanzania (Kilimanyika and SSC Forestry, 2013).*
2) *Builders' merchants and their customers – Final thesis* by Simon Ek at the Swedish university of agricultural sciences – Interviews with employees and a questionnaire study among customers at two builders' merchants in Stockholm
3) *A study of prerequisites and attitudes toward certified products according to the FSC and Fairtrade standard among actors in the Swedish market for visible wood.* (Sense Group and SSC Forestry, 2012).

[426] https://ic.fsc.org/smallholder-portal.152.htm

[427] https://ca.fsc.org/market-access-small-community-label-option.328.htm

[428] http://ga2014.fsc.org/motion-updates

In conclusion, there is a momentum to strengthen the role of and benefits for forest smallholders/communities in the development of value chains. Finding systems that can support smallholder/community forest management, local entrepreneurship and open up markets, i.e. operationalize the concept of investing in locally controlled forestry, could truly create transformative mechanisms that improve livelihoods of forest communities whilst protecting and restoring natural forests globally. This has led to current opportunities for successful intervention. However, to realize these opportunities, strategic approaches that have learnt from past challenges and successes are needed, which includes building partnerships based on critical contributions from organizations, companies and institutions.

Appendix 3: RBM-chain of the initial program

Areas of Activity	Outputs	Outcomes	Impact
1 Content development for Support Program and platform			
1.1 Develop support for Entrepreneurship • 1.1.1 Develop the business concept • 1.1.2 Develop T&S program in Business planning for Sawmill Entrepreneurs and SG's that meet the economic, social and ecological requirements of the Fair Wood concept. • 1.1.3 Develop T&S program Business management	***The following support functions of the FW start-up support program have been developed:*** • *Training and Support Program in basic business/economy/organization for SG* • *Training and Support program for entrepreneurs in entrepreneurship, business planning, startup and management.* • *Training and support to the entrepreneurs in implementing the FW concept into the startup of a wood industry*	***"An increasing number of timber-based value chains providing sufficient and secure long-term income to smallholders to motivate sustainable management of their forests"*** These value chains are operating according to the FWC, i.e. with the following characteristics: • Responsible value optimizing forest management • Transparent fair value sharing to smallholders • Credible certification of SFM and fair trade • High quality safe timber processing • Trade with high quality demanding customers,	***"An increasing number of smallholders are sustainably managing their forests for timber, because it gives them sufficient and secure long-term income.*** This leads to improved livelihoods for small-scale forest rights-holders and restoration and protection of their forests in areas under threat of forest degradation. "In key countries, The Fair Wood concept helps achieve the transition of the forest products sector away from illegally-sourced,
1.2 Develop support for value-optimizing Sustainable Forest Management: • 1.2.1 Identify range of forest management systems • 1.2.2 Forest planning • 1.2.3 Best forest management practice, including workers health and safety, conducive to efficient certification. • 1.2.4 Support for organization of smallholders	***The following support functions of the FW start-up support program have been developed:*** • *Generic platform for for SFM in different Forest Management situations (to make it faster/easier to develop locally adapted handbooks and guidelines for SFM. This will include standards for internal auditing* • *Generic platform for BMP in different Forest Management situations (to make it faster/easier to develop locally adapted handbooks and guidelines for BMP)* • *Training and Support program material for training of smallholders in organizing a smallholder group* • *Training and support to the entrepreneurs in implementing the FW concept into the startup of a wood industry. Handbook & Guidelines developed*		
1.3 Develop support for high value timber processing:	***The FW start-up support program includes support for the sawmill entrepreneurs and personnel in all***		

• 1.3.1 Design and test sawmill systems and biofuel-heated drying systems • 1.3.2 Establish and run a competitive sawmill • 1.3.3 Identify and develop business opportunities based on by-products from the processing. • 1.3.4 Develop operational training for key persons in the Sawmill Enterprise operation	***aspects of operations, including by-products utilization. This support includes a complete and field-tested, innovative pilot mill for concept development, tests, demos, training and for use by startups.***	bypassing middlemen • Co-development with customers optimizing value recovery ***The market transformation has begun based on the impact from the value chains that have been started in the project.*** ***There is interest and commitment among buyers for using wood from smallholders/fair wood in their products.*** Fair Wood products establish a competitive market niche based on highest environmental, labor, and product standards. The outcome objectives for the included sites have been reached – The site-based value chains have been created and are profitable enough to provide increased security of income from	high-volume exploitation of forests toward a system based on legality, chain-of-custody integrity, secondary processing, and certification for livelihoods and environmental values."
1.4 Develop support for Local business development: • 1.4.1 Capacity building in marketing • 1.4.2 Digital communication platform for producers • 1.4.3 Support for regional marketing of wood products • 1.4.4 Support for developing a regional market for by-products • 1.4.5 Support for Product- and supply chain development	***The FW start-up support program and The FW graduate members program include support for local marketing.***		
1.5 Develop support for Export market development: • 1.5.1 Start up FW export matchmaking function • 1.5.2 Develop and launch communication platform • 1.5.3 Plan and engage in marketing and matchmaking activities • 1.5.4 Create FW Buyers group • 1.5.5 Develop and launch support for customers' market communication • 1.5.6 Test of footprint protocol standard and communication	***The FW start-up support program and The FW graduate members program includes a support function for export market development*** **- The FW export matchmaking function**		
1.6 Develop system for assessment and evaluation			

• 1.6.1 Develop methodology for site and local partner profiling • 1.6.2 Develop methodology for on-site participatory assessment • 1.6.3 Develop methodology for search and selection of timber processing entrepreneur • 1.6.4 Develop methodology for stakeholder engagement • 1.6.5 Develop contracts between the Sawmill Entrepreneur Team and the Smallholder Group	***The FW start-up support program includes the following methodologies and tools for assessment and evaluation:*** • *Methodology for site and local partner profiling* • *Methodology for on-site participatory assessment* • *Methodology for search and selection of timber processing entrepreneur* • *Methodology for stakeholder engagement* • *Contracts between the Sawmill Entrepreneur Team and the Smallholder Group*	SFM for the included smallholders	
2 Implement value chain startup processes			
2.1 Conduct FW Training and Support program for the sawmill entrepreneur teams in entrepreneurship, business planning, startup and management.	Entrepreneurs trained and supported in Startup Entrepreneurship, business-planning and management		
2.2 Implement The FW Training and Support Program in basic business/economy/organization for the SG's	Smallholder groups have been supported in planning and performing value optimizing SFM, organization, certification and fair value sharing.		
2.3 Implement Operational training for key persons in the Sawmill Enterprises	Sawmill Enterprise operations team have been trained and supported in operational and technical matters - high quality timber processing, certification, optimizing value recovery, utilizing by-products		
2.4 Implement Support for Local business development • Capacity building in marketing • Digital communication platform for producers • Support for regional marketing of wood products • Support for developing a regional market for by-products	The sawmills have been trained and supported in business development and marketing – local and regional markets for wood products, local market for by-products, business planning and management		

• Support for Product- and supply chain development			
2.5 Implement Support for Export market development: • FW export matchmaking function support the Entrepreneur team • Communication platform available and supported • FW supports the planning of marketing and matchmaking activities • Connecting sawmill to FW Buyers group • Support for customers' market communication established based on profile of SG, site and sawmill • Footprint protocol standard and communication are established for the site	The Sawmills have been supported in connecting to international customers. Outputs during the project are presence in 3-7 national markets in the West and matchmaking processes with 100+ potential customers.		
2.6 Implement Assessment and evaluation of the sites and sawmill entrepreneurs • Site and local partner profiling carried out • On-site participatory assessment carried out • Search and selection of sawmill entrepreneur team are carried out • Stakeholders are engaged in the process • Contracts with the Sawmill Entrepreneur and the smallholder group are signed	• The assessment system implemented leading to inclusion of at least three sites into the FW start-up support program • The FW start-up support program implemented in six sites during the project period. • A pipeline of locally controlled forest locations/projects into the FW Start-up support program.		
3 Development of Organization-for-scale		The FWF organization is launched and effective, and is internationally known among smallholder organizations, policy makers and buyers for effectively catalyzing the creation of sustainable, fair and competitive	
3.1 Management and governance of the FWF	An organization built for continuous development of the FW support programs and for scaling of the operation: • Management and governance of the FWF in place		
3.2 Selection of, training of, and support to, Regional support teams	• Regional support teams have been contracted, trained and supported		

3.3 Targeted outreach to complementary operational partners	• Partnerships established with: ○ Forest companies ○ NGO's ○ Technology providers ○ Research institutes ○ Finance actors	value chains within smallholder-based wood products.	
3.4 Fundraising for the FWF operations	• Funding secured enabling expansion of the FWF operation.		
3.5 Financing facility for establishment and expansion of timber processing enterprises and to Smallholder Groups for implementing SFM	• Financing facility for timber processing enterprises and smallholder groups launched		
3.7 R&D of all components of the FW concept	• R&D plan developed and implemented for the components of the support programs		
3.8 Monitoring and evaluation of the support processes	• Monitoring and evaluation performed of the six sites/projects		
3.9 Administration and continuous development of the FW Start-up program and of the FW graduate member program			
3.10 Communication of the FWF and the FW concept to a broad set of stakeholders			
4 Certification system for smallholders		The launch and marketing of a new	

4.1 Feasibility and innovation research • 4.1.1 Investigate appropriate fair value sharing mechanisms • 4.1.2 Carry out market research study on FSC label with focus on forest smallholders • 4.1.3 Investigate innovative technologies relevant for effective forest smallholder	• A fair value mechanism which is flexible and able to return significant value to smallholders • A sound knowledge of market conditions required for acceptance of smallholder related labels. • New technologies to support smallholder forestry both for guidance and verification have been identified and developed	certification system optimized for smallholders has led to dramatically higher demand from and inclusion rate of smallholders as well as high awareness and sourcing demand among international buyers for certified wood and wood products from smallholders.	
4.2 Standard development and implementation • 4.2.1 Develop participatory methodologies to involve smallholders experienced in • 4.2.2 Develop group certification standards that closer reflect the socio-economic • 4.2.3 Based on the results from Activity Group 5.1.3 above, develop innovative technologies • 4.2.4 Develop decent livelihoods safeguards and fair value sharing mechanisms in FSC • 4.2.5 Provide cost–effective practical solutions when multiple-certification schemes are • 4.2.6 Develop a training program for smallholder auditors	• Systems to generate local Standards that are flexible and specifically adapted to smallholder and smallholder group situations have been developed • A fair value standard has been developed and adopted by the FW system • Cost effective technologies for audit verification have been developed and adopted. • Special auditors capable of dealing with smallholder situations and multiple certification situations have been trained based on a documented training program.		
4.3 Communication and marketing downstream and upstream • 4.3.1 FSC certification and marketing training of key actors and partners • 4.3.2 FSC communication and outreach of Fair Wood project • 4.3.3 Coordination of marketing and communications for FSC's part in Fair Wood project	• Key partners and actors have been trained to present the FW concept. • The FW concept has been disseminated and is well known in FSC circles at national and international level according to a well-developed and coordinated plan.		

Appendix 4: Overview of the objective "model" value chain

Overview of the "competitive smallholder-based quality wood"- value chain and the main differences compared with the prevailing conventional value chains:

Aspect	**Objective value chain**	**Conventional value chain**
Forest rights	Smallholders or communities have forest rights and exercise control. They become successful and eco-positive managers of their native forest and important suppliers to local and regional industries.	No rights or sell/lease away to outside operator
Forest management	High value/ha: Management of native forest and small plantations for higher volume, quality AND environmental benefits. Improved forest management in combination with new market opportunities to increase short and long term incomes for the smallholders motivating long-term investments in protecting and developing the native forest resource.	No management of natural forest. Selective felling on rotation leads to depletion.
Timber	High utilization of the trees – lesser known species, small sawn dimensions and for bioenergy	Only big straight parts of logs – the rest is left in the forest
Middlemen/ traders	No traditional middlemen. Only transparent agents/facilitators that help information flow between smallholder-sawmill and sawmill-customer	Many middlemen throughout the chain block information and leave very little for the smallholder.
Wood processing	High quality production: precision sawing, drying, customer-adapted components/blanks, timely delivery Mix of customers – for utilizing different parts of the log and for business resilience	Low precision, only air-drying – blocks access to advanced customers
Energy	Integrated production of chips/fibres and bio-energy	
Technology	Stepwise scalable – Timber supply, parallel lines	
Customers	Advanced customers (export and domestic) - that drive local market development	
Product development	Integrated product development – two-way adaptation and innovation	
Certification to verify sustainability claims	FSC - with developed criteria and indicators for Forest Management and a second-generation Chain of custody (COC) standard to track wood to specific groups of forest owners.	Very few cases of FSC for tropical timber from natural forests.
Competitive advantage from	The verifiable claim that wood sourcing has a net positive impact in terms of forest	

"Forest positive"	restoration/rehabilitation is used in marketing and to influence environmental rating systems for buildings as well as public and corporate policies.	
Competitive advantage from "Explicit origin"	improved chain of custody and certification down to each group of smallholders/communities secures that the wood buyers and the final consumers know exactly where the wood comes from.	
Fair value sharing in the value chain	Smallholders are paid reasonably for the timber over a long-term harvest plan – sufficiently to motivate long term engagement in SFM and certification. This is verified in the sourcing contracts.	Very little payments for logs. Often stolen. Often only paid for one harvest of old growth trees.

Appendix 5: List of Sources.

Activity reports

1.1 Consultation_Moz_Darlindo Pechisso (MOZ)
1.2 Consultation_Moz_LevasFlor_Nils von Sydow (MOZ)
1.3 Consultation_Moz_Verde Azul (MOZ)
1.4 Stakeholder Consultation Almeida Sitoe (MOZ)
1.5 Stakeholder Consultation AMOMA (MOZ)
1.6 Stakeholder Consultation Director of Commerce (MOZ)
1.7 Stakeholder Consultation Dr Egas Univ (MOZ)
1.8 Stakeholder Consultation Dr Mario Falcao (MOZ)
1.9 Stakeholder Consultation Forest Research Centre (MOZ)
1.10 Stakeholder Consultation Funds Mob Unit (MOZ)
1.11 Stakeholder Consultation NatDir Forests (MOZ)
1.12 Stakeholder Consultation Prof Bila FAEF (MOZ)
1.13 Stakeholder Consultation Reuben Mwamakinbullah (MOZ)
1.14 Stakeholder Consultation Rito Mabunda WWF Moz (MOZ)
1.15 Stakeholder Consultation Severin Kalonga (TNZ)
1.16 Stakeholder Consultation Temic Tanzania (TNZ)
1.17 Stakeholder Consultation WB (MOZ)
1.18 Stakeholder Consultation WWF Tanz (TNZ)
1.19 Stakeholder Consultation_Justitia ambiental (MOZ)
1.20 Stakeholder Consultation_sound and fair (TNZ)
1.21 Consultation Tafori Lawrence and Wilson (TNZ)
1.22 Stakeholder Consultation Mikko Leppanen Fin (TNZ)
1.23 Conafor Stakeholder Consultation (MEX)
1.24 Noh Bec Stakeholder Consultation (MEX)
1.25 Paco Chapela Stakeholder Consultation (MEX)
1,26 Pueblos Mancomunados Report (MEX)
1.27 Reforestamos Mexico Stakeholder Consultation (MEX)
1.28 Sierra Viva Consultation (MEX)
1.29 Meeting with Mapuche – The Engagement strategy
1.30 Meeting with SEB, financial services (SE) , 160125
1.31 Meeting with Steelcase, manufacturer (DE), 160217
1.32 Meeting with Deutsche Bank, financial services (DE), 160218
1.33 Meeting with JM, real estate & construction (SE), 160315
1.34 Meeting with IKEA, retailer (SE), 160421
1.35 Telephone conference, FSC UK, 160429
1.36 Product development consultation, Axxonen, real estate & construction (SE), June 2016
1.37 Product development consultation, United Spaces AB, real estate&construction (SE), June 2016
1.38 Product development consultation, Bovalls Dörrar, manufacturer (SE), June 2016
1.38 Meeting with Amsterdamische Feijnhout, trader (NL), 160621
1.39 Meeting with GWW, trader (NL), 160622
1.40 Meeting with Van den Bergh Hout, trader (NL), 160622
1.41 Short consultations with organizations attending the STTC conference in Rotterdam, 160623
1.42 Meeting with BAM Group, real estate&construction (NL), 160624

1.43 Meeting with Duracert, CoC consultant (NL), 160624
1.44 Meeting with Kährs, manufacturer (SE), 160706
1.45 Meeting with Fortum, technology provider/energy services (SE), 160810
1.46 Meeting with IKEA, retailer (SE), 160816
1.47 Meeting with Åhléns, retailer (SE), 160822
1.48 Meeting with Glover, manufacturer (CL), 160906
1.49 Meeting with MSP Group, real estate&construction (AU), 160908
1.50 Meeting with Kelding Enterprises , trader (TW), 160908
1.51 Meeting with H&M, retailer (SE), 160912
1.52 Telephone consultation with Kinnarps, manufacturer (SE), 160916
1.53 Product development process, Pettersson Rudberg, designer/manufacturer (SE), September 2016
1.54 Consultation with panellists attending FW Showcase Event, September 2016
1.55 Product development workshop, Ekolsunds slott, 160927
1.56 Panel discussion, FW Showcase Event, 160928
1.57 Consultation, Per Oscarsson, technology provider/energy services, October 2016
1.58 Report of Field Visit to Nainokwe (TNZ)
1.59 Stakeholder Consultation MCDI (TNZ)
1.60 Stakeholder Consultation Mjumita (TNZ)
1.61 Stakeholder Consultation Department of Forestry (TNZ)
1.62 Workshop on Fair Wood possibility in Tanzania – Neil Bridgeland, Jasper Makala, Geoffrey Mwanjela and Fair Wood team
1.63 Meeting with Pro Chile and Infor in Stockholm, June 21 2016
1.64 Meeting with Pro Chile, Stockholm, May 25 2016 – Evelyn Rakos, Trade commissioner, Daniella Araya, project leader
1.65 Meeting with Robert Rubinstein, Founder and chairman of the TBLI Group, Stockholm, June ?
1.66 Report on participation in the TBLI Conference Nordic, Stockholm, 20-21 September 2016:

- Workshop B2 – Impact investing for institutional investors: Barriers and innovative approaches (Anna Ryott, CEO Swedfund, Tammy Newmark, Founder of EcoEnterprises Fund, USA, AnneMarie Arens, Luxflag Luxemburg, Patrick Elmer, Blue Orchard Switzerland
- Workshop D2 – Impact investing in BoP markets (Per Haagensen, responsibility Investments, Norway, Patrice Schneider, MDIF-Sida – Innovative Impact investing using Development Agencies guarantees, Aaron Kaplan of The Fair Wood project also was part of the panel)
- Consultations with Fraser Brown, IUCN, Andreas Stubelius, Swedish energy agency

1.67 Meeting with Niclas During, Swedfund, September 8 2016
1.68 Meeting with Ninni Luthin-Kärling and Magdalena, Swedish Institute, September 8 2016
1.69 Meeting with Peter and Ann-Sofie Holmgren, Cifor, September 7 2016
1.70 Meeting with Ikea
1.71 Meeting with H&M Home, designer
1.72 Meeting and mail dialogue with John Stewart, ex World Bank
1.73 Skype meeting with Marco Kaiser, Finance in Motion, Germany
1.74 Report on participation in the Global Landscape Forum, Paris, December 2015

1.75 Meeting with FSC International, Ian Hanna, Stockholm 2016
1.76 Meeting with Bengt-Olov Byström, Logosol, Härnösand, 15-16/11, 2016
1.77 Meeting Pablo Huaiquilao, Smallholder Co-operative (Mapuche), Temuco, Chile 5/9 2016
1.78 Meeting with Desiderio Millanao, consultant/adviser, Temuco, Chile 5/9 2016
1.79 Meeting with PROCER, Managing Director, Mauricio Bruna, Los Angeles, Chile, 6/92016
1.80 Meeting with ProBosque, Managing Director, Isabel Onate, Los Angeles, Chile, 6/9 2016
1.81 Meeting with Foresa, Managing Director, Luis Basudas, Los Angeles, Chile, 6/9 2016

1.82 Meeting with INFOR, Sub-director, Rodrigo Mujica, Temuco, Chile, 7/9 2016
1.83 Meeting with National Association of Homebuilders, CEO, Gerald Howard, Valdivia, Chile 8/9 16
1.84 Meeting with Forestal Selva Valdiviana, Sawmill SME Entrepreneur Pamela Diaz, Chile 8/9 16
1.85 Meeting with Forestal Arauco SA, Director Ricardo Schaffner, 12/9 16, Santiago, Chile
1.86 Meeting with FSC Chile, Executive Director, Claudia Cuiza Zuniga, Santiago,Chile 9/9 16
1.87 Meeting with Masisa SA, Sub-Director, Regina Massai, Santiago, Chile 12/9 16
1.88 Meeting with IF (Innovation Centre), General Director Francisca Tondreau, Santiago 13/9 16
1.89 Meeting with Systema B, Co-Founder Maria Emilia Correa, Santiago, Chile 13/9 16
1.90 Meeting with FIA, Executive Director Maria Etchegaray, Santiago, Chile 13/9 16
1.91 Meeting with Swedish Embassy Santiago, Ambassador Jakob Kiefer, Chile 12/9 16
1.92 Meeting with CORFO, General Director Eduardo Bitran, Santiago, Chile14/9 16
Funding, partner GEF? , new smallholder/entrepreneur programs
1.93 Meeting with FSC Latin America Region, Coordinator Pina Gervassi, Lima Peru 31/8 16
1.94 Meeting with FSC Peru, Alba Solis, Lima, Peru 31/8 16
1.95 Meeting with Habitat Indoor, Architect Rafael Moya, Lima , Peru 31/8 16
1.96 Meeting with Citi Madera, Executive Director, Jessica Moscoso, Lima, Peru 2/9 16
1.97 Meeting with Citi Madera Lab, Ursula Jose Ugarte Olivia/Sandra Koc Mori, Lima Peru 2/9
1.98 Meeting with AIDER, Program Manager Marioldy Sanchez, Pucallpa, Peru 30/8-3/9 16
1.99 Meeting with AIDER Pucallpa, Coordiantor Pucallpa, Pio Santiago Puertas, Pucallpa 30/8 16
1.100 Meeting with Cite Forestal Pucallpa. Manuel Palacios, Pucallpa, Peru, 30/8 16
1.101 Meeting with Calleria Communety, Sergio Rodriguez + team, Calleria, Peru, 1/9 16
1.102 Meeting with Luis Alvarado, Antigua, Guatemala, 8/4 16
1.103 Meeting with Terra Global Capital, Co-Head LA, Glenda Lee, Antigua, Guatemala, 9/4 16
1.104 Meeting with Fusades/ProInnova, Director, Samuel Salazar Genovez, El Salvador, 11/4 16
1.105 Meeting with Masisa Lab, Jose Catala, Santiago, Chile 12/9 16
1.106 Meeting with MSP Group Australia, CEO Craig Nagel, Valdivia, Chile 8/9

Documentary Evidence

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Partridge, Marina Welker, and Rebecca Hardin (Supplement to April 2011), pp. S113-S125

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Documents developed by the Fair Wood Project

4.1 Stakeholder organization in different situations
4.2 Proposal to implement Fair Wood in Kilwa
4.3 The support for LevasFlor
4.4 v1_Fair Wood_Implementation_Proposal_Mexico
4.5 Lennart Ljungman The Devils Advocate on social and political constraints to FW
4.6 Interview Guideline_ver1_160315
4.7 Interview Guideline_ver2_161101
4.8 The Fair Wood Showcase Program
4.9 Environmental and social benefits of the Fair Wood program – developed for DEFRA
4.10 The energy part of a sawmill – developed for Fortum

Appendix 6: Value chain Case studies

- **Use of tropical wood from small-scale producers in installations and manufacturing**

Background

As part of the value chain research, two case studies have been carried out together with two real estate companies. The purpose of the case studies has been to simulate sales processes and get real-life experience and insights. What capabilities that are needed by the seller and by the buyer? More specifically we wanted to understand the character of real buying processes focusing on smallholder hardwood from the South.

The two companies were both known by the team from previous projects. In these projects, they have all expressed an interest to test wood from smallholder sources as part of a social commitment. They have both been offered to use wood that has been made available from funding not linked to the research project. Wood sources have been the now suspended saw mill in Curacautin, Chile, which was part of the "FSC and Fairtrade dual labelling pilot project"[429], and the LevasFlor sawmill in Mozambique.

Case 1. "The small property developer"

The company

Axxonen is a small Swedish property developer in Stockholm. They buy properties on attractive locations, rebuild them to high standard apartments and then sells them on. The main contact person at Axxonen has been an interior architect.

The sales process

The first meeting was focused on the wood from Chile since it was already in stock in Sweden. The architect decided to use the wood for custom made bathroom furniture. The time from first meeting till delivery of wood to the carpentry producing the furniture was 8 months. During that time, there was 5 meetings, several phone calls and dozens of emails. The market price of the wood delivered was estimated to be SEK 6 100 (excl. VAT).

In the second meeting several wood species from the Miombo woodland in Africa was presented to see if they were of any interest. The architect liked several of them and in dialogue with us we decided that solid parquet flooring would be a suitable product. The LevasFlor sawmill in Mozambique (with a forest concession in the Miombo woodland) was then contacted to see which of the wood species they could deliver, in what qualities, and when.

The wood from Mozambique was then shipped to Sweden where it was stored and some test solid parquet test strips was produced. The architect was pleased with the look of several of the wood species but the available volume of wood in Sweden was too little to produce the flooring for Axxonen's current building project. To this date (16 months after first meeting) there has been no decision to produce or install any solid parquet flooring.

Findings and discussion

The main objectives for Axxonen to buy the wood were:

- They liked "the story" and wanted to contribute
- The architect liked the look and the colour of the wood

[429] https://ic.fsc.org/en/our-impact/current-projects/fsc-and-fairtrade-dual-labelling-pilot-project

- It gave them something unique to present in their annual report to the shareholders and in the prospect to the potential apartment buyers.

Insights from running the sales process with an architect in a small property developer:

- The architect was in the position to change the initial design on the bathroom furniture to make it work with the dimensions on the available wood and
- To think of how different wood species with different colours could fit with different interiors in different projects
- Low knowledge of wood properties; for example, what hardness is acceptable for flooring. Also, assuming access to veneer for larger surfaces not understanding this is very unlikely to exist for LKS or wood from smallholders
- The wood price was of low importance and was handled late in the process

Warranties and product qualities

During the process the question about warranties arise. In the case of the bathroom furniture it was straightforward; the wood supplier was responsible for the wood towards the carpentry and the carpentry was responsible for the bathroom furniture towards Axxonen. In the case of the solid parquet flooring it was a bit more complex. Even though Axxonen choose the flooring to be used, it would be installed by a flooring company. Therefore, the flooring company is the one who must offer a warranty on the floor to Axxonen. To learn more about this, we interviewed Axxonen's current flooring company. They stressed the importance "high quality" -more specific meaning very consistent moisture content and very small variation in measurements. The human eye is very good at spotting very small gaps, and to manually correct the parquet strips (which is doable) while installing them is too time consuming and therefor expensive especially since the installers work on commission. The flooring company said that they once had to replace a floor for a customer and after that they changed their floor supplier to prevent it happening again. The current supplier offers an accuracy of +/-0,1 mm on length, width and thickness, and +/-0,05 mm on right angel accuracy. On moisture content, they offer custom specific drying in 0,25 percentage points, normally between 6 to 8 % (in Sweden).

Ordering wood from Mozambique

As mentioned above, the thought was to order wood from the company LevasFlor in Mozambique and then produce solid parquet flooring strips in Sweden. Since at the time of order we didn't know what wood species Axxonen wanted to have, we ordered 4 different species. From placing the order, it took about 7 month till delivered in Sweden. That was more than 2 months later than the original forecast at order placing. This was due to problems in the sawmill and by the choice of a longer (and cheaper) container shipment rout. The order hade to be changed a few times since the ordered dimensions couldn't be met. The wood was partially stacked by hand in the container causing problems at the unloading in Sweden where it's always done by a forklift. When shipping the container, the wood was wrongly declared as "HS code: 4409 29 00 00, Wood and parquet strips" instead of "HS code: 4407 99 00 00"[430]. In this case, it did not cause any problems, but it is the HS code that regulates taxes and fees and bans, so it could have caused severe problems and costs. LevasFlor did not use any standard grading rules or standards. Therefor we had to define some basic grading rules that defined what tolerances and defects were allowed for our order.

[430] See http://taricdok.tullverket.se/4.601f5f37152e44cb6bf66c.html for classification

Even though both parties spoke the same language and had direct communication via skype, there were miscommunications that in a real commercial sales process would have caused problems and extra costs. This shows the need for adequate competences at both the buyer and the seller in international trade in smallholder wood.

Trade finance and risks

In the forest sector generally, and in international trade especially, lead times and cash flow is always an issue. When LevasFlor want to harvest logs within their own concession they first must buy a harvesting permit for a specified volume and species from the local authorities. To cover this, the importer in Sweden paid this upon placing the order. The rest of the order was paid when the shipping documents (so called Bill of lading) was received, a few weeks after the container was shipped. The importer has not yet sold any of the timber (see reason above).

To explore different payment options, we had two meetings with the Swedish bank SEB. The standard practise in international trade is to use a so-called Letter of credit (L/C). The L/C terms are international and regulated by International Chamber of Commerce. When a buyer and seller has made a business contract and agreed to use a L/C, the buyer goes to a bank who issues a L/C. Once that is done, the seller can start producing the product per the contract, with the confidence that he will get payed. *If the buyer doesn't pay, the bank will!* The big upside for the buyer is that he doesn't have to pay in advance (which is standard when *not* using L/C) and risking never receiving any gods. The payment risk is moved from the buyer to the bank, and for that the bank will charge a fee and of course evaluate the buyer's creditworthiness. L/C can also be used to give the buyer a credit for e.g. 120 days, meaning that the seller gets payed immediately on shipment (by the bank), but the buyer doesn't have to pay (to the bank) until 120 days later. This will dramatically improve the cash flow for the buyer since he can then (in theory) sell the gods before he must pay for them. But the L/C can also be used by the seller to get payed in advanced. Since payment is assured by a (western) bank, the seller can ask their local bank to pay them in advance for a fee. This require the seller's local bank to be the recipient of the payment from the L/C. For the bank to issue a L/C (and take the risk) they want to see that the importer has a proven financial (positive) track record and a certain minimum turnover. Moreover, they want to have a deposit -a part of the order value (say 20 %) is locked in an account only accessible by the bank until full payment is made. The cost is set by an interest (% of the order value) and a risk premium (based on the bank's evaluation of the buyer and an overall risk of the deal) times the time the L/C is open (valid). For the issuing bank to be able to issue a L/C they need to have a partnership with a bank in the country where the seller operates. The bank has a big network of partnership banks, but in some developing countries in Africa it could be a problem. For the bank to offer a pre-payment or credit based on the L/C they charge an additional interest rate.

Other costs than the wood

The total cost of the timber was USD 11 000 for 16 m^3 (a full 20" container). Other costs (shipping, inland transport Moz + Swe, loading/offloading, other fees, export duty and clearing, insurance, document fees etc.) were 14 260 SEK (1755 USD) + 1 850 USD + 1 588 SEK (195 USD) = 3 800 USD. So, the cost for getting 1 m^3 from the forest in Mozambique to Härnösand Sweden was 237,50 USD (SEK 1 930 by the exchange rate at the time).

Case 2. "Interior for a new co-working space"

The company

United Spaces (US) is a company based in Stockholm and Malmö Sweden. They develop and run so-called co-working spaces. A big office space with different facilities where small and medium sized companies can become members and use as their offices. US wants to have a green profile, for example they have chosen to place their co-working spaces in buildings with the highest LEED classification: "Gold".

The sales process

One of the owners of US, who had heard of the sawmill in Chile, wanted to use the wood in the new expansion of their co-working space. After looking at a few different ideas, two applications were chosen. One was as a decorative panel in front of a combined reception and bar. The other was as panel around a fountain on a roof terrace.
The whole process had a tight time schedule and was done "at the last minute". The layout plans were already made for the reception/bar and it prescribed oak. The interior architect had to adjust the design to fit the wood dimensions available. The Chilean wood could be delivered in time since it was already in stock in Sweden. The panels for the fountain were planed by the company having the wood in stock in Sweden, and it was then sent directly to the co-working space where the fountain company cut and installed the panels. The wood chosen were roble *(Nothofagus obliqua)* since it according to the literature[431] was "very resistant" to decay. For the reception/bar we used rauli *(Nothofagus alpina)* that has a good reputation in Chile for being easy to work with and can be given a good finish. The rauli was sent to a carpentry who produced the panel, painted it and then installed on location.
The market price of the wood delivered was estimated to be SEK 29 900 (excl. VAT).
The total number of meeting was 1, plus numerous emails and phone calls (note that the buyer had already heard of the sawmill and the story on beforehand).

Findings and discussion

The main objectives for US to buy the wood were:

- They liked the story and wanted to support the project
- The wanted to have a feature that supported their green profile

Insights from running the sales process with an owner of the buying company in a property developing process:

- He had the mandate to force the substitution of the wood at a very late stage of the building process
- Owner having low wood knowledge and leaving it to us to choose suitable wood species. He then left it to the architects to make it look good with the rest of the interior, and to the carpenters to deliver according to the architects' plans
- The wood price was of low importance and was handled late in the process

A prerequisite to be able to handle this order was that we had the wood already ready to us and in stock in Sweden. Because of uneven quality (varieties in dimensions and presence of cracks and dead knots) we had to send extra boards of wood to the carpenter to not risking he would run out of it in combination with the tight deadline. When the installation was done the carpenter no longer wanted to have the excess wood in his shop and he had no storage place.

[431] Scheffer, T.C. and J.J. Morrell. NATURAL DURABILITY OF WOOD: A WORLDWIDE CHECKLIST OF SPECIES. Forest Research Laboratory, Oregon State University. Research Contribution 22. 58p

In interviewing the carpenter, he said that normally he used to go to his local lumberyard picking up the exact number of boards he needed for a project with the confidence that he could always go back and complement with some extra boards within a few hours if he needed. He's opinion was that it is always the architect/designer who decides the wood specie to be used and now the trend was walnut. The carpenter was never consulted in the decision. He did not mind work with, for him, unknown wood species, and his experience was that most woods were workable. His experience of rauli was positive.

The communication was a challenge since the order meant changing of an already set decision on the interior. Parties included in the communication besides us, were the owner, the external project manager, the architects, the carpenters, and they all had to communicate between themselves to get confirmation that the decision on what wood to be used had been changed. Besides this came the normal communication with the company storing the wood and the transportation company on delivery times, shipping addresses, packing instructions etc.

The colour of the wood did not match the already existing interior and therefor the architect directed the carpenter to paint it to look more teak-like. A stain was used to keep the wood feel and the result was good. The colouring decision was not known when the wood specie was chosen and could have caused problems since different wood takes stains differently (or not at all).

The time-consuming work of handling the wood became obvious when the carpenter was done with his work and there was wood left over that he could not store. Neither did he had the time to take stock or stash it on a pallet for further transport (and even if he had the time he would not want to make the work for free). The reason for the big amount of leftovers were due to the uneven quality and the shortness of time.

The panel boards on the fountain was inspected a few weeks after the installation and we found out that the boards had extensive discolouration from growth of mould. The design and the craftsmanship was not very pleasant either and therefor the decision was taken to remove the wood and replace it with oak and another design.

Durability test

The roble was tested by the "SP Technical Research Institute of Sweden" to confirm its durability and resistance to decay[432]. The result was presented after the fountain-build and it was surprisingly showing that the roble from our sawmill was not at all durable and probably would be classified as "nonresistant or perishable". The fundamental difference from the literature has not been further investigated, but possible explanations could be that that the literature's testing (from the seventies) was made from old trees in pristine forests, whereas our wood comes from younger trees in secondary forests and that the growing conditions are different. It was also a small sample and it is possible that the samples included sapwood even though clear instructions not to. The cost of this quite basic test was SEK 100 000.

[432] This testing was not funded through the Fair Wood research Project.

Appendix 7: Interview guidelines

Interview and meeting guideline_Version 1_March 2016-03-15
(FW Research Project, International Value Chain research)

Presentation of the Fair Wood partnership

Question 1: How does the company currently work in order to address sustainability and social aspects of wood sourcing? (could also be asked as an introduction)

Problem description
- Half of the world´s forests destroyed
- Predominated in the global south due to several factors
    - Low timber value when seling to existing traders
    - Low added value since processing is scarce
    - When processing is available, problems with low quality and low recovery rate

Check-Up: Does the company support the problem description?

Solution presentation: The Fair Wood value chain model

Show samples from Miombo-forests – Look and feel!

Describe idea with Support system run by Fair Wood Foundation as a solution. Wood buying companies become supporters.

Question 2: Is the described system attractive to use in order to develop supply chains, as a complement to existing strategies?

Question 3: How could wood from thought FW projects dock to existing product streams?

Question 4: What aspects of timber supply are crucial for the company XX?

Examples:

- *Properties/Species*
- *Dimensions*
- *Processing quality*
- *Logistics*
- *Legality*

Presentation of offer to interested wood buyers:

- Wood testing
- Prototyping
- Direct support to smallholders and entrepreneurs
- Possibility to join corporate network, and benefit from support activities
    - Communication development
    - Product development

Question 5: What part of the offer would be of interest?

Interview and meeting guideline _Version 2_2016-11-01
(FW Research Project, International Value Chain research)

Prior to interview: Send out Fair Wood Interview Background_161128. In this document, a brief description is given on the possibilities to……..

Question 1: What is your opinion and feedback on the general idea presented in the interview background? *Also, make sure to address questions on parts that are being perceived as vague/difficult to understand.*

Track 1: If the company response/feedback is predominately negative, explore the underlying sentiment/arguments for this position.

Examples of threads for follow-up questions:

- *Not trustworthy solutions*
- *Doesn´t fit with current sustainability strategies*
- *Too difficult/complicated*

Track 2: If the company response/feedback is predominately positive, explore what kind of support that would be required in order to make a concrete commitment.

Question 1: How could wood from thought FW projects dock to existing product streams?

Examples of follow-up questions:
- *What kind of products could be relevant?*
- *What kind of wood would be of interest?*
- *What would be your expectations on a potential supplier of es-wood?*
- *What possibilities do you see to integrate es-wood in your current sourcing operations?*
    - *Existing lines for manufacturing/logistics?*
    - *Or some kind of a dedicated solution?*

Question 2: What kind of support would be relevant to go from idea to prototype?

- *External support?*
- *Expectations?*

Question 3: What kind of support would you like to have from high-profile endorsers such as FSC, WWF, WRI, Rainforest Alliance?

Question 4: What kind of support would you like to have in order to improve communication linked to es-wood based products?

Appendix 8: The Fair Wood research Project - Background to companies interviewed

The Fair Wood Partnership consists of WWF Sweden, FSC Sweden, the Eco Innovation Foundation and Pivot Point. Together we are conducting a research project financed by Sida (the Swedish international development cooperation agency). Our focus is to explore the interest among key market actors to support the development and deployment of an innovation concept with the capacity to increase supply from forest farmers and accelerate growth and start-up of small-scale sawmills in a number of selected countries in Africa, South America and South East Asia.

An important part of the innovation concept is to influence timber suppliers and sawmills to apply best forestry and industry practices. Field research has shown that by applying basic silviculture and forest protection activities, forests can be enhanced and improved. This in turn will increase the flow of ecosystem services such as biodiversity, water flow regulation and carbon sequestration.

Buyers of wood can be positive drivers of change!

In order to encourage improvement of forests, forest farmers need incentives to manage their forests responsibly. Such incentives can be provided if the suppliers derive attractive revenues from the sale of timber. This can become real if an option exists to sell timber to competitive sawmills with a capacity to deliver high-quality sawn wood to final customers. Based on experience from several pilot projects, we know this to be a realistic possibility given that some vital investments are done to improve value chain capabilities. If final wood consumers increase their purchasing of hardwood from forest farmer based sources, this can become a positive driver of change. Ultimately, wood buyers can play a crucial role in mitigating deforestation, and at the same time alleviate poverty in forest communities.

Market research – Interviews with companies

Consequently, the demand side is pivotal in bringing about a positive change. In the project we are therefore allocating a lot of our research efforts on downstream buyers of wood, exploring the possibilities to increase market access for forest farmers and sawmills. We have so far been running 20+ dialogues with leading European and international corporate wood users (traders, manufacturers, DIYs, construction companies and retailers). In these dialogues we have investigated the interest to use tropical hardwood from improved forests in various products. Inspired by the insights and response, we now want to extend the interviews to validate the interest for the innovation concept. We also hope to learn more on what kind of support that might be needed in order to accelerate the development of new products.

For any questions regarding the interview, please contact:

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THE FAIR WOOD PARTNERSHIP – INITIAL MEMBERS:

WWF Sweden, Världsnaturfonden WWF in Swedish, is part of the global conservation WWF network, which represents one of the world's largest conservation organizations. WWF has offices in more than 80 countries supporting more than 13 000 projects. The primary focus of WWF is to preserve biodiversity, to ensure the sustainable use of natural resources whilst also promoting sustainable consumption, both within Sweden and globally. One key area of WWF engagement is to protect and promote sustainable management of forests.

The Eco Innovation Foundation (EIF) has during the past 10 years been active in the development of smallholder forest enterprises, with clients such as Sida, ICCO and WWF. EIF is also deeply involved in the timber value chain designing next generation production concepts as well as working with leading manufacturers and end users of timber-based products.

Pivot Point specializes in collaborative engagement, strategy design, multiparty facilitation and consensus building with a specific focus on implementation.
Previous assignments include co-operation with Ford Foundation, Climate and Land Use Alliance (CLUA), Environmental Grantmaker's Association, the United States Forest Service and the Norwegian International Climate and Forest Initiative and the United Nations Development Program.

FSC Sweden has long been actively involved in the mission to spread sustainable forestry in the world. FSC members at the General Assembly of 2014 passed five important motions focused on forest smallholders and communities. FSC has responded strongly to this call for action, acknowledging directly in the new Global Strategy 2015-2020 a renewed focus and commitment to developing solutions that benefit those who depend most directly on forests.

Appendix 9: Smallholder organization at the FMU level.

Background

The Fair Wood research phase has carried out detailed analysis of smallholder organization and tenure rights in a range of different countries and situations. These are briefly presented and analysed below.

Mozambique

In Mozambique in rural areas communities are recognised as being self-identifying groups of people living in a defined area. These groups have grown out of the traditional chiefdom system and are now governed by a 'Regulo' who assumes the right to speak for his group. Land tenure is based on customary usage. It is possible under land law to acquire a formal land right (DUAT) by registering land which has been occupied. This right can be taken up by individuals and by communities. The title provides for ownership of naturally occurring trees on the land but in the case where trees are harvested commercially the owners must pay the same stumpage as concession holders operating on public land.
Currently there appear to be no villages that are actively involved in the timber sector

Tanzania

In Tanzania the old system of chiefdoms was completely broken down by the reforms of the 1960s and 1970s. These reforms were based on a policy of villageisation in which dispersed rural communities were forced to come together to live in defined villages. These villages are governed by elected village councils assisted by a state employed village executive officer. Elections are held every four years and there is a very high rotation of office bearers since elected office is seen as a means of accruing individual and family benefits.
Since the late 1990s villages have been able to take over control of their forestlands and achieve formal forest tenure based on an approved forest management plan. Although initially slow in development in recent years there has been an explosive growth in take-up so that in excess of 10% of former state owned forest is now in village hands. Village forests however are to some extent concentrated on the areas of poorer quality or degraded forests. Under this forest tenure system trees become the property of the village and may be harvested according to the management plan and without the payment of any royalties to the forest administration.
Note that there is a conflict of interest here for the FA who are dependent on royalties to sustain them but are also required to approve forest management plans that will cut their revenue stream.
Under current laws it appears as if forests must either be allocated for forest management or for game management, this means that there is a choice between harvesting timber or sport hunting as a means of achieving an income from a forest. In both cases NTFPs may be harvested.

At the village level the forest management is administered by the village natural resources committee VNRC which is an elected body with a term of office of 3 to 4 years. The membership of this committee is again seen as a means of accessing the financial benefits associated with forest activities since members are paid for activities such as forest patrolling and monitoring. This means that the membership of the committee is rotated at

each election. This results in that the committee has little specific expertise in relation to forest management but is more a means of implementing forest management plans that have been developed by outsiders. VNRCs usually have a fairly even gender balance.
It is unlikely that the VNRC would be a legal *persona* with whom a contract could be established.

Chile

In Chile there are three types of forest ownership, state owned forests and two types of private ownership. State Forest accounts for a little less than 50% of all natural forests being primarily in nature reserves and national parks. Private ownership may be by individuals (companies or persons) or by indigenous communities. Indigenous communities in Chile are small, typically 5-10 families living together and sharing land areas of between 300 and 3000ha. Indigenous communities are considered to be legal persona and are therefore able to enter into contractual agreements. In the case of the Curacautin FSC SLIMF group which consisted of both private individuals and Mapuche communities compliance with the FSC group requirements was by means of contracts.

In Chile any association that is registered may make agreements and contracts as for example the Curacautin Fair Trade Timber Assocation.
Indigenous communities are headed by a Lonco (Chief) who may be a man or a woman and who has rights to make agreements on behalf of the community. Mapuche are principally an agricultural people who do not manage forest but collect servicewood and important NTFPS as well as having spiritual connections to the natural forest.

Mexico

In Mexico forests are either state owned or privately owned under three different types of ownership.
Privately owned forests may be owned by individuals and companies or by two different types of communal ownership.
Ejidos are land allocations that were made to groups of individuals on a shareholding system. The number of participants in an ejido is fixed but the entitlement to participate is transferable either by inheritance or by voluntary transfer to third parties. Ejidos governance is executed by the general assembly of all the shareholders. The general assembly usually appoints an executive to manage the ejido joint activities and may employ technical and administrative staff where necessary. In forest based ejidos the forestry activities are generally operated jointly by the members as opposed to agricultural ejidos where members receive a land allocation and carry out arable activities individually. Ranging and forestry activities in agricultural ejidos may be carried out jointly. In most cases the inheritance of ejido rights is passed on down the male lineage so that there is a dominance of men in the general assembly.

Communities are land allocations where all members of a community share in the land ownership on the basis of community membership and customary residence. Communities are legal persona capable of making contracts. The community is governed by the general assembly of all entitled adults so that there is generally gender balance in the assembly. The general assemblies tend to be large and unwieldy and are usually concerned with strategic

decisions. Decisions requiring more immediate attention will be taken by a subordinate council of 50 elected from the general assembly. Day to day running of communal enterprises is semi professionalised with a preference for employment of community members. Communities may jointly own independent businesses such as timber industries or tourism businesses. Within the land of the community individuals and families have landholdings that are used for private agriculture but they may also use communal land for collection of NTFPs.

Guatemala

In Guatemala most natural forest land is state owned (although privately owned land also has many forested parts).
In terms of timber production the main area from which natural timber is derived is the Selva Maya Reserve in the north. This area is all state owned. The state has leased out this land in the form of forest concessions to three types of actors, private companies, local communities, immigrant communities. These communities are all legal persona capable of making contracts. In the case of the Maya reserve there is also an intermediary organization involved responsible for marketing timber on behalf of a number of communities.

Peru

To be clarified by Klas and Maria
Indigenous communities have forest tenure of large areas including the right to harvest and sell timber.

Summary

Land tenure rights and forest tenure rights may be separate.
Forest tenure and forest governance are two distinct aspects.
It is possible to have good tenure and poor governance and vice – versa
Not all forest holders are legally able to enter into contracts.

Agreements and contracts with forest owners and managers in the Fair Wood system.

Background

Fair Wood beneficiaries at the forest level (smallholders) will be expected to carry out their forest management according to guidelines and standards developed by the Fair Wood system appropriate to local situations and to provide information for monitoring performance. In exchange for this the beneficiaries will receive technical and business support from Fair Wood as well as support for seeking forest management finance where this is deemed necessary.
It is likely that these smallholders will also make agreements with the sawmill entrepreneurs to assure them of a regular supply of timber. These types of agreements will not be considered here.

Types of Agreements

Agreements between parties about their relationship may take a variety of forms some of which may be legally enforceable and others which may not. In most cases the enforceability of an agreement is based on the existence of a contract between the parties. This contract

may be either explicit or implied. In general, a contract between two parties exists when there is an agreement between them and this agreement involves 'a consideration'. A consideration is something of value which is mutually exchanged between parties. In the case of a contract the failure of one of the parties to the contract to fail to perform will result in the other party being entitled to damages caused by that failure. These damages will be equal to the loss of value suffered by the aggrieved party as the result of a failure to perform by the other party.
This leads to a number of issues related to Fair Wood agreements:-

1) The beneficiary organizations will in some cases not be legal persona and therefore will be unable to enter into a contract.
2) The beneficiaries will not have the resources to pay damages even if they are at fault in breaking a contract.
3) The legal cost of recovering damages is likely to be significantly higher than the damages awarded by a court.
4) In most cases the obvious recourse of Fair Wood when a beneficiary fails to perform is to reduce, suspend or terminate the technical support.

On the other hand, there may be the case of a Fair Wood beneficiary seeking to enforce a contract with the Fair Wood system for technical support which it believes it has not received. In this case it is difficult for the beneficiary to demonstrate a loss since the support will in most cases have been provided free of charge. It may be possible that the beneficiary could argue that the failure to provide technical support previously agreed has led to a loss in future value but this would be very difficult to quantify.
Based on these considerations it seems that for a large group of potential beneficiaries of the Fair Wood system entering into a formal contract would be an unnecessary expense offering little benefit to the Fair Wood system.
There are other forms of non-legally binding agreements that are likely to be more appropriate for defining the relationship between Fair Wood beneficiaries and other parties. These would include straightforward non-binding documented agreements between two parties and Memorandum of Understanding (MoU) which may include more than two parties.

Who would be parties to an agreement with Fair Wood beneficiaries

It is intended that the Fair Wood system will devolve the direct responsibility for technical support to local actors either employed by the local Fair Wood support team or by 'in country' Fair Wood partners such as NGOs or consultancies.
In these cases a tripartite MoU between the Fair Wood system, the technical service provider and the smallholders may be the most efficient tool for regulating the agreement. Such an agreement is likely to include the following aspects:-

- Fair Wood agrees to finance and train the service provider for the technical support specified.
- The provider agrees to accept training and to carry out the specified technical support in the agreed way
- The smallholder agrees to receive technical support in exchange for carrying out forest management in the agreed way.

The impact of governance and tenure.

From the discussion in section 0 we have seen that there is significant variation in both tenure and governance in the different countries and regions visited and this is likely to become more complicated as more cases are added.
In terms of forest tenure this may or not be connected to land tenure and may be of different durations and different types held under different categories of legal persona. Although some forest tenures are allocated for short durations typically, 1 to 5 years these types of tenure are unlikely to be of interest to Fair Wood since forest management is a long-term activity.

Forest tenures by type

Forest tenures can be allocated to smallholders either by way of title or by way of a concession (includes leases etc.) When forest tenures are allocated by concessions the agreements usually contain significant performance agreements as well as the payment of concession fees and/or royalties. When forest tenures are allocated by title there are usually few if any performance requirements for maintenance of the title.
Broadly speaking forest tenures can be fitted into one of three types:-

- Concessions
- Limited term titles
- Permanent titles

Tenure holders by type

Tenures can be held by a variety of different legal persona and in different ways this includes amongst others: -

- Individuals by legal title
    - Chile small farmer
- Individuals under customary title[433]
    - Mozambique community land
    - South Sudan community land
- Groups under shared[434] legal title
    - Ejidos in Mexico
- Groups under joint legal title[435]
    - Community Forests, Tanzania[436]
    - Community Forests, Mexico
    - Community Forests, Chile
- Groups under joint customary title
    - Community Forests, Tanzania[437]

[433] These types of customary tenure are often 'nested' with for example children having tenure of fallen tree fruit, women having tenure of dead branches for firewood and me having tenure of livestock browse and timber.
[434] Under shared title the tenure rights maybe transferred by sale, gift or inheritance under joint title the title cannot be transferred although the number of title holders will often change due to birth, death and immi/emi-gration.
[435] These joint titles often have a component of the forest tenure that is allocated to individuals or families under customary tenure.
[436] Forests with tenure under a management plan.
[437] Forests falling inside village land but without a management plan.

- Community Forests, Mozambique

Impacts of Governance

There is a wide range of governance systems found amongst the smallholders encountered during the Fair Wood research phase. Governance structures had different levels of complexity and effectiveness. Most governance structures had some level of democratic organization between the smallholders and the day to day operational decision making. Under some governance structures a professionalised management was appointed for day to day operations and to give strategic advice to rights holders. In some cases democratically appointed representatives had very high rates of turnover leading to loss of knowledge capital in the system.

In many cases elected governance structures had the status of legal persona but in some cases they did not.

The variety of governance situations encountered can be categorised as follows: -

- Governance by group without legal persona
- Governance by group with legal persona
    - Group without professional assistance
    - Group with professional assistance

Table 2 Types of Agreement Sutiable for Different combinations of ternure and governance

	Land Tenure Type	Individuals by legal title	Individuals under customary title	Groups under shared legal title	Groups under joint legal title	Groups under joint customary title
Governance Type						
Legal Status	Professionalised					
Governance by group without legal persona	Group without professional assistance	Simple Agreement	Simple Agreement	Simple Agreement	Simple Agreement	Simple Agreement
	Group with professional assistance	Simple Agreement	Simple Agreement	Simple Agreement	Simple Agreement	Simple Agreement
Governance by group with legal persona	Group without professional assistance	Simple Agreement	Simple Agreement	MOU	MOU	Simple Agreement
	Group with professional assistance	MOU	Simple Agreement	Contract	MOU	MOU
Individual legal persona	Private decision making	Simple Agreement	Simple Agreement	X	X	X

Appendix 10: Proposal to implement Fair Wood in Kilwa.

Description of Site

Forest Resource

The natural vegetation of the Kilwa district is largely Miombo woodlands of the East Coast subtype. Under natural conditions these woodlands would have included wet grassland areas known as 'dambos'. The system includes small patches of evergreen forest (East African Coastal Forest) which is allied to Afromontane Forest and is high in endemics species. Most forest in the district has been disturbed by human activity in the past and almost all is affected by anthropogenic fires. Much forest has been converted for agricultural use either permanently or in a system of shifting cultivation. Most of the area has been selectively harvested in the past for the extraction of Blackwood (Dalbergia melanoxylon). Total forest area in the district is about 300,000ha of which a little over 100,000ha is currently certified under the MCDI group scheme with an AAC of 12,000m3. Actual harvests are of about 1000m3 in the past years.

The key species available include ***Dalbergia melanoxylon, Milletia stuhlmanii, Afzelia quanzensis, Pterocaprus angolensis****, Julbernardia grandiflora as well as various more common species such as Brachystegia spiciformis*. Some of these species are already known in the international market. Many have some local use.
Apart from harvesting, protection from illegal harvesting and some fire management there are no silvicultural activities in these forests.

Smallholders

The Forests in the Kilwa district fall under several types of ownership and governance, state ownership with management by FBD, village ownership with management and tree tenure by FBD (village inputs) and village ownership with management and tenure by the village. It is this last category that counts as smallholder ownership. About 30% of forests in the district are included in this category. These tenures are based on approved forest management plans that have been developed by villages with the assistance of the MCDI/WWF coalition. Most of these forests are now FSC certified under the MCDI group scheme (SA-FM/COC-002151).

History

The Kilwa forests are likely to have been sparsely settled for many hundreds of years since Kilwa was an important port and the terminus of the trade route (including a major slave route for the arabs) which runs from the coast up the Rufiji and Kilombero valleys to the great lakes region. It is likely also that the area was depopulated as a result of the activities of Maji Maji rebels during the rebellion of 1905-1907 which started in the Kilwa hills a few kilometres to the north. Repopulation of the rural areas is likely to have started in earnest in the 1950s as was the case further inland in the Kilombero.
The villageisation policy of the Tanzanian government in the 1960s and 1970s would have forced the concentration of the population into the local centres existing today. As a result of this process large areas that had formerly been sparsely resettled in the mid 20th century had their population removed.

Human impacts on forests would have been limited to areas closer to settlements where these impacts would have been intensified.
In the mid 1990s the large scale extraction of Blackwood for the Chinese market started in the district (it is believed that up to 10,000m3 per year was exported in this period) and this has accounted for significant depletion of this species. Other species were harvested for local use.

Regulatory Framework (if known)

The forests that make up the VLFRs are owned by the villages and governed by the local village councils. Councils have an elected village natural resources committee (VNRC) that is responsible for forest management including, planning, protection and harvesting. The VNRC is responsible for organising timber sales and for supervising harvesting. Membership of the VNRC is rotated so that everyone gets a chance to benefit from the employment offered (and possibly for accessing informal payments from harvesters). In an case the rapid turnover of membership mean that there is little retention of technical knowledge in the committee.

Current Situation of the smallholders and the timber business.

The total amount of roundwood harvested from the MCDI certified area of 139,000ha in 2015 was 898m3 of an AAC of 12,800m3. The trees are sold standing and the buyer is expected to remove the entire usable volume including branches following the harvest. This sold volume is concentrated into a very few species. Most of the harvested wood is sold as logs although two of the 13 group members also sell pit sawn boards.
The use of a ding-dong mill to produce boards at Nanjerinji has proved a failure and the boards could not be sold on the local market due to poor quality. Total income from sale of timber is likely to be about US$50,000/yr which equates to about US$0.35/ha/yr over the entire forest area.

Current Situation of timber processing

There is an attempt by some villages to process logs into boards either by pit sawing or by use of a Ding-Dong mill provide by MCDI but this has largely proved a failure. Processing of timber other than blackwood is for the national market. Blackwood is used for carving for the local market and is also exported, mainly as instrument blanks. Timber processing happens away from the forest in villages and small towns on the main road between Kilwa and Dar es Salaam which is the main market. Manufacturing takes place in small workshops along the roads or in somewhat larger workshops and a few factories in Dar. Timber is not dried locally and there is currently no kiln capacity dealing with native timbers. It is known that KVTC and Tanwat have kilns for teak and pine respectively.

In early 2017 Sound and Fair will be developing a sawmill in Nainokwe which is intended to process primarily blackwood for the instrument market. Neil Bridgland has expressed an interest in dealing with other species as well. It should be noted that as far as I know Neil, although he has spent many years getting this project off the ground has never run a sawmill (or any other physical business before) and is relying heavily on his Tanzanian partner who has worked in sawmills in the Arusha district.

Proposed Fair Wood intervention

Brief Description of Planned Intervention

The intervention will focus on two or three adjacent villages with a joint forest area available of at least 20,000ha. No village with a forest area less than 3000ha can be included in the startup period.
Smallholders will be supported in forest management planning and in silviculture. A new silvicultural system will be introduced that is designed to stimulate regeneration and growth of better quality trees. This will be based on patch clearing, singling of coppice and fire management. Forest management interventions will be paid for by immediate increased incomes from charcoal production and more timber sales of more species. Fire protection particularly of the cleared areas will ensure regeneration.

Sound and Fair will be supported to develop and access markets for non-blackwood species. A partnership between Sound and Fair and supplier villages will be developed along the lines of Sodra to ensure profit sharing for the non-blackwood species. Sound and Fair would be supported in the selection of appropriate sawing equipment and kilns for the business and also in obtaining the necessary finance. Sound and Fair will be supported in accessing local markets for non-blackwood species.

The Fair Wood intervention will be done using local partners for different activities these will include Mjumita, MCDI and others.

Brief Description of expected conditions after intervention

Forest condition will improve due to improved regeneration over the managed area. There will be an immediate increase in forest incomes due to the production of significant volumes of charcoal and an increase in the volumes of all species available as roundwood from the patch clearing activities. Sound and Fair will achieve increased incomes from processing of timber which will be based on a separate production line at their existing facility (Blackwood requires different saws from the other hardwoods due to high precision sawing needs). Sound and Fair will supply local markets (mainly in Dar es Salaam) with higher value properly dried timber than is currently available and export markets with products developed under the fair wood system. It is expected that forest incomes can be improved from the current US$0.3/ha/yr to US$10-30/ha/yr

Engagement Strategy

With local partners

Fair Wood will employ a country representative who will be responsible for engaging with implementing partners and for participating in training. Fair Wood will implement training of the representative and staff of key partners.

Mjumita

I believe that Mjumita is likely to be more successful than MCDI in engagement with local communities for large scale production of the most important secondary product that will provide income for smallholders and that is Charcoal. They have experience of this with many villages across Tanzania. Mjumita will be asked to support the charcoal business and to

ensure management of forest patches. It is expected that this will require Mjumita to have two permanent employees in the district.

MCDI

MCDI with WWF support have been successful in developing the management plans needed by villages for two purposes, acquiring the land as VLFR and in achieving FSC certification. They have on the other hand been unsuccessful in developing markets and achieving sales of roundwood. In addition, they have failed in attempts to carry out processing at the village level. MCDI will receive training and support to develop and implement the new silvicultural scheme. MCDI staff will be responsible for joint development of detailed forest management plans in collaboration with the smallholders. MCDI will be required to have one permanent staff member resident in the villages.
MCDI field officers would be expected to carry out field monitoring of the impacts of silviculture and of the completion of forest management tasks for the purpose of reporting.

Engagement strategy With smallholders

Engagement with smallholders will be carried out largely by the implementing partners following training.

The basis for the Mjumita engagement will be the introduction of a charcoal business for the smallholders benefit. This is expected to be largely self-financing but may require an investment in portable steel kilns.
In this case MCDI is already engaged with smallholders and the basis of the further development will focus on development of the improved silvicultural plans and engagement with the entrepreneur. MCDI will support the interface between the smallholders and Sound and Fair and other customers by helping to identify markets and to negotiate fair business arrangements.
Smallholders will not know that the support and the changes involved are part of a coordinated external strategy from Fair Wood.

Engagement strategy With Entrepreneurs

Engagement with Sound and Fair is already under way. This will be developed directly with Neil Bridgland for product development with the market and for equipment selection and finance and organization of the fair relationships with the smallholders.

Development of local engagement between actors

The key local actors, Fair Wood national representative, Mjumita, MCDI and Sound and Fair are already in contact as a result of previous activities. They will form a Fair Wood implementation committee (which will receive direct training from Fair Wood) which will meet monthly to plan and coordinate activities with smallholders.

Forest Management interventions

Silviculture and harvesting plan

It is expected that the total harvestable area will be about 15,000ha (25% set aside) and that this will be divided into 30 blocks of 500ha for annual management purposes. Of this area 50ha will be patch cleared and the entire area will be harvested.

50 ha of complete harvest will yield 1000m3 of round wood of a range of species and approximately 1500m3 of wood for charcoal production. (50m3/ha) 450 ha of selective harvest will yield a further 900m3 of roundwood and approximately 450m3 of branches etc. for charcoal. This will yield about 150 tonnes of charcoal with a value of US$30,000 and round timber with a value of around US$100,000.
Post harvest management of cleared patches is a key requirement which requires weeding twice during the first three rainy seasons and fire prevention for four to five years. Coppice singling will be carried out in the extensive management area.

Training

Training will be given to smallholders in all aspects of their activities by Mjumita, MCDI employed staff working on the ground who in turn have been trained by Fair Wood.

Support

Technical support will be given through the implementing partners for all forest activities. It may also be necessary to develop some level of financial support for charcoal activities in order to pay up front labour costs if workers are to be employed directly for this. This may be necessary if large metal kilns are used by groups and if the business is to be organised on a village level basis.
It is expected that Mjumita will be responsible for supporting communities in marketing the charcoal.
The national Fair Wood representative will be responsible for helping to find markets for round wood that cannot be taken up by Sound and Fair.

Entrepreneur interventions

Expected Market (type and quantity of sawn materials)
The Fair Wood market will be for sawn kiln dried timber of about 6 species of which at least one will be a dominant miombo species such as Msasa. This will ensure that the bulk of material from patch clearing is able to find a market.

Sawmill design support
Sound and Fair will be supported in designing an appropriate sawmill for dealing with secondary species and for kiln drying.

Business planning support
Fair Wood will support Sound and Fair in the development of fundable business plans for the processing and marketing of non blackwood species.

Business management support
Fair wood national representative will support Sound and Fair in business management and administration with a specific focus on meeting national legal requirements for all aspects.

Market interventions

Engagement by entrepreneur with local market

The entrepreneur will be supported by the national Fair Wood representative to find markets for sawn timber in Dar es Salaam and other manufacturing centres. This market is expected to consume about 50% of the local roundwood resource. A fair price for boards on this market will be about US$400/m3 which after costs will yield a margin of about 20%. This will account for 350m3 of boards generating a gross income of US$140,000 per annum.

Engagement by entrepreneur with export market

Product design and testing

Fair wood will support Sound and Fair in partnering with potential customers to develop products based on well dried dimensioned timber. This will be done according to the lean startup approach for each product and customer. It is expected that 350m3 of sawn products will be exported at a net FOB price of US$900 generating an annual income of US$315,000 with a profit margin of approximately 40%.

Fair Wood outcomes

Condition of Smallholders after Intervention

Smallholders will receive income from both the sale of timber to the entrepreneur and from the sale of charcoal. The system will create employment for charcoal production and for timber harvesting and forest management. In addition the entrepreneur will create local employment.

The smallholder community is expected to receive direct income from product sales of US$130,000 and a further income from employment at the sawmill of about US$100,000. Profit sharing schemes either through Fair Trade premiums or trust equity would generate about an additional US$30,000.

The intervention in forest management is expected to increase the production of timber in the long term. Currently ingrowth of the desirable species is about 0.1 m3/ha/yr which has a value of about US$5/ha/yr. If the range of desirable species can be increased and the total growth can be directed more towards these species then yields of 0.5m3 – 1 m3 should be possible after the first rotation increasing to 2-3m3 after several rotations.

Condition of entrepreneur after intervention

Sound and Fair currently is concentrating solely on blackwood this is a well established market that generates high values mainly from instrument blanks. The total world market in blackwood for this purpose appears to be less than 300m3 per year. I have no detailed knowledge of Sound and Fair plans but would expect that they will be harvesting about 200m3 per year to produce 100m3 of blanks which I would expect them to sell for about US$2 million. This is labour intensive since the blanks would have dimensions of about 50x50mmx 300mm down to 20x20mmx300mm. This would require about 40 people in the mill.

The additional timber of other species could be used to generate additional revenue of about US$450,000 and additional profit of about US$150,000. Approximately ten people would be employed for this.

The investment in the Fair Wood activity would diversify their market making them less reliant on a single type of customer. It would require additional investment in kilns but the waste material from the sawing of this additional volume makes it possible to run the kilns from the sawmills own offcuts thereby reducing operating costs. The investment would also act to stabilise the relationship with local smallholders who would look favourably on a one stop shop for selling their roundwood and for the benefits of Fair Trade

Market development

It is expected that the market will take approximately three years to develop to the capacity to absorb all of the timber produced and that growth will be linear during this time. This market growth will require the continuous intervention of Fair Wood market agents.

Business model and financial requirements

For smallholders

For smallholders to engage in charcoal production requires the use of portable metal kilns and saws for felling and dividing trees. A single kiln can produce 1 tonne of charcoal in a week thus a minimum of 3 kilns will be required to produce 150 tonnes a year. It is suggested that five will be used. Kilns can be produced for around US$2000 . Saws and a chainsaw would have an additional cost of US$1000.

Smallholders have a choice to produce charcoal individually or as a paid community effort. It should be possible for the smallholders acting together to produce a truck load 15 tonnes of charcoal every two weeks during the operational period. This will require the employment of 6 men at a cost of US$240[438] per week or US$12,500 per year. This will yield a profit of about US$20,000 of which 50% should be spent on silviculture of the cleared areas during the subsequent 3 years, 25% should be retained for capital repayments and kiln and saw replacement 25% and the remainder used for general funds.

There is therefore a capital requirement of about US$12000 to cover the initial capital and this could be paid back over a five year period from the charcoal business alone.
Income from round wood sales of about US$100,000 per year should be used about 50% for forest management including fire protection and 50% for general funds.
The expenditure of general funds should be decided on wholly by the community and this could include simply distributing the money between them.

It is expected that Fair Trade payments from Sound and Fair for their non-blackwood timber will be about US$30,000 for the exported portion and this should be divided between the smallholder producers and the employed labour in the forest and sawmill. Usual Fair Trade rules require that only 50% of this can be directly distributed and that the remainder should be used for communal benefit.

For Entrepreneur

Sound and Fair already has infrastructure in place so will require funding only for additional processing equipment including kiln. It is assumed that because of the lean startup

[438] I suspect a labour cost of US$40 per week is high for Tanzania

procedure that no investment will be made until a market has been secured for a significant volume of timber and that kiln capacity will be increased as necessary.
The expected output of 700m3 per year can be produced with a single Laks mill and two bandsaws.
The production of 65 m3 per month will require 4 kiln chambers of 15 -20m3 capacity.
The timber in production and transport will be approximately 200m3.
This leads to the following capital and cash flow requirement for the entrepreneur

Item	Unit Cost US$	No	Total Cost US$
Kiln	15000	4	60000
Boiler	40000	1	40000
Band saw	10000	2	20000
Cross cutting saw	5000	1	5000
Laks Saw	40000	1	40000
Stock (Production Cost) m3	550	195	107250
Total Cost			272250

With additional costs this is likely to rise to about US$350,000 in total.
Annual profits of about US$150,000 will allow this to be paid off in two years.

Fair Wood Support Requirements

The Fair Wood support costs would be for both in country and out of country support. I estimate these at a cost of US$320,000 in the first year and about US$250,000 in subsequent years due to reduced International support costs.

Item	Unit Cost	No	Total Cost
Field Support Silviculture (Wages, plus transport)	20000	1	20000
Field Support Forest Management	20000	2	40000
Field Support Charcoal Business	20000	1	20000
National Fair Wood Representative (Wages, Transport, Office)	60000	1	60000
International Market Support (Product Development & Customer Engagement)	100000	1	100000
International Training Support	50000	1	50000
International Business Management Support	30000	1	30000
Total Cost			320000

Appendix 11: LevasFlor – Proposal for a Fair Wood Intervention

During the time the Fair Wood research project was ongoing, EIF also received some funding for a pre-study for technical upgrade project for the sawmill LevasFlor in Mozambique. This funding came from The Swedish Agency for Economic and Regional Growth, which is a government agency under the Ministry of Enterprise and Innovation. The funding was a planning grant within the program Demoenvironment[439]. From the interviews and site visit in this pre-study information was also gathered with the Fair Wood research project in mind. Based on this research this paper was drafted describing how LevasFlor could possibly be included in a Fair Wood program, what support would be needed and how it could be implemented. This paper serves to illustrate the activities of a Fair Wood program toward a participating timber processing enterprise.

1. Background LevasFlor

The Miombo forest in Mozambique is threatened by serious over-logging as well as pressure from a poor rural populations. This pressure includes, for example, illegal logging and "legalized" logging, over-grassing, intensive use of fire for bush meat and farming and unsustainable charcoal production. All taken together creating devastating effect on the Miombo eco-system.

EIF/FW has identified the Miombo forest as a potential region were the Fair Wood Concept have a great potential to support local communities to start managing the forest in a more sustainable manner. Even if the situation in Mozambique today is generally not favourable for introducing sustainable forest management, the EIF/FW initial analyses shows certain opportunities for building local "islands" of good examples which can later on, when improved general governance and security is introduced at national level, serve as a roadmap for sustainable development at a national and regional level.

LevasFlor has a 10 years history operating in Sofala province, close to the Gorongosa National Park about 3 hours drive from Beira, central Mozambique. With a forest concession of 46 000 hectares of Miombo woodlands and 150 workers, LevasFlor are the only FSC certified company in the Mozambican natural timber industry. LevasFlor have an old sawmill, CCA-treatment plant, carpentry shop and 3 old drying kilns (modified tobacco kilns) heated with fuel-wood. LevasFlor have been owned by, and greatly supported by, the Swedish church, Västerås Diocese, for more then 10 years but from this year (2016) new private owner have taken over the ownership. The new owners are committed to long-term ownership and also to continue to keep the high level of social and environmental standard introduced by the Vasteras Diocese.



Based on the serious commitment for responsible and sustainable management including also a commitment to keep the FSC certification, expressed by both the management of LevasFlor and the new owners, EIF/FW have started a process to evaluate the potential for introducing the Fair Wood Concept at LevasFlor based on potential market opportunities.

[439] https://tillvaxtverket.se/english/demo-environment/planning-grants.html

2. Challenges and Opportunities

The overall biggest challenges for a small local industry, far away from the major regional and international markers, is to build long-term relationships with relevant customers interested in, and prepared to pay for, legal and responsible produced products. These industries are instead often depending on a number of middlemen's, not always fair and transparent – and almost never interested to pay extra for legality/responsible management, and consequently this industries are isolated from important business information, business contacts and business opportunities. LevasFlor is no exception. Most of the wood is sold as commodities on regional markets via old contacts developed over many years. With a total production of less then 3.000 m3 sawn wood per year the possibility to develop international markets, as well as more attractive regional markets (for example high value products for Maputo) is very limited. Also, if a "demanding customer", interested in legality/responsible management, and is prepared to pay for these "services" is identified – this customer will at the same time also demand just in time delivery, certain volumes and specific drying and sawing quality - impossible for LevasFlor to meet with existing production system.

The major technical challenges is the old and inadequate sawmilling and drying facilities and the off grid situation were electricity is today only available daytime (from a big diesel generator) with relatively high running costs. Even if a smaller diesel generator will make electricity available for 24 hours, the layout and the limited possibility to control temperature/moister/airflow makes high quality drying very difficult, if not impossible.

Finally, there is also a number of general political and governance risks that influences the possibility to develop a sustainable and responsible business in Mozambique.

The most important opportunity for LevasFlor is the relatively well managed forest resource that includes a number of valuable (but some-times not commercially well known) tree species. The forest resource in combination with the very good relations and trusts that the company has established with neighbouring communities makes LevasFlor unique in the region.

In the area there are also a number of local communities with their own forest concessions that have been able to resist the "pressure" from logging companies. These communities have expressed an interest in developing their forest recourses in co-operation with LevasFlor.

3. The process to include LevasFlor in a potential Fair Wood intervention

First Step – Identification and first evaluation

LevasFlor is well known for the EIF/FW team since many years back. Västerås Diocese was, together with TCT Dalmann, the first Native Forests in Mozambique certified already more than 10 years ago. In discussion with several different organizations, including the World Bank Mozambique, FSC, WWF Mozambique and the University Eduardo Mondlane, the picture of a well-managed and responsible company has been confirmed.

Interviews with the management and the board of LevasFlor have been further strengthen the indications that the company has a long-term commitment to responsible forest management and also to meet high standards for social responsibility. This impression was also supported by the FSC auditing reports.

To further evaluate the company's commitment and possibilities to meet the Fair Wood Principles the EIF/FW team also decided to visit the concession and the attached sawmill industry. The visit to LevasFlor was carried out in September 2016. The general impression from this short visit was that the company meets high environmental and social standards:

- Even if the Miombo Forest in the Gorongosa region seems to be under heavy pressure from illegal/legalized logging, charcoal production and extensive and continuously repeated fires the concession managed by LevasFlor is well protected from illegal/legalized logging and extensive fires and still keep a high number of different trees
- The company have built an impressive trust with the communities in and around the concession and workers at the mill
- The company have well trained and attentive personnel
- The company have a good reputation and other forest villages in the region wanted to build partnership with LevasFlor to protect their forests from (international) logging companies/illegal logging and to introduce responsible forest management
- LevasFlor has, in the concession, large stock of several potentially valuable tree species.

But the visit also revealed that LevasFlor have some major challenges to work on

- The sawmill is old and almost all of the key machinery is in a need of replacement or up grading. The accuracy in sawing does not meet international standards.
- High quality further processing (planing etc.) will not be possible without investments in new equipment and sawmill-infrastructure.
- Layout and general conditions (ground preparation etc.) do not allow for cost-efficient and high quality production
- The kiln capacity is limited and the quality of the drying needs major improvements – most likely new kilns will be needed to meet international standard even if there is possibilities to up-grade the old kilns for cost-efficient drying for products for less demanding markets
- Kiln management capacity is further limited
- National/Regional marketing capacity very limited (however new capacity will be employed for developing the national market)
- International marketing capacity do not exist
- Road system in the concession is limited resulting in longer transports in the forest
- The main road to major local markets and the harbour in Beira is in very bad condition increasing transport cost dramatically

Second Step – Evaluating different market opportunities for LevasFlor

The general market analyses carried out under the Fair Wood program has indicated a positive interest for FSC certified wood with a “positive story” and 100% traceability. However, the analyses also shows that the wood is only possible to market at demanding markets if also the technical, logistic and esthetical properties fulfil the same high standards.

Based on a first test container of 16 m3 of sawn wood, produced and delivered by LevasFlor, of the 4 most interesting wood species, Msasa, Umbila, Chanfuta and Panga Panga different technical tests and also prototyping has been carried out. These prototypes have been presented to potential wood buyers/users with positive response. During the tests and prototyping the key specification of the potential export wood from the sawmill that need to be met has been defined. This includes for example acceptable variations in dimensions and moister content – information that will be useful in the design of the potential future sawmill.

In parallel also local and regional market opportunities need to be evaluated focusing especially demanding markets in Maputo. This needs to be done by LevasFlor with support from Fair Wood

Third Step – Evaluation of the surrounding villages interest and capacity to participate as supplier based on a FW approach

LevasFlor has already carried out a first analysis with positive results but further studies needs to be designed in co-operation with EIF/FW and then implemented by LevasFlor.

Fourth Step – Go ahead?

Based on the status of the concession and the industry, interest and capacity in surrounding villages and the potential market opportunities identified the necessary investments in the industry and the potential future incomes can be roughly estimated. The total investment needed in the industry, to reach a yearly output of 3. 000 m3 of sawn wood of high quality is preliminary estimated to approximately 5 million SEK including necessary machinery and consulting support. Next step is to make a first draft of a first business plan together with management and owners to evaluate if this investment is possible and relevant given the local situation and requirements from the new owners.

If the answer is Yes, the EIF/FW proposed intervention below can (if EIF/FW in agreement with LevasFlor and the surrounding villages decide to do so) be implemented.

4. Proposed EIF/FW intervention (assuming EIF/FW have agreed to work with LevasFlor in Mozambique).

The planned intervention in LevasFlor will initially focus on starting the process of including the interested neighbouring forest communities and to start up the new sawmill based on a lean start up model. In parallel the efforts to develop new markets locally, regionally and in Europe will continue.

The overall objective is to secure relevant income opportunities for the concession owners and the local forest communities based on responsible, and FSC certified, forest management *making other land use alternatives, especially selling the forest for clear felling to international logging companies, irrelevant.* A sub-objective is that the sawmill will be able to continue to deliver safe and fairly paid working opportunities for all the 150 people today employed by the LevasFlor company.

Engagement Strategy

With local partners: Step by step a national EIF/FW team needs to be developed. However this process has not started yet and will be developed in parallel with the development of the LevasFlor co-operation and the expansion into new potential EIF/FW project in Mozambique. The LevasFlor support will initially be managed under direct support from EIF/FW International.

Regarding potential other local partners, for example local consulting companies and potentially relevant NGO:s, this contacts will be developed over time and in relation to specific needs of the support to LevasFlor. A first contact has been taken with the Verde Azul consulting company in Maputo.

With smallholders: The initial focus is to secure the capacity of the LevasFlor to sustainably produce high quality products, based on the wood resources available in the concession and sell them at relevant markets. Based on the sawmill capacity established and new supply chains/customers developed new smallholder suppliers can be included and fair and sustainable payments for wood from these communities can be guaranteed.

Even if short-term focus is on developing the LevasFlor concession, some first informal contacts with the surrounding villages needs to be taken already as soon as possible. This first contacts should be taken by well-known and trusted local persons representing LevasFlor. It's critical that these contacts are correctly performed and help to strengthen the already established trust. By accepting that this process can take long time and include many meetings and long discussions the risk of miss-

understandings, future problems based on unrealistic expectations (as happened in the Vasteras Diocese project in Niassa) or mistrust (for example that the communities feels that LevasFlor has a "hidden agenda") can be minimized. For this reason a specific strategy for how to contact the villages will be developed by LevasFlor with support from EIF/FW.

At the moment there is no information about any NGO actively working with the surrounding forest villages currently discussed as potential suppliers. In a second (or third step) also more complicated communities (with ongoing conflicts and also support from NGO:s) can be included in the LevasFlor supply program if conflicts are solved and confirmed interests are established.

With entrepreneurs: Based on several years of contacts there is already an establish trust between EIF/FW and the local entrepreneur, LevasFlor. However, its still important that FW/EIF do not create unrealistic expectations on what kind of support that can be delivered to the entrepreneur. One key aspect is that the ultimate economical responsibility will always stay with the entrepreneur. Consequently LevasFlor must ultimately take all critical business decisions. This includes also all the final contacts and contracts with customers, local, regional and international. Even if EIF/FW will support in the process of finding and establishing new supply-chains and new customer-relations also the ultimate responsibility for fulfilling agreed contracts regarding quality and price and meeting expected delivery agreements stays with the entrepreneur.

Development of local engagement between actors: See under "*With smallholders*" above

Forest Management interventions

Silviculture and harvesting plan: The forest management in the LevasFlor concession is FSC Certified since many years and the methodology (25 years rotation with no silviculture interventions) is generally and traditionally accepted as "best management practice" for Miombo Forests. However EIF/FW want to challenge this "standard" and we are convinced the forest management implemented today needs major improvements including a much more rigorous silviculture to increase long term value production, secure long term biodiversity, and to secure long term social values. New management plans for the LevasFlor forests, based on an adaptive strategy, need to be agreed developed and implemented. In parallel new best management handbooks and other support tools etc. needs to be developed and field tested by EIF/FW. LevasFlor will, in agreement with the management, be used as a field test areas for the development of this necessary tools.

As a part of the support for FSC certification of the interested surrounding forest communities, the experiences from the implementation of the new EIF/FW Forest Management for the Miombo forest in the Gorongosa region will then, step by step, be shared.

Training: The entire LevasFlor forest organization will be trained to understand and implement sustainable forest management based on the new management strategy developed and agreed in EIF/FW-LevasFlor co-operation. The Training will be based on a "train the trainer" system were the major responsibility for the training rests on LevasFlor management team with support from EIF/FW.

In a second step LevasFlor, with support from EIF/FW, will train the surrounding forest communities, interested in becoming suppliers' to LevasFlor. This training will include the joint (LevasFlor-EIF/FW-Forest Community) development of a forest management plan adapted to the needs of the community and meeting both EIF/FW and FSC standard.

Support: See above

Entrepreneur interventions

Expected Market (type and quantity of sawn materials): The preliminary discussed business strategy is aiming at reaching a total production of 3.000 m3 (high quality) sawn wood and per year within 2 years. Of this approximately 1.500 m3 will be artificially dried high quality products and 1.000m3 lower value artificially dried products. Around 500 m3 will be sold as only air-dried or wet low value products. Total objective is to reach 50% for export and 50% for national consumption. Main species are Msasa, Umbila, Chanfuta, Panga Panga and XXX?.

Sawmill design support: A completely new sawmill/wood industry will be designed and built (based on a lean start up model) including artificial drying capacity and further processing. The design will be developed and also "field-tested" in Sweden by EIF/FW in co-operation with Logosol. The biggest challenge is to find competitive solutions for the artificial drying.

Business planning support: LevasFlor have, with the new owners, a relatively good capacity for doing the business planning. However, EIF/FW would like to introduce a lean start up model based on direct contacts with selected potential customers/innovation leaders. This will include also development of new products and new development of new supply chains. This will take time and carry considerable costs. There is a need to create a flexible and adaptive business plan were new market opportunities, new products and new combinations of products and customers will open up new business opportunities. Also the investment plan need to be flexible and continuously be adapted to the available market information.

Business management support: The new owners have already decided to strengthen both marketing and general management capacity. There will be a need of both training of the management team and also train the trainer activities in the forest and in the industry. There will be a special need to focus the training on 1/ strengthening sustainable relations with local communities, 2/ quality management and maintenance and 3/ artificial drying 4/ forest management according to EIF/FW 5/ gender aspects 6/ Logistics and 7/ special training program for sales department

Market interventions

Engagement by entrepreneur with local market: LevasFlor already have comprehensive experiences of selling at local markets. With improved quality of the sawn wood new local/regional market opportunities needs to be seriously explored. EIF/FW will support in all this efforts with sale-training and development of sale strategies. LevasFlor has already decided to strengthen sales department with one qualified and experienced sales person focusing local and regional markets

Engagement by entrepreneur with export market: Even if LevasFlor already have some limited experiences of export sales there is a need to strengthen basically all aspects of export sales including also quality control and logistics. In parallel EIF/FW will develop new supply chains together with "Innovation Leaders" at the market

Product design and testing: An important part of developing the market (especially for export but also for demanding regional customers) will be also product development in co-operation with potential new customers/innovation leaders.

Fair Wood outcomes

Condition of Smallholders after Intervention: There will be a certain delay before the smallholders in surrounding forest villages can start to feel a positive difference. First of all LevasFlor needs to develop new markets and new (high quality) production capacity. The smallholders will, in the short-term perspective, face a number of serious investments including the costs for establish forest management plans and to become FSC certified. Even if these costs can be limited it's not likely that

this costs can be carried by the smallholders themselves - especially as they can not sell any logs in the short term perspective. A certain short-term (first 2 year?) financial support will therefore be needed (see financing below). This investments needs to, to some extent, come from the entrepreneur, but a major parts probably needs to be some kind of soft loans or aid money. A key aspect is that these communities cannot, or do not want to, sell any logs to the existing market (informal and very low-paying)

Condition of entrepreneur after intervention: New sawmill, improved forest management at the concession, new suppliers and new market opportunities. Major investments will be needed but expected return will meet (or exceed) the investors (relatively low) requirement. Hopefully a prosperous and scalable business confirming the relevance of the FW concept and spreading the news to other entrepreneurs that then want to become legal, sustainable and responsible suppliers.

Market development: There are a number of different market opportunities to explore both regionally and internationally. In the first phase local and regional market will be the most important. International markets will take longer and cost more. In a first step leading innovative buyers (industries as well as final commercial wood users such as hotels or building companies) will play an important roles as "game-changers"

Business model and financial requirements

For smallholders: It's to early to evaluate the financial requirement for the smallholders/forest communities. This includes costs for introducing the FW forest management plan and the forest certification. Basically these activities should be (long –term) self-financed by 1/ the forest villages (by income from selling wood) and 2/ LevasFlor (as a cost for wood supply). In the short term perspective there is a potential need for financing of external consultants and the FSC certification (auditing and licence fees) as there might very well be a certain delay (perhaps as much as one –two years) between the first costs and the first income. The total external support to the smallholders for FSC certification and implementation of SFM) is preliminary estimated to 0.5-1 million SEK over 2 years

For entrepreneur: The total investment to get the sawmill production and forest management concession up and running, including machinery and consulting support is 6-7 million SEK over 2 years. About 1.8 million of this can (possibly) be covered by Demo Miljö (Tillväxtverket) and the rest of the investment (4 million SEK) need to be covered by the entrepreneur and finally around 1-1.5 million SEK (consulting time) needs to be covered from the EIF/FW support. However, this does not include necessary investments in market. These investments partly needs to be covered by the entrepreneur but especially costs for "market development in Europe", development of new products and completely new supply chains, especially for the wood from the smallholders, needs to be shared with other actors. Total costs, related directly to LevasFlor can be estimated to 1-2 million SEK over 2-3 years (assuming general market development costs will be covered by other funding).

Appendix 12: Biomass Energy potential from Sawmill Waste – an introduction to energy partners

INTRODUCTION

This paper was produced as an introduction to discussions with Fortum, Pamoja and African Opportunities AB for expert input and for possible future partnerships to help the Fair wood program.

BACKGROUND

Recent developments now provide an opportunity to create functioning markets for native wood products from smallholder forests in the South. These markets could act as a powerful tool to reverse the alarming destruction of forests. Secure incomes allow smallholders to become agents of forest improvement by engaging in sustainable forest management.

Forest protection and restoration is a focus of development agencies, impact funds, carbon schemes, and big corporations. The discussion has moved beyond preservation to one of market-based interventions. However, realized projects have often been large scale monoculture plantations where forest communities are excluded as active agents in the value chains.

Examples of inclusive value chains are rare and often not competitive in the global marketplace. A solution must acknowledge that the inclusion of forest rights-holders is a necessary condition for a market-based intervention to be effective in scaling forest improvement and protection.

Over the past five years the Eco-innovation foundation has focused on solving this issue. The result is an innovative value chain concept delivering clear commercial value to the main actors of the value chain. At scale this concept would also serve as the most powerful tool for providing other urgently needed values in our time: poverty alleviation and ecosystem services such as biodiversity, water flow regulation and carbon sequestration. This concept is adaptable to different conditions but builds on four main pillars:

- Sustainable and active forest management by local rights-holders
- Small-scale and high quality timber processing for access to advanced markets
- Direct communication and joint product development between the main actors
- Communication of the positive effects for the forests and the local communities

GOAL OF THE PROGRAM

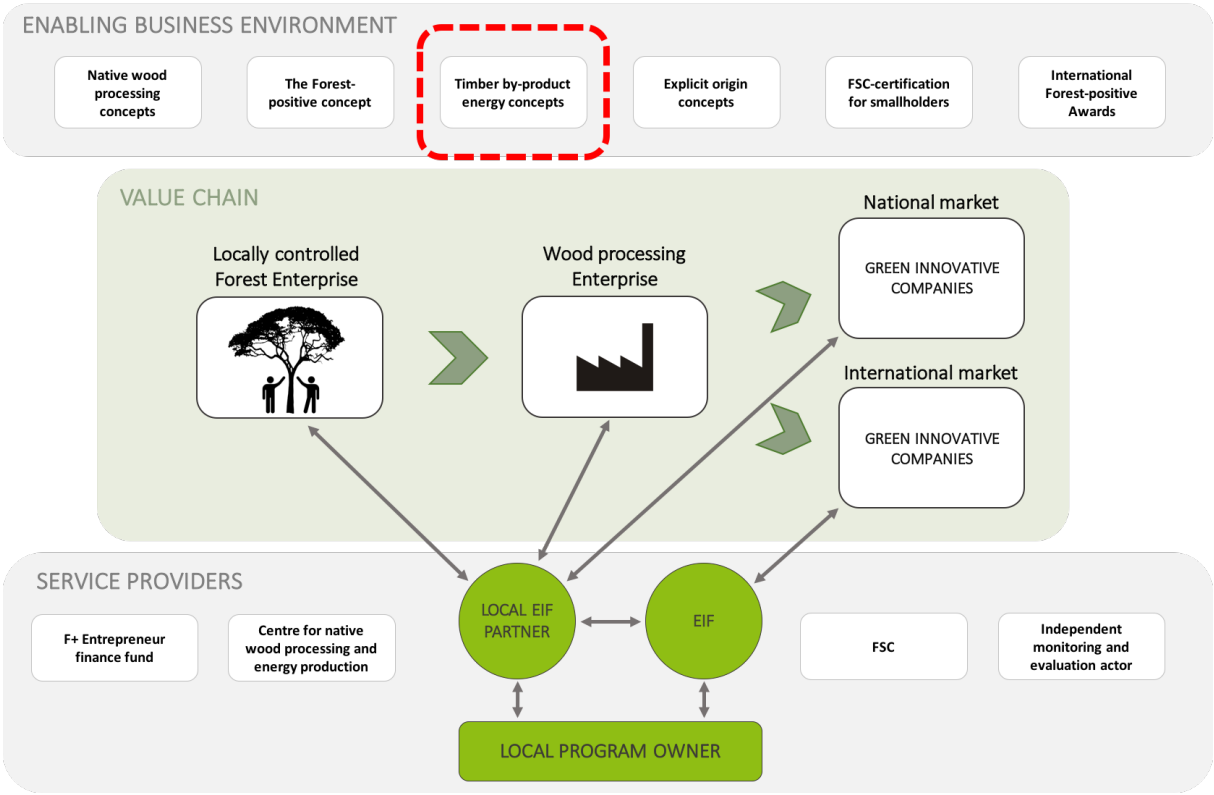
The aim of the Forest Positive Program is to create a global market for wood products from degraded natural forests in the South that supports:

- protection and restoration of rich and resilient forest ecosystems
- local peoples' control over- and value retrieval from their forest
- modern and scalable entrepreneurship that builds societies

SCOPE OF THE PROGRAM

The program is designed to be as slim and resource-efficient as possible to achieve the goal. The activities outlined here are a mix of activities performed by different actors coordinating

to reach the common goal of creating the market for smallholder-based natural wood. Activities may along the line be added and revised from what is described here, but this is a starting plan that is believed to address the development challenge with sufficient power to achieve a sustainable change. An overview illustration of all intervention activities of the program, divided into those directly aimed at supporting pilot projects with value chain actors (service providers in green), other needed service providers and concepts that will be launched to create an "enabling business environment":



TIMBER BY-PRODUCT ENERGY CONCEPTS

As seen in the figure above, there are a number of actors and concepts needed to make the value chains successful and profitable -and energy is one of them. The *Timber by-product energy concepts* is aimed for the Timber processing enterprise. A small-medium seized company that normally operates in a rural location to be close to the raw material in the forest. A timber processing enterprise demands big amounts of energy for its operations and most of it is used in the kilns as heat for drying the fresh sawn wood into more stable products that can be used in our homes. The rural locations mean that the enterprises are often of grid and if they are on grid it is often a very unreliable access to electricity. Put together this means that there is a need to develop different energy concepts on how to produce the electricity and heat that the timber processing enterprises needs in different contexts and how to monetize on the excess energy produced -and there is a big potential to produce more then they consume!

BY-PRODUCTS AND TREES FOR ENERGY

The most obvious way to produce energy at a timber processing enterprise is to use the by-products that is generated from the normal operation i.e. sawdust, wood chips, bark, cut-offs,

rejects etc. Normally 50-80 % of the volume of the processed roundwood becomes by-products. So, for a small enterprise that annually use 3000 m^3 of roundwood, 1500 to 2400 m^3 becomes by-products and consequently 600 to 1500 m^3 becomes sellable products. Today these by-products normally just end up in a big waste pile and are not being used.

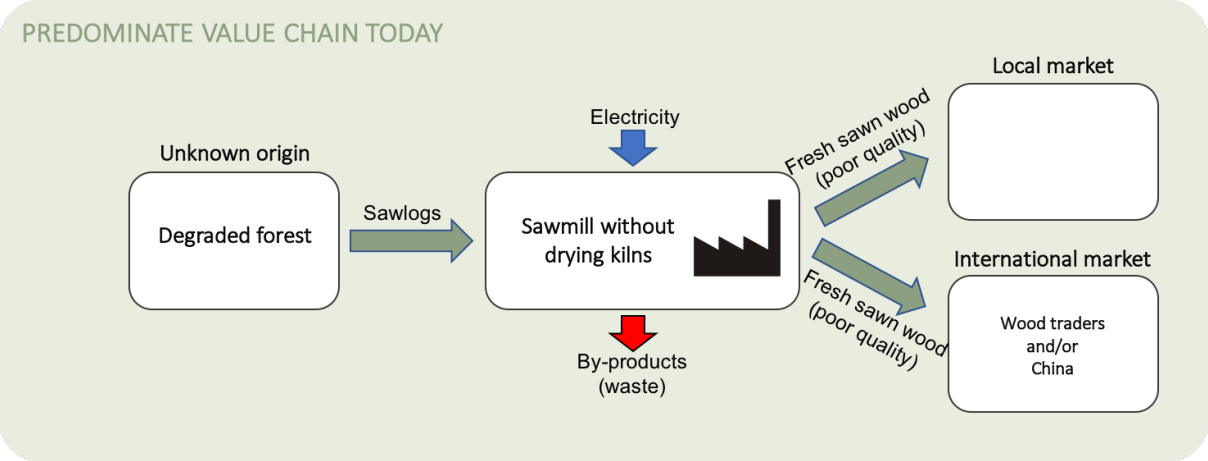


Figure 2. The predominate value chain for sawn wood from developing countries today. Electricity (often diesel) is a cost and by-products is a waste. The fresh sawn wood of often poor quality must bear all the costs. This is not a sustainable business model and is based on unsustainable forest mining and/or illegal logging, minimum wages, no workers' health and safety.

For the wood processing industries of northern Europe, the situation is very different. They can sell part of the by-products to other companies like pulp mills and particle board producers, but they also use the by-products themselves to generate heat for their drying kilns. As the focus the last decades has shifted towards global warming and the use of renewable energy, has the wood processing industries expanded their energy production so that they also can sell heat as local district heating and as electricity into the national grids. As part of the same trend has also the bigger district heater companies started to buy biomass from forest owners e.g. branches and rotten wood that cannot be used in sawmills and pulp mills.

For the wood processing industries in the Forest positive program to be successful and long term sustainable it is important that they can produce their own heat and electricity and hopefully sell excess production. These value chains would look more like this:

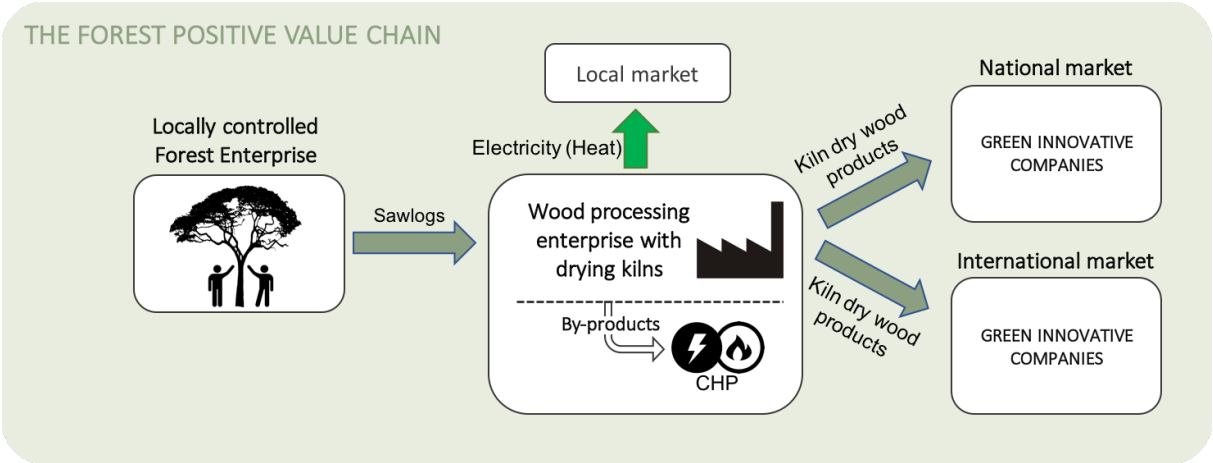


Figure 3. The forest positive program's value chain for sawn wood products. By burning their own by-products, the timber processing enterprise gets heat to kiln dry its products so that they can sell their products to higher paying customer and at the same time they can sell excess electricity and in some cases heat. The dashed line between the timber processing enterprise and the CHP indicates that the CHP could be a separate actor.

Even if the by-products from the sawing- and further processing operations are the most obvious energy raw material, the big potential is still the tree-biomass that is left in the forest today. The Forest Positive Program will run in forest that are degraded and where we see that a good forest management regime can restore and improve the forest. When implementing the sustainable forest management in the Locally controlled forest enterprise, they will harvest trees that are not suitable for the Wood industry enterprise but needs to be removed to restore to forest. The reason why the industry cannot process these trees can be that they are too small, bad shape, poor quality etc. Today these trees are left in the forest decomposing or just used as (low value) firewood locally.

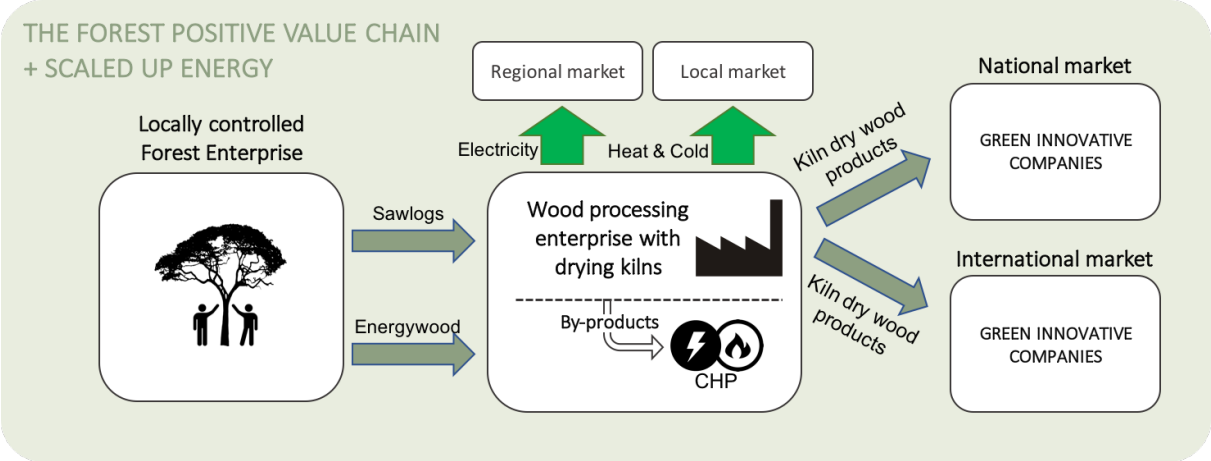


Figure 4. The value chain in the Forest positive program on a location where the Local forest enterprise also delivers energy to the Timber processing enterprise who use it for electricity and heat production to be sold to the local and regional markets

The energy business in this case could potentially be big.

THE NUMBERS

Here we present three different cases to give an idea about how much energy different value chains in the Forest positive program could potentially generate. The assumptions made in case 1 are also used for case 2 and 3.

Case 1. Small size timber processing enterprise

An average small entry level timber processing enterprise in the program that produce 100 m^3 of sawn wood per month and 150 m^3 of by-products per month will have the following energy need per month:

- 17,7 MWh/month electricity for the processing machines, lightening etc.
- 83 MWh/month heat for the drying kilns

The energy content of the by-products (150 m^3) depends on a few different things. The energy content for oven dry wood is almost the same no matter what tree species it is; 19 MJ/kg (it varies just a few percent between different species and different parts of the tree). What do vary a lot though, is the density of different species and the water content. Then there is the efficiency of the boiler that burns the biomass and turns it into heat and electricity. We assume that we have a small boiler with a 90 % heat recovery and no flue-gas condensation (meaning that we cannot make use of the vapor produced when burning wet wood) and that the by-

products are mostly wet and containing 6 GJ/m^3 usable energy (aka. calorific value). This mean that the boiler produce 150*6*0,9 = 810 GJ = 225 MWh/month. If the boiler has a turbine that can generate electricity of 15 % and the rest is left as heat we will have 225*0,15 = 33,75 MWh electricity per month and 225*0,85 = 191,25 MWh heat per month. The surplus of energy per month will then be:

- 33,75-17,7 = 16,05 MWh electricity
- 191,25-83 = 108,25 MWh heat

Case 2. Small-medium size timber processing enterprise

The same calculations for a somewhat bigger timber processing enterprise with a monthly production of 300 m3 sawn wood and 450 m3 of by-products gives the following numbers:

Energy consumption

- 40 MWh/month electricity for the processing machines, lightening etc.
- 250 MWh/month heat for the drying kilns

Energy generated

- 112,5 MWh/month electricity
- 637,5 MWh/month heat

Energy surplus

- 72,5 MWh/month electricity
- 387,5 MWh/month heat

Case 3. Small-medium size timber processing enterprise with energywood

With the same sawn wood production as in case 2, this enterprise also consumes 20.000 m^3 of energywood per year (1666 m^3/month).

Energy consumption

- 40 MWh/month electricity for the processing machines, lightening etc.
- 250 MWh/month heat for the drying kilns

Energy generated

- 529,2 MWh/month electricity
- 2998,8 MWh/month heat

Energy surplus

- 489,2 MWh/month electricity
- 2748,8 MWh/month heat

These are just examples based on very moderate assumptions to give an idea on the potentials. With the scale on the energy production in case 3, it is likely that it is profitable to have more modern equipment with higher efficiency and higher proportion of electricity production (of that is the demand of course). See more on potentials for improvement next.

POTENTIALS FOR INCREASED PRODUCTION

These numbers are based on using only by-products as fuel. There is a big potential, as mentioned earlier, to increase the harvest of trees that would be used solely for energy production. Since the infrastructure to harvest and transport the trees from the forest to the processing enterprise is already in place, the cost for increased volumes should be relatively low. Drying the wood fuel by storing it under roof, exposed to wind, etc. has the potential to increase the useable energy by 100 %. If using a flue-gas condensation technique (often only used in bigger plants) the useable energy could increase by 150 %.

ENERGY DEMAND IN RURAL LOCATIONS

The forest positive program will run in developing countries and in rural locations. The demand for reliable energy in form of electricity is normally very high. Energy in form of heat or cold normally needs some form of industry to utilize on it.

ENERGY PARTNER IN THE FOREST POSITIVE PROGRAM

The Fair wood research project is currently investigating potential energy partners who want to develop the *Timber by-product energy concept* and who see the business potential in energy production. The business could be an integrated part of the Timber processing enterprise but it could also be an individual entity where the Timber processing enterprise is the supplier of raw material and customer of heat and electricity. There will always be a local partner from the program available for support. We are convinced the energy is an important piece of the puzzle in making sustainable forest management a profitable business for local communities and smallholders in developing countries.

Appendix 13: Proposal to Implement Fair Wood: Mexico Case Study

The National Forest Commission of Mexico (CONAFOR) designates 23 million hectares of forests as commercial timberlands, a significant portion of which are owned by communities and smallholders. Currently, smallholders and ejidos provide 30 percent of the native wood for domestic production. In September, Fair Wood visited Ejido Noh Bec in Quintana Roo, which provided the information for the sample proposal below.

Forest Resource

Seventy-four percent of forests in Quintana Roo, the state where Ejido Noh Bec is located, are medium semi-evergreen forest, composed of 200 species. There are also areas of wetlands, low and high semi-evergreen forest, and deciduous forests. Research has shown that deforestation rates in ejido owned forests are lower or similar to those in protected areas in Quintana Roo. Communities manage their land for both timber and agriculture. Fortunately, Quintana Roo smallholders are not subject to high in-migration (small farmer colonization) pressures, which is experienced (to the detriment of forests) by other countries in Latin America. Relevant species for timber management include Caoba (*Swietenia macrophylla*), Tzalam (*Lysiloma latisiliquum*), Chicozapotes (*Manilkara zapota)*, and Chechen (*Metopium brownie*).

Ejido Noh Bec History and Governance

Ejido Noh Bec was established in the 1936 with 24,122 hectares of forest land under the common ownership of 216 rights holders. Ejidos and communities are distinct entities in Mexico. Ejidos can operate in numerous forms between private property and communal land. Ejidos often operate in the middle space with both communal land and usufruct agricultural plots. The biggest change to ejido organization came in 1992 with the Agrarian Law in which joint ventures between ejidos and external actors was sanctioned as well as the acquisition of ejido rights from people outside of the community. As a result, in Noh Bec, 60 of the 216 rights holders do not reside in the community itself.

Between 1954 and 1982 the Noh Bec's communal forests were operated by the public utility – Industrial Wood of Quitana Roo Inc. (MIQRO), through a concession. In 1983, MIQRO's concessions throughout the Yucatan Peninsula were terminated and Noh Bec took the opportunity to manage their own forest, using the well-developed road network from MIQRO's time managing the forest. Noh Bec's governance is executed by the general assembly of all the 216 rights holders. The general assembly appoints an executive to manage the ejido joint activities and employ technical and administrative staff where necessary. Noh Bec has a separate forestry office that employs both community and non-community members to do inventories, impact monitoring, logging, and procure buyers. In 2007, Hurricane Dean, devastated the Noh Bec forest, destroying decades of forest management. This resulted in a spike in mahogany harvests and then a significant decrease in harvest. Despite the setback, the community worked to recover destroyed wood and reassess forestry plots. As a result, the forest was re-certified in 2015.

Current Situation: Forest Management and Timber Processing

Noh Bec currently manages 18,000 hectares of FSC-certified forest with numerous species including Caoba, Tzalam, Chicozapotes, and Chechen. The ejido produces roughly 5,000 m3

of wood a year. Noh Bec uses low-impact forest management. For example, the use of long distance cable hauling of logs minimizes soil damage and minimizes the highly damaging movement of heavy machinery in the forest. Silviculture is limited to site preparation and enrichment planting. There is no mid rotation intervention such as weeding or thinning. Noh Bec owns a sawmill located in the small town where families from Noh Bec and neighbouring ejidos reside. The sawmill at Noh Bec is old, rusting, dangerous, and requires significant energy resources to run. Additionally, the community has a kiln powered by oil and gas as well as a wood shop located at a nearby technology institute.

Proposed Fair Wood Intervention

There is a significant amount of capacity within Mexico for sustainable forest management and entrepreneurship aimed at selling both raw timber and finished products (mainly furniture) on the domestic market. With these conditions and capacity in place, Fair Woods intervention has the most value-add through supporting the international market development. Improvements to silviculture, sawmills, and entrepreneurship can be achieved through partnership with a regional organization and the government.

Potential Regional Organization Partners

Fair Wood's intervention would begin at the national organization level. This was initiated in the 2016 Research Phase through interviews and field visits with two well-established non-governmental organizations: Reforestamos Mexico and Consejo Civil Mexicano para la Silvicultra Sostenible (CCMSS). Both focus on strengthening the institutional, technical, and financial capacities of smallholder forest organizations (both of communities and ejidos). During the field visit, Fair Wood observed competition between CCMSS and Reforestamos Mexico. The former has more on-the-ground staff, with the Director based in Quintana Roo where Ejido Noh Bec is located. Reforestamos Mexico has two staff members in the same region. Prior to making a decision on which organization to partner with, Fair Wood would need to conduct additional research. This could be done through interviews and would not require an in-person visit. Additional information required would include: their in-field capacity, the requirements for operating with Fair Wood, and their vision for both forest management and forest enterprises. It may be that working with both organizations is the best solution, allowing each of them to focus on their strengths.

Additionally, Fair Wood needs to consider additional meetings with both state and federal representatives, particularly given federalism concerns in Mexico about benefit-sharing and standard-setting (having worked in the REDD+ space). CONAFOR has a specific project, the National Strategy of Sustainable Forest Management for Production and Productivity (ENAIPROS), aimed at strengthening community entrepreneurship, forest management, and wood supply and trade. Reforestamos Mexico indicated that they have a good relationship with CONAFOR and recognized that working with the government could be beneficial to the success and scale of a project like Fair Wood.

Engagement Strategy

Engagement in Mexico should begin with the Regional Organization Partners. The expectation is that Regional Partners will be delivering solutions and services in partnership with Fair Wood to the smallholders and entrepreneurs. Fair Wood will have carried out an initial assessment of the potential partner organizations prior to making contact. The regional organization would create an engagement strategy for the

smallholders/entrepreneurs, however, Fair Wood will establish general guidelines for consulting with stakeholders. These consultation guidelines include:
Create Consultation Body: Ideally the consulting body will be a trusted local operator (who does not have a direct relation with the project). Other options are trusted regional operators or a representative of the partner group.
Identify Stakeholders: The consultation body should spend time identifying stakeholders at a specific site. This could involve a power mapping exercise to identify who is directly impacted by the project and who is not. In some sites, this activity will also include the optional activity of identifying broader stakeholders. In this case, activities could include power mapping with shareholders and smallholders to identify who falls into the "broader stakeholder" category, discussions with local leaders or individual conversations with the broader stakeholder group members. Power mapping is an important tool that can: (1) sort between those directly impacted by the project and those who are not, (2) prioritize work with the shareholders and stakeholders, and (3) sort who from the broader community should be engaged.

Create Consultation Methodology: This involves adjusting the Fair Wood methodology to a particular site given local dynamics. This will be the time to decide if the consultation will include the broader stakeholder group or only the core stakeholders (shareholders and smallholders). The methodology should include how the stakeholders will be contacted and how the actual consultation will take place.

Inform Stakeholders of Consultation: Stakeholders must be contacted in appropriate local language and given enough time to respond (at least 6 weeks before the evaluation site visits). Contact techniques include: e-mail, phone, letter, public notice, radio, postage, announcement in village, and face-to-face meetings. Ideally, the information will be shared both verbally and written. If not verbally, then through some means that allows illiterate people to understand the information.

Identify Information to Share with Smallholders and possibly Stakeholders: This activity should include sharing by both the consulting body but also by the shareholders and smallholders themselves. Specifically, shareholders and smallholders should be given the opportunity to influence certain indicators given the local situation. In cases where a broader stakeholder group is also being consulted the FSC guidelines are helpful: (1) Activity to take place (2) start date (3) name of enterprise (4) how to find standard to use in evaluation (5) that the certification body is seeking views on whether applicant complies with standards or not (6) how to contact body (7) arrangements to meet (8) mechanism for complaints / disputes (9) information can be confidential on request.

Conduct Consultation: Based on methodology/stakeholders set in previous activities. This should include a space for shareholders and smallholders to present their indicators.

Evaluate Information from Consultation: After the consultation is completed, the local operator and/or Fair Wood representative should spend time evaluating all of the feedback. This may include focusing on and deciding how to blend Fair Wood and shareholder/smallholder indicators, highlighting risk areas, and sorting through investment opportunities. This step can also blend into other RBM chain activity areas included

designing the forest and land management plans (given the discussion on indicators) and Monitoring and Evaluation activities as it relates to project design and implementation.

Report Information from Consultation: Once the consultation is evaluated for key findings, they should be communicated to key partners. Depending the site, the information will also be shared with shareholders and smallholders and possibly the broader community (if they were included in the consultation). Ideally, the information will be shared with key partners 2-4 weeks from the completion of the project. If shared with stakeholders, allow 30 days for comments.

Forest Management and Entrepreneur Interventions

In Noh Bec, silviculture and harvesting plans, training, and support would be undertaken by Regional Partner. This is not to say the Fair Wood does not have a role but rather that role would be advising the Regional Partner rather than interacting with the smallholders and/or entrepreneurs directly on these issues. Fair Wood advising would be particularly useful in sawmill design and business management plan support. How Fair Wood should support the Regional Partners in this would be a requirement of the agreement settled between the two entities at the onset of the project. Therefore, further interviews on current capacity of both CCMSS and Reforestamos Mexico is required before decisions are made on a partnership and how to move forward.

Currently, CCMSS is engaged with Noh Bec through a Mexico FSC Representative who helps the community with their forest management activities. Noh Bec has a well-functioning, certified forest that would benefit from a Regional Partner's support both in silviculture (weeding and thinning) and sawmill operations (new equipment, safety, drying, energy, storing recommendations).Silvicultural training is in progress already and there is capacity in-country for improvements. Fair Wood can provide additional support for upgrading the current sawmill technology and co-delivering training in use and maintenance – in concert with the Regional Partner.

Market Interventions

Fair Wood's intervention in Noh Bec is most useful at the market level. There are significant market opportunities in Quintana Roo because of the continually expanding tourism industry in Cancun. This provides a good, local market for lesser known wood species in the region. At the international market level, Noh Bec could provide high-quality sawn hardwood for furniture, flooring, and docks.

Fair Wood would support Noh Bec, through finding both national and international markets as well as establishing clear protocols and guidelines for the quality of wood required to meet the markets' demands. Additionally, Fair Wood would develop direct partnerships with potential customers when relevant, to develop products based on well dried dimensioned timber.

Fair Wood Outcomes

As a result of Fair Wood partnership with a Regional Partner, Noh Bec, and similar Mexico ejidos, will have the incentive and capacity to improve sustainable forest management. Improved sawmill processing will provide the quality required by the international market

and decrease the wood wasted on site. Access to quality national and international markets will increase the sale of wood from the ejido, increasing shareholder incomes. Agreements between the ejidos and the Regional Partner will ensure financial equity across all stakeholders regardless of age or gender.

Appendix 14: Re: The Devil's Advocate on social and political constraints to a Fair Wood program

This paper is a documentation of a discussion with Lennart Ljungman, a long time employee of the FAO and World bank who has been involved in designing and implementing forest smallholder interventions. In this dialogue he acts as the "Devils advocate" listing a number of factors that could be barriers to successful implementation of a Fair Wood program. After describing these factors Berty van Hensbergen of the Fair Wood team gives a reply on how these are thought to be pre-empted or overcome in the program.

The term smallholders that FW is aiming at supporting, denotes local people with customary and legal rights to forest land. The smallholder can represent various entities, such as private families, communities, or indigenous groups. We are in the initial state of the program aiming at supporting smallholder already organized in established forest user or forest owners associations **(FUOAs).** Such FUOAs are typically initially set up (1) to manage forest for household consumptions, (2) to protect forests or (3) to establish new forests through tree planting.

Fair Wood: Many of the issues will be picked up by the pre-assessment which will exclude affected sites from consideration for the first phase of the Fair Wood Project

There are some inherent social and political constraints when FUOAs are embarking on commercial activities

- **Forest land** in tropical countries is predominantly State/Government **(S/G)** owned even when the communities have traditional or legal rights to the trees. This means that:
    - There is often a regulation that the S/G can demand payment of stumpage fee which should represent the return on the forest land asset.

Fair Wood: We are aware of this issue and note for example the difference between Tanzania and Mozambique where the former has 0 stumpage on community managed forests. While in the latter the usual FS stumpage is required even from community owned forests.

We are also aware of irregularities in Tanzania where FS officials are attempting and often succeeding in levying an illegal stumpage being the difference between the amount the buyer has paid for logs from community land and the official stumpage.

    - There is often a regulation that the S/G forest service **(FS)** should control the use of that land which often leads to cumbersome procedures and demand for bribes

Fair Wood: We will look for situations where the tree tenure for commercial purposes of the smallholders is well established in law. Our understanding is that this is the case in Tanzania and Peru.

- **S/G laws and regulations** could have a profound impact on the use and management of forests by FUOAs or individuals. A common feature is a **banning of logging**. Such banning is triggered both by the FS desire to have more control of the forests and

therefore opportunities for bribe taking and the desire by the political powers to sound environmentally concerned and to avoid critical comments on illegal logging

Fair Wood: We will only work in areas where communities already have a right to commercial logging.

- The **customary or legal rights** to FUOA forests are typically for local use of the forests for fuelwood or building material for household use, but **not for commercial use**

Fair Wood: We are aware of this issue and its effects. In particular, the impact that this has in terms of the development of the informal/illegal market for in country consumption.

- The **original aim of planting trees** has typically been based on advocated virtues of environmental benefits such as improved soil protection, shade and beautification. When the harvesting of these trees is proposed a strong local resistance can be expected. This has certainly been the case in India.

Fair Wood: This is clearly an important issue and requires significant sensitization procedures in some areas. We are aware of the counterproductive impact of this issue for forest management and in particular for silvicultural interventions.

- The government **FSs have a built in resistance** to grant local rights to harvest forests since this reduces the control of these forests and therefore reduces their possibilities to earn income through their employment and through bribes.

Fair Wood: We are aware of this issue and for this reason we will initially select countries where the local rights are established, Tanzania, Guatemala, Peru, Bolivia etc.

- The setup of the **FUOAs are often designed** to create employment to the members and to provide wood for household consumption but **not to distribute financial benefits** from the sale of wood or from benefits resulting from a value chain improvement.

Fair Wood: This again is an important issue and one we have met even in Tanzania where the forest rights are well established. Having achieved their rights people ask the question of how can we get value from our forests. This again requires a significant engagement and sensitization effort.

- A fundamental considerationis **how to distribute the FW income** (after deduction of possible stumpage fees) to the members of the FUOAs. There are many options for such distribution
    - Distribute income to benefit the poorer segments of the local community
    - Give equal income to the whole group
    - Distribute income based on the area of traditional or legal family or individual traditional use/ownership of the forest land
    - Use income to improve the forest asset

Fair Wood: Again a key issue. My feeling is that we are often too prescriptive about how the money should be used. Interestingly in Lindi, Tanzania, Mjumita the implementing NGO of REDD+ disbursements allowed the community to select the use and methods of payment. The community decision was to divide the income on a 60:40 basis for individuals v community projects and to distribute the individual money, US$10/person, to every man woman and child in the district. Mothers collected on behalf of children. And it seems to have worked.
(It must be noted that we have no idea of how many women were beaten up by their husbands in order to get the money).

- There is a profound risk that a **FOUA may experience strong division** when question on how income should be distributed has to be decided

Fair Wood: This is a risk that requires, local knowledge of traditions and excellent facilitation and engagement to overcome. This has to be a major part of local intervention by FW.

- **Taxation of income** from forests may distort the or influence the management of local forests

Fair Wood: This could become a problem if taxation is very high, we would see taxation on the profits of the sawmill as normal business charges. For the producers it would depend on how the log producing business is legally structured. This is an issue that may well require local legal business advice to identify the best options. At the individual level in the short term it seems unlikely that incomes will increase sufficiently to enter them into the taxation regime.
We will need to budget for legal/accounting advice on this in each country.

- The **management structure of the FUOAs** may have to be changed when commercial decisions have to ne made. The structure may have an important role in avoiding conflicts in the FUOAS and still making it possible to take commercial decisions

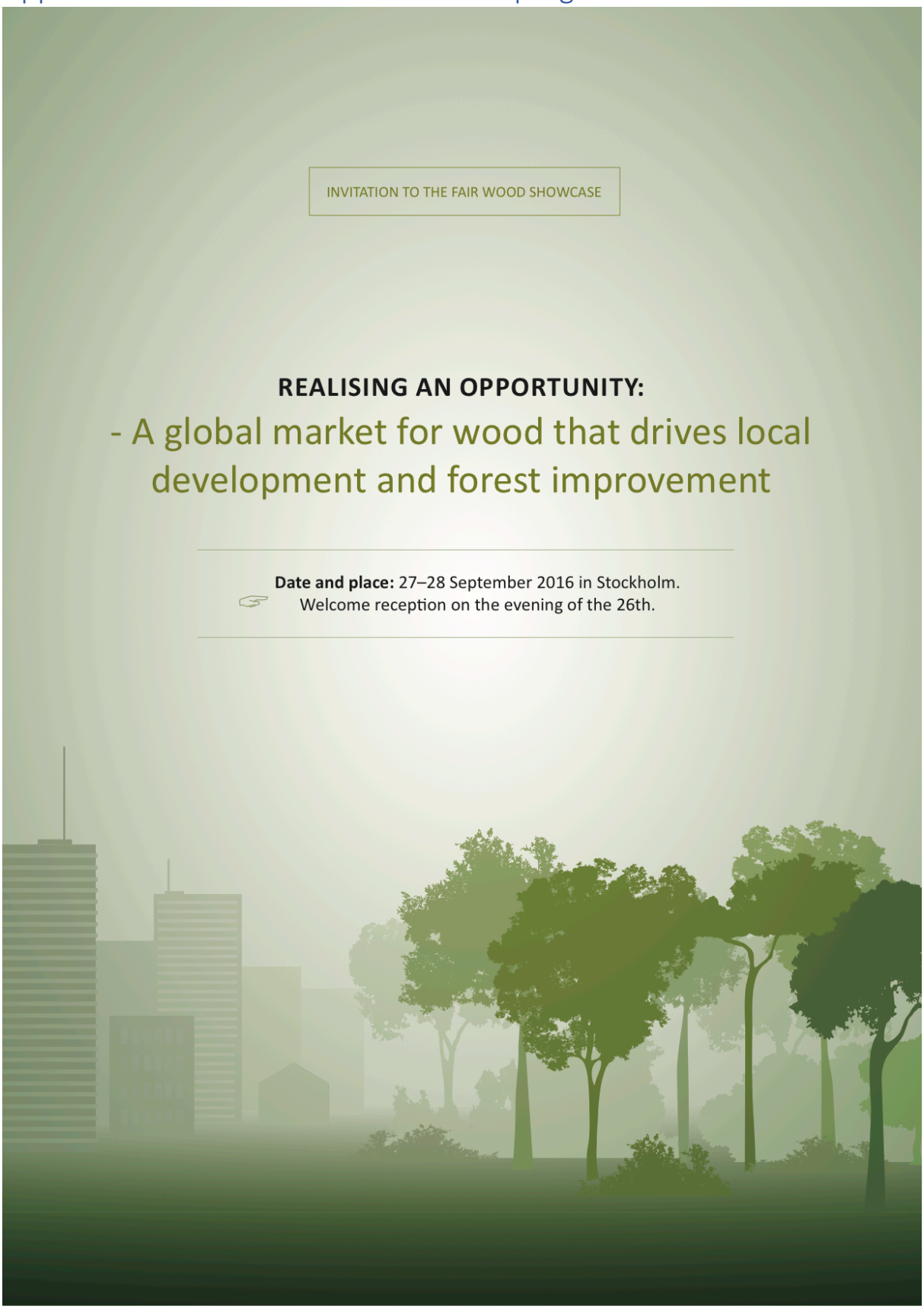
Fair Wood: This issue of management structure is important and in many cases is outside the control of the FW program since it is prescribed by national or local laws. We recognize this to be a problem.

For example we recognize that one of the weaknesses of the current situation in Tanzania is that the village forest committee changes its membership every three years so that there is no long term development and retention of capacity. This may have to be changed so that there is an elected committee to decide policy and an appointed permanent? Management committee to run the 'forest management business'

This list of social and political constraints to the FW program has not in my view been properly considered and the list could possibly be made much longer.

It would be unfortunate if these constraints will appear in the review of FW before we have decided how to address them.

Appendix 15: The Fair Wood showcase program



BACKGROUND

Recent developments now give an opportunity to create fair markets for native wood products from smallholder forests in the South. These markets could act as a powerful tool to reverse the alarming destruction of forests. Secure incomes allow smallholders to become agents of forest improvement by engaging in sustainable forest management.

Forest protection and restoration is a focus of development agencies, impact funds, carbon schemes, and big corporations. The discussion has moved beyond preservation to one of market-based interventions. However, realised projects have often been large scale monoculture plantations where forest communities are excluded as active agents in the value chains.

Examples of inclusive value chains are rare and often not competitive in the global marketplace. The Fair Wood Model acknowledges that the **inclusion of forest rights-holders** are a necessary condition in order for a market-based intervention be effective in scaling forest improvement and protection.

The Fair Wood initiative aims to create such markets by launching a programme that supports the creation and scaling of value chains. Over the past ten years a model of a competitive and inclusive value chain has been developed and tested. The model is adaptable to different conditions but builds on four main pillars:

- Sustainable and active forest management by local rights-holders
- Small-scale and high quality timber processing for access to advanced markets
- Direct communication and joint product development between the main actors
- Communication of the positive effects for the forests and the local communities

In the past year the programme concept has been developed through listening to a broad set of stakeholders and learning from past efforts. The result is a unique approach providing simultaneous support and clear value to the four main actors of the value chain: The smallholders, A new generation of sawmill entrepreneurs, Manufacturing customers and End customers.

This programme will only be successful in creating and scaling forest-positive markets if we see it as a movement based on strategic collaboration, partnerships and mobilising an "ecosystem of actors". This is where you come in. With this event we wish to present this concept and we are interested in your sharp thinking, good ideas and fruitful networking. How can we collaborate to make this market a reality?

SHOWCASE GOALS

1 Showcase the Fair Wood value chain model and present the vital building blocks
2 Demonstrate new technologies available for small high-value sawmilling operations
3 Value chain actors meet and learn from each other – vertically and horizontally
4 Identify collaboration opportunities

TARGET PARTICIPANTS

With these objectives, we are inviting the following actors as participants:

- Smallholder/community representatives
- Sawmill entrepreneurs
- Manufacturing customers
- Corporate end customers
- Designers and architects
- Value chain financiers - enabling growth of small forest enterprises
- Organisations promoting forest improvement and climate mitigation
- Potential enabling partners and funders of the Fair Wood Programme

We believe this event will provide a unique opportunity to learn and network with a selected group of professionals from very different places and with different roles who share the vision of restoring the native forests through market-based approaches. We very much look forward to seeing you here – A warm welcome to Stockholm!

THE FAIR WOOD PARTNERSHIP

The Fair Wood Partnership currently consists of the Eco-Innovation Foundation, WWF Sweden, WWF UK, FSC Sweden and Pivot Point. The partners have backgrounds in the fields of forest management, forest conservation, timber processing, forest certification, local development, business development and entrepreneurship.

Program

MONDAY SEPT 26 – UNITED SPACES, WATERFRONT BUILDING

18.00 **Welcome Cocktail and an Introduction to the Fair Wood Concept**
- Introduction to the Fair Wood Concept
- Introducing value chain actors from around the world - around the room

Entertainment, finger food and drinks

TUESDAY SEPT 27 – URBAN DELI AND EKOLSUNDS CASTLE

"Presenting the Fair Wood concept for feedback and mutual exchange among value chain actors and experts"
Fair Wood will present an innovative value chain model that has been developed and tested over the past years. Invited value chain actors - smallholder organisations, sawmill entrepreneurs, manufacturing customers and end users - will be involved in dialogue and asked to share their experience, feedback and ideas.

07.30 *Breakfast at Urban Deli*

08.00 **Over breakfast - introduction and agenda for the fair Wood conference**

08.30 **Value chain perspectives and the Fair Wood approach**
Introduction to the FW concept and current perspectives from representatives of the smallholder wood value chain.

09.30 *Coffee Break*

10.00 **A new market landscape for smallholder-based tropical wood**
Our latest market research is presented as well as current trends that are potential drivers for market transformation.

11.00 **Departure to Ekolsunds Castle**

12.00 *Lunch break at Ekolsunds castle*

13.00–17.00 **Showcase of and feedback on the Fair Wood value chain:**
Three stations showcasing the main parts of the smallholder-based tropical wood value chain. A mix of presentations and participants sharing their experiences, key questions and feedback.

- **The opportunity of silviculture for the Smallholder**
- **The requirements and demand potential of advanced buyers**
- **The opportunity of high quality and high utilisation for the Sawmill entrepreneur**

Group feedback and discussion
Key issues from the preceding sessions are discussed in plenum. Feedback on the value chain model and on the Fair Wood concept.

17.00–18.00 **Travel back to Stockholm**

Evening free

WEDNESDAY 28 SEPT – UNITED SPACES, WATERFRONT BUILDING

"The Fair Wood concept as a corporate strategy, an investment case and part of a broader movement"

08.00	*Morning coffee at United Spaces*
08.30	**Recap of yesterday** Yesterdays feedback on the Fair Wood concept from the value chain members is summarised and presented.
09.00	**Fair Wood as part of the solution** Fair Wood is designed to build on and augment existing initiatives. A set of important actors - FSC, WWF, WRI etc. - will present and discuss the potential of market transformation through collaboration.
10.00	*Coffee Break*
10.15	**The Corporate impact case** Forward-thinking representatives of a diverse set of companies on the buyer-side present how sourcing is changing and discuss what opportunities and challenges they see with the Fair Wood concept.
11.30	**The Investment case for smallholder forestry and wood processing facilities in the fair Wood model** The central business cases of the Smallholder and the Sawmill entrepreneur are presented and a panel of impact investors discuss what they see in terms of risk, opportunity and viability in terms of investment models and types of investment.
12.45	*Lunch and mingle as long as you want at United Spaces*

If you have any questions or requests, please contact the person you received the invitation from, or: aaron.kaplan@eco-innovation.org

THE EVENT WILL TAKE PLACE AT TWO PLACES IN CENTRAL STOCKHOLM:

United Spaces (Monday and Wednesday)
ADDRESS: Klarabergsviadukten 63
WEB: http://www.unitedspaces.com
MAP: https://goo.gl/maps/WkHGPxFwyxA2

Urban Deli (Tuesday)
ADDRESS: Sveavägen 44
WEB: http://www.urbandeli.org/sveavagen/
MAP: https://goo.gl/maps/qC3GqjCpVMC2

Appendix 16: Environmental and Social Benefits of Fair Wood Interventions.

The Fair Wood project is intended to operate at sites where forests are currently under pressure of degradation or where poor management leaves forests of reduced value to local communities. Fair wood support will facilitate management systems for the production of hardwood timbers which will have a positive impact on the growth rate of forests and the timber will be used to produce durable goods which will sequester carbon over long periods.

Fair Wood sites are expected to experience a number of direct and indirect benefits such as;

Conservation benefits

1. Promoting sustainable forest management in areas of degradation will mitigate further forest degradation and allow the recovery of forest ecosystem integrity. Research show that allowing sustainable use and management of natural forests in areas with large human pressure improve conservation compared with strict formal protection[440].
2. Through improvement forest assessment and planning, biodiversity hot spots can be identified and these values can be preserved or enhanced through informed and deliberate forest management decisions (c.f. Forest Integrity Assessment tool, HCV-network).

Social benefits

1. Supporting the development of sustainable forest management and connecting with equitable timber value chains will deliver improved livelihoods and work opportunities for communities[441] and give clear incentives to protect and manage forests.[442]
2. Improved forest ecosystem integrity through informed and deliberate forest management will sustain and improve ecosystem services other than timber production, e.g. water availability/quality, Non timber forest products etc.
3. A Fair Wood program is expected to improve knowledge, capacity and work opportunity at many levels, i.e. local support expertise, forest workers, sawmill workers and local entrepreneurship.

Carbon benefits

1. Silvicultural interventions will increase the growth rate of trees[443] and therefore increase the rate at which carbon is absorbed at the site. It is believed that in most cases the rate of carbon absorption will increase by between three and tenfold. For different forest types this will mean an increase of between 0.2 and 1.5 tonnes of carbon/ha/yr. An analysis of the carbon benefits for natural forests in Chile suggests that the additional carbon absorbed in

[440] Stevens, C., Winterbottom, R., Springer, J. & Reytar, K. (2014). Securing rights, combating climate change: how strengthening community forest rights mitigates climate change. Washington, DC, World Resources Institute (WRI) and RRI

[441] Macqueen, D. (ed.), Baral, S., Chakrabarti, L., Dangal, S., du Plessis, P., Griffith, A., Grouwels, S., Gyawali, S., Heney, J., Hewitt, D., Kamara, Y., Katwal, P., Magotra, R., Pandey, S.S., Panta, N., Subedi, B. and Vermeulen, S. (2012) Supporting small forest enterprises – A facilitator's toolkit. Pocket guidance not rocket science! IIED Small and Medium Forest Enterprise Series No. 29. IIED, Edinburgh, UK.

[442] Tiina Vahanen (2015), Associate Secretary-General, XIV World Forestry Congress, InFO news 27 – Editorial

[443] Grosse H. & Quiroz J (1999) Silvicultura de los bosques de segundo crecimiento de roble, raulí y coigue en la región centro sur de Chile. In Donoso C. & Lara A. (1999) Silvicultura de los bosques nativos de Chile

the growing stock due to forest management will be equivalent to 1 tonne of Carbon for every 1m3 of sawn timber produced from the forests[444].

Table 3 Typical amounts of carbon additionally absorbed in different types of FMU each year as forest management is introduced. The increase in carbon added each year is linear. Final Steady state figure after 25 years is additional absorption when entire area is under management. Fair Wood expects to have a minimum of 6 FMUs in Fair Wood value chains running after five years.

	Tonnes Carbon added each Year in Typical FMU		
	Year 1	Year 5	Year 25 and onwards
Forest Type			
25,000ha Miombo Woodland in Africa	120	600	3000
5,000 ha Nothofagus forest in Chile	480	2400	12000
10,000 ha Tropical High Forest in Latin America	180	900	4500

2. Silvicultural interventions will produce trees that are of a better quality than found in unmanaged forests so that a much higher proportion of timber will be suitable for durable timber products as opposed to fibre based products or biomass. High value hardwood timbers produced by Fair Wood sites will have a much longer lifespan than similar products made from softwoods and therefore sequester carbon for longer[445].
3. Strengthening incentives for sustainable forest management will reduce further carbon emissions from forest degradation. Furthermore, promoting forest restoration will increase the area of forests so that the total amount of carbon held in the growing stock will increase in line with increased forest areas.
4. Forest restoration will increase the stocking of forests so that the average amount carbon retained in the growing stock per unit area will increase over the current situation even in situations where sustainable harvesting will take place[446].
5. Larger Fair Wood sites are expected to house CHP plants for drying and power generation and these will substitute for fossil fuels currently used.
6. Optimizing the timber value chain combined with robust sawing and drying technology is expected to improve the wood recovery from logs which will generate both improved economic value and a reduced carbon footprint.

Scaling benefits

The Fair Wood program will be supporting selected sites but will do this systematically and accumulatively. It is expected that as Fair Wood succeeds in building new value chains that these will be replicated by new smallholder and entrepreneur partnerships in order to satisfy growing market demand for quality products. This will allow the following scaling benefits;

[444] H.J. van Hensbergen (2011) A preliminary assessment of the Carbon balance of hardwood harvested in Chile and in Sweden for the manufacturing of flooring. Technical Report. SSC Forestry.
[445] Fabiano Ximenes, Brendan George, Annette Cowie, Georgina Kelly, Justin Williams, Graham Levitt, Ken Boer (2012) Harvested forests provide the greatest ongoing greenhouse gas benefits. State of New South Wales through Department of Primary Industries 2012
[446] Hammarstrand & Särnberger 2013; Comparative evaluation of two forest systems under different management regimes in Miombo Woodlands - A case study in Kitulangalo area, Tanzania Master of Science Thesis in Industial Ecology Report No. 2013:4

- Conservation, social and carbon benefits will be up scaled as the Fair Wood program grows
- Risks will be diversified by both producers and buyers having choices in the marketplace. This will facilitate the resilience of the program, securing benefit return on invested capital.

Appendix 17: Overview of the pilot project facilitation process

Below is an overview of the activities in the two assessment phases and first two project phases and an estimate of the activities set in a timeline (of course this will always need to be discussed and co-planned in depth with the project owner and other participating actors).

Pre-assessment

Intended outcomes:

- Decision to enter an assessment and co-planning project

Outputs:

- Pre-assessment report

Participants:

- The F+ facility
- Local F+ facility partner
- Local NGO/CSO
- National development agencies

Client:

One of the following are possible clients: Local NGO/CSO focused on forest smallholders, National and regional development agencies

Pre-requisites and contingencies:

Activities:

Time

Budget:

Assessment and co-planning

Intended outcomes:

- A positive decision to enter a value chain creation project
- Alignment of client actor and local supporting organizations around the pre-requisites for and success factors of a new smallholder-based native wood value chain
- A joint vision of a new native wood industry among the participating actors

Outputs:

- Assessment report
- Project plan

Participants:

- The F+ facility
- Local F+ facility partner
- Local NGO/CSO
- National development agencies
- Potential value chain members: smallholders, entrepreneurs and customers

Client:

One of the following are possible clients: Local NGO/CSO focused on forest smallholders, National and regional development agencies

Pre-requisites and contingencies:

- The pre-assessment was positive, se above

- The client has a serious interest in creating a native wood industry based on local control
- The Facility will have resources to enter value chain creation projects following a positive outcome of this project

Activities:

Assessment and co-planning – project overview	
Step	**Activity**
Step 0	**Joint planning and co-ordination of assessment and planning project** – Presentation of client's objectives – Presentation of the F+ value chain concept – Presentation of facilitation project opportunities for starting up value chains – Implications of different assessment results: pre-requisites for a competitive value chain – Coordinate the assessment and planning project with client, Facility and local partners: o Time plan, assessment scope and activities, roles
Step 1	**First assessments:** - Forest resources based on observation – quantity, quality and infrastructure - Capacity of local forest rights-holders for potential timber supply - Potential timber processing entrepreneurs - Potential regional and export markets for wood and energy products - Analysis and initial concept development based on assessments
Step 2	**Joint planning of projects** - Planning of value chain creation projects, based on the assessment results: o Project type: Concept development, Proof of concept, Concept launch? o Adaptation of projects to local situation o Participant value chain actors o Support actors – roles o Local business environment factors to consider o Time plan

Time

Budget:

Value Chain Business Concept development

Intended outcomes:

A Timber processing entrepreneur and forest rights-holders group decide to enter a start-up project based on the business concept opportunities identified.

Outputs:

Research, model and evaluate several viable business scenarios based on locally controlled native forest

Business concepts for a group of forest rights-holders and for a prospective timber processing entrepreneur

Participants:

- The F+ facility
- Local F+ facility partner
- Local project owner: NGO/ CSO/ National development agencies
- Potential value chain members: smallholders, entrepreneurs and customers (regional and export)

Client:

One of the following are possible clients: Local NGO/CSO focused on forest smallholders, National and regional development agencies

Pre-requisites and contingencies:

Assessment must be concluded and positive.
A forest site under control of forest rights-holders (community/smallholders) must be identified as a base for the project. However, this project can be executed without an identified timber processing entrepreneur.

Business concept development phase – activity overview	
Step	**Activity**
Step 0	**Joint planning and co-ordination of project** – Coordinate involved support providers – Goal alignment, joint vision of the project, its scope and outcomes – Joint fine-tuning and anchoring of process, activities, roles and time plan – Opportunities of-, and threats to, the project – and related actions
Step 1	**Assessment and engagement of timber processing entrepreneur** - Presentation of the market creation project and the involved actors - Basic silviculture and potential values - Presentation of the basic business concept (Sourcing native timber from smallholders, high quality processing, advanced customers) - Pre-requisites and capacity to succeed with new native wood business? (assessment of development potential in different relevant aspects) - Interest in participating in the project?

Step 2	**Assessment and engagement of smallholder group**
	- Presentation of the market creation project and the involved actors
	- Presentation of basic silviculture and potential values over time
	- Implications (work, competence, management, equipment) of a potential new forest management regime
	- (If not already done in previous assessments:
	  - First assessment of forest resources based on observation – quantity, quality and infrastructure
	  - First assessment of capacity of local forest rights-holders for potential timber supply
	- Interest of forest rights-holders in participating in the project?

Step 3	**Forest study** - Qualitative timber inventory: onsite, test cutting - Local infrastructure – roads, energy, supply and support functions - Management regimes - What management interventions are needed to support and

	strengthen the forest ecosystem and at the same time increase the economic values? (in cooperation with relevant national forest institutions) - Supply potential of different log species and qualities, over the different seasons and for the short, medium and long term – given different management regimes - Supply potential of timber by-products for energy production
Step 4	**Draft of First hypothesis of wood and energy business concept by entrepreneur** - Markets, customer segments - Wood products, qualities - Volumes and prices - Timber supply – volumes, qualities, prices - Energy by-products - Necessary investments in equipment - Personnel and management - Basic business evaluation - Entrepreneurs' and facilitators decision to continue the project?
Step 5	**Draft of first hypothesis of forestry business concept by smallholder group** - Forest management regime - Organization of forest management - Incomes: Volumes and prices over short and long term - Necessary investments and operating costs - FSC certification implications - Available support - Business evaluation – short and long term - Forest rights-holders' and facilitators decision to continue the project?
Step 6	**Wood production study** - Research suitable cost-efficient small and medium sized wood processing technology for high quality production of native wood - Research suitable artificial kiln drying technology for native wood - Test sawing (either existing, external capacity or invest in small equipment) – make samples for the market study - Test drying (either external capacity or invest in small test kiln) - Develop drying schemes that are optimal for the wood species, dimensions and small-scale production layout. - Wood testing: For advanced manufacturers and customers to be willing to try (for them) new wood species they require proper durability testing. Workability, stability, ability to be glued and stained/painted are also of major importance and should be tested. - Investment needs for different scenarios (This step is a crucial pre-requisite as High quality and kiln-drying is crucial to enter export markets.)
Step 7	**Energy production and energy market study** What are the possibilities to use wood from the site for energy? Sawmills are naturally a good match with Combined Heat & Power (CHP) production but there are also other opportunities. What are the possibilities to produce products that can be used for energy production in other locations, e.g. pellets, briquettes, charcoal, wood chips, black pellets, etc. - Energy production potential given by-products from new forest management regime and sawmill operation - Energy demand of the new sawmill – heat for kiln drying and electricity - Energy surplus and potential markets (electricity, charcoal, pellets etc.)

	- Investment needs for different scenarios - Potential business models
Step 8	**Market study for wood products (local and export)** - Identify customer segments - The study targets advanced customers in regional market (city) and in one or more export markets - Acquire respondents – manufacturers and corporate end users - Test samples made of different species and qualities for different markets and segments (Drying and further finishing can be done by third party if this capacity doesn't exist) - First presentation to customers of the market creation project, Forest-positive concept, explicit origin etc. - What are the obstacles today and what innovations and product development are needed? Opportunities for improved market integration? - Gather customers interest for and estimates of various products, volumes and prices - Goal is also to find customers with interest of entering a prototyping-phase
Step 9	**Draft of second hypothesis of wood and energy business concept by entrepreneur (**All now in more detail) - Markets, customer segments - Wood products, qualities - Volumes and prices - Timber supply – volumes, qualities, prices - Role and responsibility vis-à-vis the local forest rights-holders - FSC COC-certification - Energy by-products - Necessary investments in equipment– and time-phasing for low risk - Personnel and management requirements - Communication and verification of environmental and social benefits (See Forest-positive concept and Explicit origin-concept) - Other key factors: partners, service providers, business environment - In depth specification of business concept (Business plan) - Cash-flow, break-even and payback - Financing and ownership - Total business feasibility evaluation - Interest of entering prototyping phase?
Step 10	**Draft of second hypothesis of forestry business concept by smallholder group** (All now in more detail) - Forest management regime - Organization of forest management - Incomes: Volumes and prices over short and long term - Necessary investments and operating costs (training, equipment etc) - FSC certification implications - Available support - Business feasibility evaluation - Interest of entering prototyping phase?
Step 11	- **Analysis and recommendations to project owner and other involved institutions/agencies**

Activity timeline overview – Business Concept development phase:

Project activity	M1	M2	M3	M4	M5	M6	M7	M8
Joint planning and co-ordination of project phase								
Assessment and engagement of timber processing entrepreneur								
Assessment and engagement of smallholder group								
Forest study								
Draft of wood and energy business concept by entrepreneur								
Draft of forestry business concept by smallholder group								
Wood production study								
Energy production and energy market study								
Market study for wood products (local and export)								
Update of wood and energy business concept by entrepreneur								
Update of forestry business concept by smallholder group								
Analysis and recommendations to client and involved agencies								

Decision point 1: Concept? Continue?
Decision point 2: Concept? Continue?
Decisions point 3: Concept? Continue?

Budget for the Business concept development phase:

Activity nr	Activity	Tot Value (USD)
1	Joint planning and co-ordination of project phase I	36.000 USD
2	Assessment and engagement of timber processing entrepreneur	14.000 USD
3	Assessment and engagement of smallholder group	13.000 USD
4	Forest study	18.000 USD
5	Draft of wood and energy business concept by entrepreneur	14.000 USD
6	Draft of forestry business concept by smallholder group	9.000 USD
7	Wood production study	18.000 USD
8	Energy production and energy market study	12.000 USD
9	Market study for wood products (local and export)	42.000 USD
10	Update of wood and energy business concept by entrepreneur	24.000 USD
11	Update of forestry business concept by smallholder group	16.000 USD
12	Analysis and recommendations to client and involved agencies	16.000 USD
	Total Value - Business concept development phase:	**232.000 USD**

Value Chain Proof of concept phase

"A Facilitated lean Customer-integrated approach"

Intended outcomes:

- Showcase a possible way forward to establish a new and modern industrial sector based on locally controlled native forest in the country/region
- Provide a knowledge base for development of a general national support system for catalyzing the emergence of native forest value chains, aiming at forest protection and forest restoration, local industrial development and improved livelihood for smallholders/communities.
- Decisions by the participating pilot entrepreneur and smallholder group in this project to invest in and implement the new business concept, and by the participating pilot customers to enter long term sourcing contracts

Outputs:

- All actors in the value chain see a long term positive business case based on the Proof-of-concept project results
- Three product prototypes are developed for local and export markets, which provide a base for the new value chain
- The "eco/forest-positive wood"-concept is adapted to work as a practical marketing tool for the specific forest site and involved value chain actors
- The needs for support to the different actors in the value chain for a broader local native wood sector to be established are identified – technical, business development, business environment etc.
- Based on the project results, a pathway for scaling up a local smallholder-based native wood industry is presented
- A recommendation outlining the project owner and other institutions' roles to support the scaling up of the smallholder-based native wood industry

Participants:

Value chain members:

- 1 Smallholder group
- 1 Timber processing entrepreneur
- Manufacturing customers: 2 from EU, 1 from country or region
- Final customer: 2 from EU, 1 from country or region
- (Designers/architects – as potential link and advisor to the above customers)

Client:

One of the following are possible clients: Timber processing entrepreneur, Local NGO/CSO focused on forest smallholders, National and regional development agencies,

Support and facilitation actors:

- The F+ facility
- Local partner to the F+ facility
- Various national development agencies – to be defined

Pre-requisites and contingencies:

- Positive results from a previous assessment that a competitive business concept is feasible for the smallholders and wood entrepreneur in terms of timber resource, infrastructure, tenure rights etc.
- Continued serious interest from the main value chain actors (smallholders, wood entrepreneur and customers) – otherwise the project stops and must be re-evaluated/re-planned.

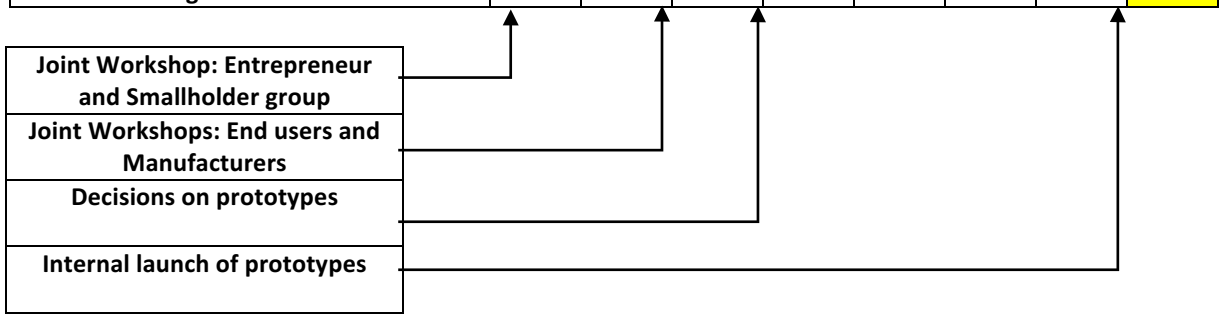
Value chain proof of concept phase – activity overview	
Step	**Activity**
Step 0	**Joint planning and co-ordination of project phase** – Coordinate involved support providers – Re-alignment of joint vision, goals, scope and specific objectives? – Joint fine-tuning and anchoring of process, activities, roles and time plan – New identified opportunities of-, and threats to, the pilot project? – Kick-off phase 2!
Step 1	**Joint Workshop: Entrepreneur-Smallholder group** (Maybe several meetings) - Presentation of prototype phase - Possible outcomes – different scenarios and their implications for forest management, incomes, investment needs in equipment, management, certification and communication - Risks and opportunities - Transparent value sharing offer hypothesis (volumes and prices for different scenarios) from facilitator to both parties - Dialogue, q&a's and negotiation - Decision from both parties to enter prototype phase?
Step 2	**Acquisition of End customers for prototyping** - Real estate developers, property managers, hotel chains, big retail - 2 export, 1 local - Identify internal pioneers and anchor the concept with them - Create internal cross-functional innovation steering groups: Design, CSR/environment, sourcing, marketing and sales - Group workshop to anchor the concept and process in the organization
Step 3	**Acquisition of Manufacturing customers for prototyping** - Flooring, kitchens, doors, furniture, interior/exterior wood - 2 export, 1 local - Match the demands and ideas of the End customers - Identify internal pioneers and anchor the concept with them - Create internal cross-functional innovation steering groups: Design, CSR/environment, sourcing, marketing and sales - Group workshop to anchor the concept and process in the organization
Step 4	**Workshops with end users and manufacturers** - 1 workshop in each export market, 1 locally Draft content: - "Forest positive" value chains for wood products – the differential to the traditional value chains, market trend etc. - Presentation of the forestry and timber processing entrepreneurs (photos, video –

	background, mission, operation) - Risks and opportunities with "forest-positive" wood - Implications for the different functions in the participant customer organizations (sourcing, marketing, CSR, sales etc.) - Creative meeting between end users, manufacturers and designers
Step 5	**Decisions on prototypes** - Dialogues between end users and manufacturers have led to decisions on prototypes and the following intentions: - Successful long term running product lines - Long term contracts from the end users for repeat purchase and installations - Innovation teams for prototype development (product, communication and sales strategy - Internal prototype showcase date and place
Step 6	**Update of business concepts by forestry and wood entrepreneurs (**Including short term plan and decision) - See Phase 1 - steps 9 and 10 above for business content update points - Decision on short term investments for delivering wood for prototypes - Update is based on information from prototype decisions by customers
Step 7	**Customer Wood testing** - Manufacturers test the wood according to their procedure - Wood from the samples can be used for this
Step 8	**Make and deliver wood for prototypes** - Capacity for sawing and drying can be rented externally or small investments in suitable equipment made at this point - Precision sawn and kiln dried - Customer adapted dimensions and properties - On-time delivery - Additional processing?
Step 9	**Prototyping: Manufacture products, develop sales strategies and communication** - Manufacturing customers: design and make product lines (perhaps in cooperation with design consultants) - Manufacturing customers: develop Sales strategies for the products and Communication packages based on the sustainability advantages (see the Forest-positive concept), the story of origin (See the Explicit origin concept) and the wood species/properties. - Corporate end customers: develop communication strategy and material for the products based on the material of the manufacturer - Innovation teams have set regular briefings to the Innovation steering groups
Step 10	**Internal launch of prototypes** - Half-day event. Either each company separate or all together – corporate end users and manufacturers - Products, sales strategy and communication package presented by Innovation teams and steering groups to an internal audience of relevant directors and co-workers - Other impacting actors are included, such as architects, installation engineers, floor layers, etc. - Feedback and ideas for further development is gathered from all
Step 11	**Follow up with all value chain actors** (smallholder group, wood entrepreneur, local end user and manufacturer, export end users and manufacturers) - Joint evaluation

	- Learnings - Updating of business concepts, see Phase1 - steps 9 and 10 - Dialogue on next steps: Decisions by all actors to invest/launch/source – LOI's?
Step 12	- **Analysis and recommendations to project owner and other involved institutions/agencies**

Activity timeline overview – Proof of concept project:

Project activity	M9	M10	M11	M12	M13	M14	M15	M16
Joint planning and co-ordination of project phase								
Acquisition of corporate end users								
Acquisition of manufacturers								
Ideation of products for prototypes								
Update of business concepts by forestry and wood entrepreneurs								
Wood production for prototyping								
Prototyping product, market strategy and communication								
Follow-up analysis and decisions by all value chain actors								
Analysis and recommendations to client and involved agencies								



Budget for the proof of concept phase:

Nr	Activity	Tot Value (USD)
1	Joint planning and co-ordination of project phase II	24.000 USD
2	Acquisition of corporate end users	14.000 USD
3	Acquisition of manufacturers	14.000 USD
4	Ideation of products for prototypes	17.000 USD
5	Update of business concepts by forestry and wood entrepreneur	10.000 USD
6	Wood production for prototyping	19.000 USD
7	Prototyping product, market strategy and communication	56.000 USD
8	Follow-up analysis and decisions by all value chain actors	39.000 USD
9	Analysis and recommendations to client and involved agencies	21.000 USD
	Total Value – Proof of concept phase:	**214.000 USD**

Appendix 19: Development of the “Forest-positive” concept

This is a concept directed to customers that want to be able to claim a net positive effect on the ecosystem of the forest where the wood comes from. This claim entails that the change in forest management compared to a status quo baseline will lead to net positive ecological benefits in terms of carbon sequestration, biodiversity, soil, water, storm protection, etc. In summary, this change can be named forest "restoration", "rehabilitation" or "improvement" depending on the baseline state and the nature and magnitude of the change.

This claim is relevant since this program is targeting the vast areas of forest land where local rights holders (smallholders and communities) want to keep the native forest if it becomes a viable economical alternative, but where this forest has been degraded leading to both low economical value and low values in terms of production of ecosystem services and resilience. These are the areas that WRI has calculated to add up to 500 million ha worldwide.

Previous market research by EIF shows that such a credible claim would be an attractive marketing advantage for actors in the value chain. The challenge for the value chain actors is thus how to communicate, quantify and validate this claim.

Activities:

Initial development of F+ concept carried out by experts, backed by leading international organizations

6. Develop *general forest management regimes* for common forest types: For a handful of forest types common in these targeted areas and represented in the pilot projects, "General forest management regimes" are developed. These regimes are based on reaching set objectives, and have a focus on securing intended regeneration, biodiversity and water protection with active silviculture activities. Local experience and research as well as leading global expertise and research will be consulted.
7. *Calculate ecological effects of these regimes given typical baselines:* For these forest management regimes expected ecological effects are collected from available quality academic research and experiential sources.
8. *Review and validate these regimes and projected effects:* A number of leading institutions and organizations are asked to review and validate both the regimes and the effect calculations (e.g. Cifor, IVL, WWF, WRI?, institutions in the upstream countries)
9. The result is a document describing the FM-regimes and the stating corresponding ecological effects, and complemented with an instruction of how a FM-plan should be written according to the FSC-certification to be in accordance with one of these general regimes

Launch of an independent ESG-monitoring and evaluation unit

For reasons of market credibility there must be an independent monitoring and evaluation of these claimed effects. This unit collects the relevant data from the pilot projects and evaluates the actual effects of the change in forest management regime.

Implementation of the F+ concept in the pilot projects

1. The general forest management regimes are used in development of the specific forest management plans with (minor) adaptations to the local site and situation. The adjustments are small enough that the calculated effects cannot be questioned on this ground.
2. The FSC-FM certification is based on these FM-plans. For simplicity and effectiveness, the certification can be used as the tool/template for devising, implementing and following up the forest management plan.
3. Baseline is calculated
4. Effects are calculated based on the baseline and the document of effects of the general FM-regimes
5. The timber processing enterprise and customers can use the calculated effects in their communication.
6. Verification by a customer of the claimed effects is done by the following actions:
    - The FSC COC (possibly also SCLO) certification that shows which smallholder group the wood comes from
    - The FSC FM-plan of the smallholder group (which the FSC certification verifies) is via the sawmill shared with all the customers in the value chain
    - The document stating the ecological effects of the general FM-regimes, of which the FM-plan of the smallholder group represents an example of one of the general regimes

Evaluation and further development

During and after the pilot projects the F+ concept is evaluated and revised. The continued revision is based on both internal continued research and on input from an independent monitoring and evaluation function mentioned above. Revision will take place in the following dimensions:

- General regimes - learning of more optimal regimes for economic and ecological values
- Effects of the regimes: Revisions based on input from monitoring and evaluation of the pilot projects and from continued exchange with leading institutions
- Verification - ease of use, effectiveness of the F+ concept
- Communication - what messages, wordings and claims are attractive to which segments

(If this process holds – no new verification is needed for the value chain actors than the existing FSC FM and COC, complemented by a new “document” that can be a base for the FM-plan and thus be verified by the FM-certification.)

Appendix 20: REDD(+) A Brief Review.

Berty van Hensbergen & Peter Roberntz
2016-06-17

Background REDD+

REDD refers to an approach to climate change mitigation first adopted by the UNFCCC conference of the parties (COP13) in 2007 in Bali. The acronym REDD stands for Reducing emissions from deforestation and forest degradation. REDD was introduced in response findings that an estimated 20% of anthropogenic carbon emissions originate from forest sources.

REDD interventions have been divided into three categories which are implemented sequentially in each participating country

- REDD readiness which consists of the development of the technical instruments and the design of the regulatory and governance framework required in order to make REDD possible.
- REDD implementation which consists of the implementation of the regulatory and governance framework and field implementation of REDD projects.
- Verified emission reductions for which participating governments will receive REDD payments.

Initially REDD interventions were to be aimed solely at reducing emissions from deforestation and from forest degradation. However, the possibility of co-benefits was also recognized including protecting the environmental services and improving the livelihoods of forest-dwelling communities.

In 2008 COP14 in Poznan broadened the scope of the original REDD interventions to include 3 additional strategic areas of work to reduce emissions:- the role of conservation, sustainable management of forests and enhancement of forest carbon stocks. These are implicated in the + of REDD+.

In 2010 Parties to the United Nations Framework Convention on Climate Change (UNFCCC) agreed on seven broad principles constituting a set of safeguards for REDD+ – known as the *Cancun safeguards*[447]*, i.e.*

a) Actions complement or are consistent with the objectives of national forest programs and relevant international conventions and agreements;
b) Transparent and effective national forest governance structures, taking into account national legislation and sovereignty;
c) Respect for the knowledge and rights of indigenous peoples and members of local communities, by taking into account relevant international obligations, national circumstances and laws, and noting that the General Assembly has adopted the United Nations Declaration on the Rights of Indigenous Peoples;
d) Full and effective participation of relevant stakeholders, including, in particular, indigenous peoples and local communities;
e) Actions that are consistent with the conservation of natural forests and biological diversity, ensuring that actions are not used for the conversion of natural forests, but are instead used to incentivize the protection and conservation of natural forests

[447] http://reddplussafeguards.com/what-is-redd-safeguards/

and their ecosystem services, and to enhance other social and environmental benefits;

f) Actions to address the risks of reversals;

g) Actions to reduce displacement of emissions

These are early days for country approaches to safeguards and many countries are still in the initial stages of their safeguards processes. As such, many REDD+ stakeholders are "learning by doing", which has yielded important preliminary lessons.[448]

Organizationally REDD is housed within the United Nations as the UN-REDD program. Three UN organizations are involved in REDD; UNDP, UNEP and FAO.

Funding for the UN-REDD program is derived from a Multi Donor Trust Fund to which seven 'countries' have contributed in decreasing order of size Norway (US$234m); EU, Denmark, Spain, Japan, Luxembourg, Switzerland. Total commitments are US$281m[449] so that Norway is responsible for almost 80%.

Expenditure within the REDD program is a little more than 50% directly by the UN agencies involved with the remainder split amongst recipient countries of which the largest amount received was for Republic of Congo (Brazaville) (US$7.4m) down to Philippines that received US$0.5m.

During the period 2009 to 2015 almost all expenditure has been allocated to projects designated as REDD readiness projects. These projects fall into four categories:-

- Development of National REDD+ strategy and action plan (NS/AP)
- Estimation of Forest Reference Emission Levels and Forest Reference Levels (for carbon) FREL/FRL
- Development of National Forest Monitoring System NFMS
- Safeguards information system SIS

However the official funding through the UN-REDD framework is not the only way in which funds are allocated to REDD related projects. There is a much larger amount of REDD related funding of which the largest portion has been allocated through bilateral agreements and other amounts through multi donor trust funds and private funding. The funds committed are much larger than the actual amounts distributed for a variety of reasons. Of US$1 billion allocate to Indonesia in 2010 from Norway by the end of 2015 only US$50 million had actually been disbursed. In total about 30% of the money pledged has actually been spent and of the total amount spent by all countries Brazil accounts for about 80%. This is due largely to its more efficient and relatively well resourced bureaucracy and its participation in the Amazon Fund for which disbursements are quick and efficient.

There is also a significant contribution from private donors both through charitable foundations and also through the purchase of carbon offsets in the voluntary market.

At Cop 21 in Paris the amount allocated to REDD has increased to commitments of US$3.5 billion. It is not yet clear if this money will all be allocated to completion of preparedness activities or if it will be allocated to on the ground implementation.

The REDD strategy 2016 to 2020 adopted by the governing board has 3 groups of target outcomes.

[448] UN-Program Info Brief, no 4, november 2015

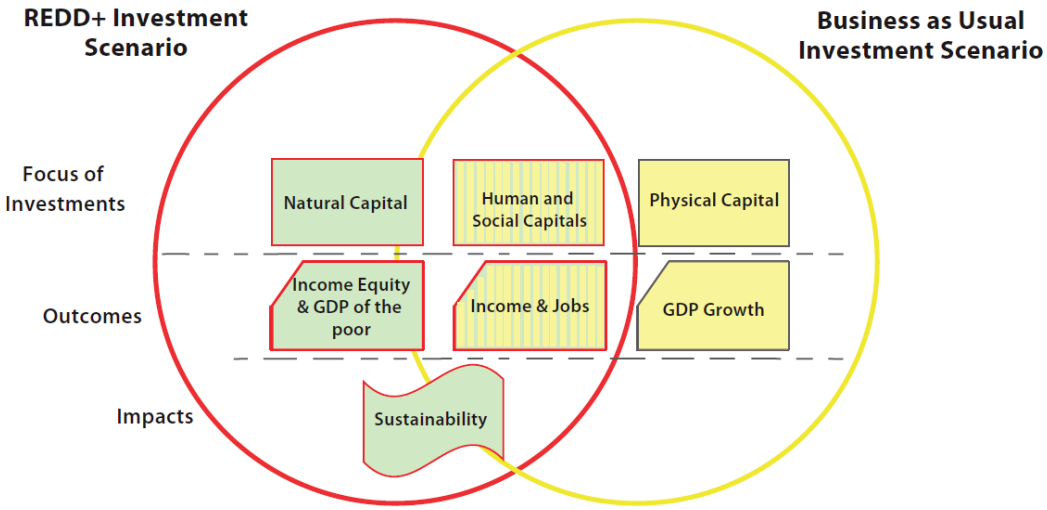
[449] UN-REDD (2015) UN-REDD Program 2015 Semi-Annual Update. UN-REDD program fifteenth policy board meeting.

Outcome 1. Contributions of REDD+ to the mitigation of climate change as well as to the provision of additional benefits have been designed.
Outcome 2. Country contributions to the mitigation of climate change though REDD+ are measured, reported and verified and necessary institutional arrangements are in place
Outcome 3. REDD+ contributions to the mitigation of climate change are implemented and safeguarded with policies and measures that constitute results-based actions (RBAs), including the development of appropriate and effective institutional arrangements.
It is clear from these outcomes that the period 2016 to 2020 is a further period of REDD readiness support at the country level. One of the required outputs for outcome 3 is that countries put in place national systems to access and disburse REDD+ finance.
Based on this finance and implementation structure it seems unlikely that significant amounts of money will reach the ground, much of it will be consumed in the organization of national monitoring and measurement systems. Furthermore, a critical study that assessed 98 REDD readiness documents from 43 countries came to the conclusion that few national strategies to curb carbon emissions through avoided deforestation and forest degradation actually addressed the root causes of deforestation. This may lead to focusing on forest conservation rather than addressing the socio-economic underlying drivers of deforestation.[450]

REDD+ and relevance for Fair Wood

All finance for REDD will be channelled through national governments so this means that the only way to obtain funds for Fair Wood will be through national government REDD+ finance programs. From this it can be concluded that it is highly unlikely to obtain core funding for Fair Wood projects through official REDD+ channels.
However, this does not mean that there are not some opportunities and efforts to build on related to the REDD system. There are a number of positives associated with the REDD system which overlap with Fair Wood objectives.
Stakeholder involvement in determining forest management objectives and stakeholder benefit sharing is an important part of the REDD philosophy which means that part of REDD readiness relates development of systems to secure tenure rights for smallholders.
The REDD investment philosophy is intended to focus on projects that enhance natural capital, are sustainable, i.e. conservation of natural forests and biological diversity, and that are designed to ensure income equity and increase the GDP of the poorest sections of society; so called green development, c.f. Cancun Safeguards.
Currently none of the countries where Fair Wood is likely to operate have progressed beyond the REDD readiness stage and although carbon offsets payments could be a source of income to support forest management activities in Fair Wood communities it is doubtful if these will start to flow until country level implementation is complete. It may be possible that the voluntary carbon market could be of assistance but compliance with this is a far costlier exercise than compliance with forest certification standards.

[450][450] http://www.cifor.org/publications/pdf_files/articles/ABrockhaus1401.pdf



These objectives are perfectly in alignment with Fair Wood.

REDD+ has also spurred discussion about sustainable alternatives to cutting forests, including deforestation-free supply chains but substantial impact on transforming economies not yet apparent.[451]

REDD is seen as an enabling funding that will represent a relatively small part of a stream of blended funding for REDD projects. This blended funding is expected to come from the voluntary carbon market as carbon payments and from other sources of funding for capital requirements. From its inception REDD has been in cooperation with the World Bank's Forest Carbon Partnership Facility and during the period 2016-2020 it is seeking to strengthen this partnership as well as to develop new partnerships with the Forest Investment Program (FIP), the BioCarbon fund, the Global Environment Facility (GEF) and the Green Climate Fund (GCF). These funds all appear to be associated in some way to the UNFCCC or to the World Bank.

Some of them e.g. GEF seem to be heavily involved in blended funding using public money to leverage private investments. It seems this is done most commonly by becoming the junior investor in projects. As junior investor this means that the GEF will forfeit its investment before the others should an insolvent company be wound up.

Thus for our purposes it seems that some of these other funds may be more likely to finance the field level projects. It is noticed that the Green Climate Fund runs through accredited entities for directing its funding to the field level. These accredited entities may be private companies or NGOs operating at any level from global to local. It may be that Fair Wood could obtain some funding by becoming an accredited entity.

Overall the Fair Wood initiative could explore how these funds relate to possible support of Fair Wood as a global program *vis-á-vis* supporting Fair Wood interventions on the ground in specific countries directly or indirectly (thru national partners) or if these funds are simply not relevant from a Fair Wood perspective.

[451] http://www.climateandlandusealliance.org/wp-content/uploads/2015/08/Impacts_of_International_REDD_Finance_Summary_for_Policymakers.pdf

Appendix 21: Gender Strategy

DESKTOP LITERATURE REVIEW- KEY FINDINGS

RATIONALE, KEY TERMS AND LINKAGES

Rationale

Engagement in value chains is frequently crucial to rural women's livelihoods, and by extension their families' health and wellbeing Benefits accrued by working toward gender equality are consistent with the three key intervention areas Fair Wood seeks to address: rural economic development as a means of poverty alleviation; sustainable forest management and entrepreneurial development. Another way to answer the question is to frame the argument along three legs: that women's empowerment satisfies social justice needs, focusing on livelihoods goes to poverty alleviation, and enhanced value chain performance goes to better business these benefits can express economic, social, or political dimensions and may over time increase the efficacy of sustainable development interventions. Increasingly, gender equality and women's economic empowerment are central to international development agendas[452].

Key Definitions, and the Links and Synergies between them

Gender, gender equality and women's empowerment are frequently conflated terms. Though related in crucial ways, each has a distinct and important meaning in the context of exploring gender equality strategies in timber value chains.

In brief, the term gender infers the socially constructed norms, attitudes, beliefs, roles and responsibilities that cultures ascribe to women and men, and the relationships between them. Gender is a fluid continuum which influences the creation and distribution of power, operates on and across multiple scales (individual, community, region/state) and is expressed through socio-cultural, institutional and policy means.

Distribution of power between women, girls, men and boys is asymmetrical, and generally favours men and boys. A common touchstone for this in the literature depict women's lack of access to or control over the means of production. This helps to explain why ascertaining land and resource tenure for women is a key priority for many development organizations. As such, compensatory measures which seek to lift women up on par with men are required to achieve gender equality. Gender equality is commonly defined as men and women are attributed equal social value, equal rights and equal responsibilities and have equal access to the means (resources, inputs, education and opportunities) to exercise them. Strategies for

[452] See, for example, http://sdg.iisd.org/news/csw-highlight-womens-economic-empowerment-sdg-implementation: The priority theme for the 61st session of the UN Commission on the Status of Women (CSW 61 (E/CN.6/2017/3) in March of 2017 is 'Women's economic empowerment in the changing world of work.' … "UN Secretary-General calls for implementation, monitoring and accountability mechanisms of the 2030 Agenda that systematically support women's economic empowerment and "rights to and at work," and promote decent work and full and productive employment for women… also urges governments and other stakeholders to take action on: strengthening normative and legal frameworks for full employment and decent work for all women; implementing economic and social policies for women's economic empowerment; addressing the growing informality of work and mobility of women workers; managing technological and digital change for women's economic empowerment; strengthening women's collective voice and leadership; and strengthening the role of the private sector in women's economic empowerment"

women's empowerment provide the means by which some of these asymmetries can and have been addressed. (for more see[453]).

Sida defines women's economic empowerment(WEE) in this way: "Processes which increase women's real power over economic decisions that influence their lives and priorities in societies. WEE is achieved through equal access to and control over critical economic resources and opportunities and the elimination of structural gender inequalities in the labour market, including better sharing of unpaid work and care" [454]. Consistent with much of the literature, Sida situates WEE as a precondition for sustainable development, and specifically links that efficacy of empowerment strategies to "systemic transformation of institutions to actively promote gender equality and rights; addressing WEE requires addressing access to and control over resources" The five key areas of WEE as defined by Sida are consistent with addressing key barriers identified in the literature and instructive for Fair Wood gender strategy development. They include:

- Entrepreneurship and private sector development (priority- remove barriers to female entrepreneurship and promote access to inclusive financial services)

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[453] Adopted from Business Case for Mainstreaming Gender in REDD+;

BOX 1 Gender, Gender Equality, Gender Mainstreaming, Women's Empowerment and Women's Economic Empowerement

The terms "gender" and "gender equality" imply concern for both men and women and the relationships between them. Nevertheless, specific attention to women's needs and contributions is typically required "in order to address the array of gender gaps, unequal policies and discrimination that have historically disadvantaged women and distorted development in all societies."10 This does not, however, preclude activities that address men's specific needs where doing so will contribute to gender equality.

Gender denotes the socially constructed roles and responsibilities ascribed to men and women and the relationship between them. Gender influences the creation, use and distribution of power. Thus, common attributes of gender-differentiated roles, rights and responsibilities include an asymmetrical distribution of and access to power between men and women. In addition, gender interacts with other societal differentiations that shape power asymmetries, such as ethnicity, age and education. Gender has interpersonal, cultural, institutional, policy, political and socioeconomic dimensions.11

Gender as defined in CGIAR brief: Gender refers to the socially constructed differences between women and men (Kabeer 2005) how society gives meaning to differences in femininity and masculinity, and the power relations and dynamics that characterise how women and men interact (Laven et al. 2009).

Gender equality exists when men and women are attributed equal social value, equal rights and equal responsibilities and have equal access to the means (resources, opportunities) to exercise them.

Women's empowerment refers to tools, strategies and approaches that seek to correct asymmetries of power, access and privilege that result from gender inequalities. Promoting gender equality may require efforts to ensure women's empowerment. Gender mainstreaming is "a globally accepted strategy for promoting gender equality. Mainstreaming is not an end in itself but a strategy, an approach, a means to achieve the goal of gender equality"12

Gender mainstreaming was defined by the United Nations Economic and Social Council in 1997 as "a strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of the policies and programs in all political, economic and societal spheres so that women and men benefit equally and inequality is not perpetuated." As such, gender responsive policies and programs recognize and address gender as an important variable that must be explicitly designed and budgeted for, implemented, monitored and evaluated.

10 Empowered and Equal, UNDP Gender Equality Strategy 2008-2011 11 Aguilar, L. et al 2009; Empowered and Equal: United Nations Development Program (UNDP) Gender Equality Strategy, 2008-2011 others 12 UN Women, http://www.un.org/womenwatch/osagi/gendermainstreaming.htm, retrieved December 2011

[454] citation(p 5 WEE document SIDA)

- Access to land and property rights (priority- increase gender quality with respect to access to and control over land and property rights) (note this is something to be enhanced through partnering with others/ecosystem of actors)
- Productive employment and decent work (priority promote
- Unpaid care work- and and more equal sharing and productive employment and decent work (priority?)
- Education and skills development (priority increase women's access to quality post primary education ; increase # of children enrolled in early childhood education
- Social protection (priority- increase # of gender sensitive social protection, systems and increase # of women enrolled)

GENDER IN FORESTS, TREES, AGROFORESTRY, AND TIMBER VALUE CHAINS

Gender in Forests, Trees and Agroforestry

TO BE MEASURED, it has to be counted. In commodity value chains generally, and timber value chains In particular, documentation and analysis of empirical evidence remains one of the key challenges to understanding how gender inequalities work, and (therefore) how best to design, target and implement effective interventions. . Nearly every study, brief, white paper and other analysis on gender all conclude with the persistent call to first gather sex disaggregated data at every level and consistently. Understanding women and men's unique knowledge, positions and interests, division of labour and values accorded to that division is an important foundational step to understanding how gender operates in a particular value chain. Absent a baseline it is difficult to develop indicators and calibrate an effective monitoring and evaluation program against which to measure progress and assess stumbling blocks.

…AND TO BE COUNTED, it has to be visible. Due to a number of primarily socio-cultural dimensions (e.g. differences in norms and relationships between and amongst women and men) and structural dimensions (e.g. economic, political, governance, and institutional), women have historically been somewhere between low profile to invisible in timber value chains. [455] The nature of gendered differences is highly contextual, interdependent and intersectional. Key analytical categories include socio cultural, economic, governance political and institutional as well as environmental dimensions[456].

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[455] The authors analyzed a total of 109 studies addressing a wide swath of gender dimensions, including timber and non timber forest products (ntfp's). Of the 109 studies, 63% were peer reviewed scientific articles; and only 17% described external interventions in value chain. 84% of the studies used were "female biased (seeking to improve women's position in the value chain)" and the majority detailed interventions that targeted gender specifically. Most were made at the harvest level.

- [456] *Socio cultural factors* are foundational to understanding the context in which gender- a social construct- operates. These are the norms that shape who participates when, how and where along the value chain. Those norms are in turn reflected and reinforced at a structural level by institutional policies, and practices that comprise the governance of value chains, as well as the economics. Differences emerge around access- for example to education (literacy is necessary for business).
- *Economic factors* are structural and impact benefits, benefit distribution and demand and consumption of forest products broadly. Women are most frequently situated in the informal (unpaid and without formal contracts) and no or lower value end of the value chain- e.g. collection/harvesting (with some regional variability), and time

Gender in Forest Value Chains

Gender in forest, tree and agroforestry value chains differs from agricultural based chains in two important, and connected ways. The first is about governance -how access to and benefits from the resources are managed. And the second is that governance affects sustainability. (Colfer et al) There are studies that evidence women's participation in forest user groups and decision making has resulted in improved management of the forest resources, and enhanced livelihoods. (Agrawal, 2010). And value chains make clear the linkages which shape livelihood systems from the local conditions, including gender norms, to broader socio-political and economic factors. Add to this picture other key components of gender operating at the intersection of race, age, class, religion etc and you have the full and complex picture of that which gives rise to gender differentiated access to, participation in and benefits from value chains.

WHY ARE THERE GENDERED DIFFERENCES IN THE VALUE CHAIN?

Key constraints for women are mired in the broader socio-political (e.g. social norms, household responsibilities) and economic structures, and specifically around physical nature of the work, household time constraints and distance to the work site, access to capital and education. "The NATURE OF GENDERED DIFFERENCES IN PARTICIPATION IN fta CHAINS CAN

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poverty is frequently invoked as a design consideration for program or policy implementers. Men are most frequently situated upstream in the higher value ends of value chains, with concomitant access to rights (including land and resource tenure)and financial supports (e.g. credit), resources and training. apparent in revenues and spending patterns b/t women/men---generally men sell a higher proportion of products (processed and un processed) and therefore have higher income; regional differences are very apparent in earnings b/t women and men; and focus on in this realm is land and resource tenure, and benefit distribution mechanisms. many researchers note *more benefits accrue with women's spending than with mens (food health and education*).

- *Governance, political and institutional factors*—this set of variables are particularly complex and interdependent. Here researchers generally looked at overlapping customary and formal regulatory arrangements. One of the key issues gender experts Of particular interest to the Fair Wood model is the researchers' observation that underrepresentation of women in governance/decision making structures and positions was the norm, "*however in some customary and market based governance arrangements, women have developed strategies to increase their representation and participation in institutions governing value chains*". And finally, political factors-here the literature generally looked at addressing rights and political empowerment (mentioned in 5% of the studies). As with governance and institutional factors,, political differences are another expression of gendered power relations which run the gamut from household to enterprises. Researchers note specifically here that women are often described as subordinate to men or disadvantaged; and that strategies to increase power-including women's collective actions were noted as successful.
- *Environmental factors*- women were shown to be more vulnerable to effects of degradation because they are poorer and more dependent on ecosystems on the one hand, and lack agency, or means of effective participation and representation in decision making structures on the other. A flip side of this conversation not covered in the CGIAR study but raised in many others, is their knowledge could be harnessed along with men's knowledge to enhance sustainable forest management/silvicultural practices.

Understanding gender requires a multi-factoral analysis. Selecting any single factor above as the sole basis for analysis would disserve another important concept in identity structure*: intersectionality*. Each individuals identify is a specific and unique composite of these factors, and more (other dimensions include religion, history, sexuality/sexual orientation). These factors are mutually informing and compound in a gender unequal environment.. This is the basic stuff that frequently translate into context specific barriers, constraints to – or opportunities for- women's equality and economic empowerment.

LARGELY BE ASCRIBED TO SOCIAL AND CULTURAL DIFFERENCES THAT INFLUENCE HOW CHAINS ARE GOVERNED. THESE DETERMINE GENDER DIFFERENTIATED ACCESS TO, AND OWNERSHIP (TENURE) OF LAND, FORESTS, TREES, FARMS, fta PRODUCTS, LABOR, TECHNOLOGY, CREIT, INFORMATION AND fta MARKETS." THESE DIFFERENCES TRANSLATE TO WOMEN OFTEN HAVING LESS OR FEWER ACCESS RIGHTS THAN MEN,

WHERE DO GENDERED DIFFERENCES OCCUR ALONG THE VALUE CHAIN?

Access issues mediate participation in the value chain, and also shape gender differentiated benefit capture. This is why land/resource tenure are critical components to women's economic empowerment strategies, and gender equality strategies more broadly. Most broadly gendered differences occur with respect to participation in different nodes of the value chain (e.g. silviculture/sustainable forest management; processing, and trading) and access to benefits. Generally speaking, women tend to engage along the downstream ends of the value chain.[457]- There are also gendered differences with respect to earning and spending patterns. Men tend to earn more- even for the same work; and women's spending is linked more directly to family and community benefits. "THE MOST SIGNIFICANT SOCIO-CULTURAL FACTORS ARE CLOSELY LINKED TO GOVERNANCE, WITH CULTURAL NORMS AND CUSTOMS STRONGLY INFLUENCING THE PARTICIPATION AND ACTIVITIES MEN AND WOMEN PERFORM IN CHAINS" (Colfer et al p 10); specifically note the overlap of formal and customary law, and the underrepresentation of women in decision making positions in government. Worth noting, however, is the observation that women have managed to design strategies increase their presence and participation in institutions governing value chains. Moreover, Agrawal(2009) demonstrated women's presence in community institutions can improve resource conservation and regeneration in cases from India and Nepal.

-differences also due to nature of product and activity; gendered power relations were also noted, at household and enterprise level, resulting in differentiated benefits to men and women.

-Relatively little information quantifying male/female participation in FTA value chains. Regional differences. Overall trends are that women are mostly active in the upstream and downstream ends of chain, but that men tend to run the larger businesses.

(SKIPPING TO CONCLUSIONS)

Subtitles are: gender differences in the FTA value chains (socio cultural differences that influence governance and are determinative of access to, ownership. Women fewer rights, less access; and differences due to the nature of product or activity- time and distance components;

contextual factors influencing those; gendered constraints rise from socio cultural political economic and environmental factors. Socio cultural factors disadvantage women; governance, political and institutional factors (structural) concerned overlapping customary

[457] CGIAR meta analysis researchers emphasis that most studies don't indicate the sex of those involved, and that of those cases reviewed, most were concerned with gendered participation in harvesting: "a general trend indicated is that men participate more in chains when the value of the products increases, and that men typically participate to commercialize products, whereas women participate both to gather goods for their own and family use, and to generate income." There was no specific mention of gendered participation in sustainable forest management nor silvicultural practices.

and formal regulatory arrangements, women lacking representation in these formal bodies/also the “agency” argument. Education was found to influence participation in and benefits from FTA chains…plus INTERSECTIONALITY

making chains more gender equitable

combination of horizontal and vertical upgrading

horizontal coordination =between the same types of actors, e.g.a harvester groups, trader cooperatives, mixed gender groups; vertical coordination = between actors in different chain positions- e.g b/t individual women or a women’s group with their buyers

Appendix 22: Extract on Tropical Forest Management and Silviculture from HJ van Hensbergen (2016)[458]

Poor forest management

Forest management is the way in which forest activities are organised so as to meet the objectives established for the forest area[459]. These objectives must be established *a-priori* but must also remain flexible[460] so as to cope with changes in the social, economic and natural environment. Management objectives should be framed in terms of the range of goods and services that the forest is expected to provide over time. This does not equate to maintaining the current structure of the forest in perpetuity but in adapting its structure to meet the current and future demands. Nor does it require that the yield of individual species is necessarily maintained at some fixed levels[461].

Forest management objectives should seek to meet social, environmental and economic objectives within the matrix of a forest that is zoned for multiple purposes and with specific management plans for each area.

The first failure of forest management is the failure to establish these objectives. Most commonly the objectives established are purely in terms of the timber to be harvested immediately and management planning is carried out on how to achieve this logistically while minimising the negative impacts.

There is increasing knowledge of the autecology and synecology of commercially important tropical species[462],[463],[464] so that it is increasingly possible to plan management strategies that result in proper regeneration of these species[465].

Forest management plans for concessions are usually deficient in these aspects and are better described as reduced impact harvesting plans since they often do not include management of the forest itself.

This lack of proper forest management planning has led to forest exploitation systems that have no basis in a scientific understanding of forest dynamics and that have led to the sequential economic extinction of a range of species and will continue to do so. This may not be a bad thing in the short term if there are biodiversity reserves to effectively protect those species[466] and if there are alternative species to fill the gaps in the market vacated by the

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[458] van Hensbergen H.J. (2016) Forest Concessions:- Past, Present and Future. FAO Forest Policy and Institutions Working Paper 36. FAO Rome.

[459] Muys B, H. J. van Hensbergen, L. Oldenkamp L. 2010."Principes van Duursaam Bosbeheer. In *Bosecologie en Bosbeheer*, by Muys B & Mohrens F. Den Ouden J. Leuven: Acco Uitgeverij.

[460] von Gadow K, M. Kurttila, P. Leskinen, L. Leskinen, T. Nuutinen and T. Pukkala. 2007. Designing forested landscapes to provide multiple services. CAB Reviews: *Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources* 2, No. 038.

[461] Karsenty, A., and S. Gourlet-Fleury. 2006. Assessing sustainability of logging practices in the Congo Basin's managed forests: the issue of commercial species recovery. Ecology and Society 11(1): 26.

[462] Mostacedo B., Z. Villegas, J.C. Licona, A. Alarcón, D. Villarroel, M. Peña-Claros y T.S. Fredericksen. 2009. Ecología y Silvicultura de los Principales Bosques Tropicales de Bolivia. Instituto Boliviano de Investigación Forestal. Santa Cruz, Bolivia

[463] Snook LK (2005) Sustaining mahogany: research and silviculture in Mexico's community forests. *Bois et Forêts des Tropiques* 285: 55-65.

[464] Ashton, Mark S. and Jefferson S. Hall (2011) The Ecology, Silviculture, and Use of Tropical Wet Forests with Special Emphasis on Timber Rich Types. In S. Gunter et al. (eds.), *Silviculture in the Tropics* Tropical Forestry *8*

[465] Sheil, D., van Heist, M. 2000. Ecology for tropical forest management . International Forestry Review 2 (4) :261-270. ISSN: 1465-5489.

[466] Karsenty, A., and S. Gourlet-Fleury. 2006. Assessing sustainability of logging practices in the Congo Basin's managed forests: the issue of commercial species recovery. Ecology and Society 11(1): 26.

overexploited ones provided that the shorter term socioeconomic benefits are large enough to ensure the protection of the forest.
However, in the longer term it is necessary to develop a system where forest management ensures a more stable supply of the types of timber and other services required by local populations to support their livelihoods and economic development.

Lack of silviculture

Silviculture is the art and science of controlling the establishment, growth, composition, and quality of forest vegetation for the full range of forest resource objectives.[467] This definition of silviculture is selected since it makes it clear that it concerns all aspects of forest vegetation and not only trees and the impact of this vegetation on all resources including water and biodiversity.
Silviculture is not the same thing as forest management but in almost all cases properly established forest management objectives can only be achieved through silvicultural interventions[468].
In Europe the trigger to silvicultural interventions was often the exhaustion of the forest resource for specific purposes, for example the planting of oak in England and Sweden for the building of future battleships. This was further stimulated by large scale planting or regeneration of softwood resources when wars depleted resources. In much of the tropical forest that point is now very close.
The cutting down of trees to extract them from the forest is itself a silvicultural activity and it may be that the harvesting of trees (and the impacts of machinery to achieve this) is the only silvicultural intervention that is required in order to meet forest management objectives; however, it is unlikely that this would have results that are in any way optimal.
There may be several reasons why silviculture is not practiced in tropical forest concessions. There may be insufficient scientific knowledge to design appropriate silvicultural systems to achieve forest management goals and this was indeed the case in the past. It may also be that there is insufficient human resource capacity to plan silvicultural activities both in terms of quality and quantity.
It may be that the costs of required silvicultural interventions are so high as to render forest harvesting unfeasible or, as is more often the case, so high as to lead concession holders to avoid carrying out silvicultural interventions when there is no incentive to do so. This latter is often the case where enforcement of the concession contract is weak. In any case the failure to carry out silviculture is likely to prove disastrous both to the future value of the timber resource and to the other goods and services that the forest should supply.
Early efforts (1870s-1920s) to establish a scientific basis for forest management were mainly focussed in south East Asia stemming from the early work of Brandis and others in the forests services of Indian and later in Malaya[469]. In Latin America and particularly in Africa work started much later and was much more restricted in scope until the 1950s.
The problems associated with the lack of silviculture were recognised relatively early on in the history of industrial scale tropical forest exploitation so that foresters started establishing silvicultural trials in the 1960s aimed at determining the effects of alternative

[467] https://www.for.gov.bc.ca/hfd/pubs/ssintroworkbook/index.htm.
[468] Matthews J.D. 1989. *Silvicultural Systems.* Oxford.
[469] Ashton, Mark S. and Jefferson S. Hall (2011) The Ecology, Silviculture, and Use of Tropical Wet Forests with Special Emphasis on Timber Rich Types. In S. Gunter et al. (eds.), *Silviculture in the Tropics* Tropical Forestry *8,*

silvicultural strategies in tropical forests. Unfortunately, the results of these trials have not been widely available so have not entered the scientific domain.[470]

[470] Petrokofsky G.*, Sist P., Blanc L , Doucet J, Finegan B, Gourlet-Fleury S, Healey J R, Livoreil B, Nasi R., Peña-Claros M. , Putz F E & Wen Zhou (2015) Comparative effectiveness of silvicultural interventions for increasing timber production and sustaining conservation values in natural tropical production forests. A systematic review protocol. *Environmental Evidence* (2015) 4:8.

Appendix 23: A proposed management system for Miombo Woodlands

There is currently no silvicultural management of the miombo woodlands and this undoubtedly results in their long term degradation as well as missing the opportunity to increase both the quantity and quality of the timber produced. For example, De Cauwer (2016)[471] has shown that *Pterocarpus angolensis* growth is strongly determined by competition for light so that silvicultural thinning can increase the growth rates of selected trees significantly. Many of the species regenerate from coppice stools or by root suckering after fire or agricultural clearing has removed the mature trees. Very few trees reach diameters of more than 60cm (age 100 yrs) before senescence or fire kills them.

Harvesting practices

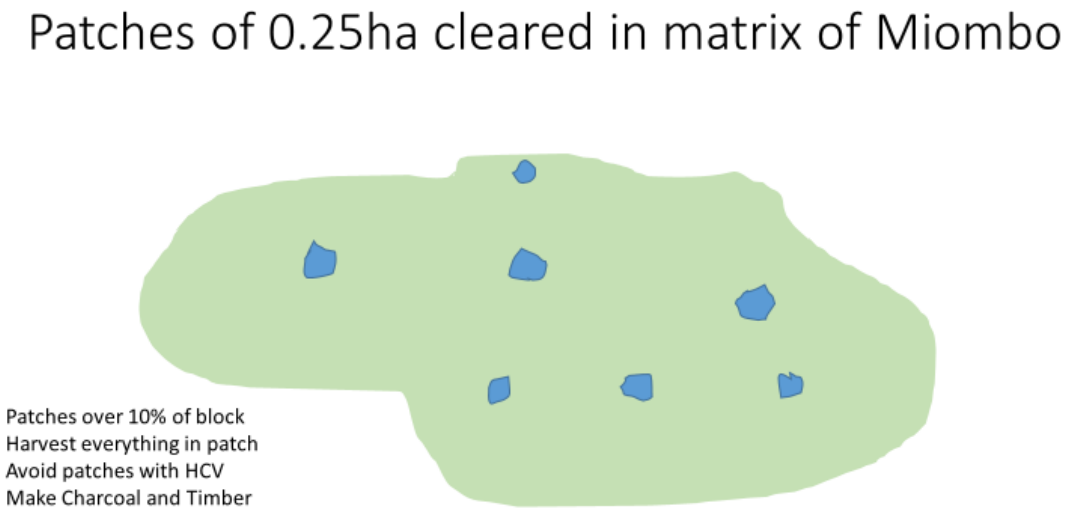
The current system in which trees over the minimum felling diameter are harvested can continue to be followed over 90% of the area. There should be strong control that at least a proportion of the larger trees remain standing for biodiversity purposes and as seed trees. Hand loading of timber is both dangerous and inefficient resulting in significant cost increase of harvesting and transport. Future harvesting should involve the hauling of timber to loading points by cable and tractor followed by mechanical loading for transport to the mill. Where biomass material is to be extracted this can be done with tractor and trailer up to the loading point for mechanical loading onto trucks for transport to point of use.
Logs should be processed as close to the forest as possible in order to reduce the very high transport costs for long distance transport to Bulawayo. Only sawn dried material should be transported over longer distances.

Patch clearing

Over 10% of the area a system of small scale clearings of 0,25ha (approximately 50m x 50m) should be instituted. In these areas all trees of all species including pole size trees will be harvested (sites should be selected to ensure no rare or endangered or otherwise important trees are included in them. All material over 5cm diameter is removed from the site and the remainder is burnt in situ. If the rotation length is 60 years then this results in 0.2% of the total FMU being cleared in each year for regeneration which should not produce significant environmental risk. The return time for clearing any individual patch would be over 300 yrs which is significantly longer than current return times for areas affected by shifting cultivation.
All woody material from the patch should be used either as sawing timber, service wood or as timber for biomass (for heat or electricity generation) or converted to charcoal. Following patch clearing there is abundant regeneration from seed, coppicing and root suckering.[472]

[471] De Cauwer, Vera (2016) *Autecological aspects of the African timber tree, Pterocarpus angolensis in support of its sustainable management*. Unpublished PhD Thesis. K.U. Leuven September 2016
[472] Interview with Mjumita

Figure 5 Patch management in Miombo Woodland



Silviculture

In the formerly cleared patches there is expected to be heavy regeneration, mainly from coppicing and from root suckers. This regeneration should be thinned and coppice stools should be singled over a period of about five years in order to select trees of good stem form and desirable species. Where there is inadequate regeneration of commercially important species enrichment planting could be carried out.
Later thinning at the pole stage should also be carried out to reduce competition.
In the rest of the area where coppicing is occurring on remaining stools this should be similarly managed by coppice singling.

Fire Management

Fire is an integral part of miombo ecology, however the frequency of fire has increased significantly in recent times with many areas affected by almost annual burns (satellite image analysis) suggests that away from heavy human density that the usual return interval is approximately once every three to four years. It is therefore vital that effective fire control is introduced, particularly for the cleared patches which will be expected to have significant ground level vegetation growth in the first few years.

Proviso

Although we believe that this type of silvicultural scheme is technically feasible based on research results there is a need to use an adaptive management approach with a strong monitoring component in early years to ensure that there are no unexpected consequences. For example, it is possible that if there are insufficient patches in the system that browsing and grazing game will concentrate on the patches and prevent regeneration. If successful we believe that it will become possible to shorten the rotation length in the future.

Appendix 24: Technology in a Fair Wood program

A Fair Wood program will encourage and support the clients to implement new and innovative systems and technologies in management of the forest and in the processing of the wood.

Technology in forest management

One of the key elements of the Fair Wood concept is the introduction of silviculture into the management of native forest. By introducing soil preparation, planting, weeding, pre-commercial thinning and pruning, social, ecological and economical objectives will be actively supported resulting in improved long term status of the forest. When new strategies for forest management are introduced, for example the proposed patch clearing for Miombo forests (see appendix YYYY), also appropriate support and control systems as well as best management practices need to be developed and introduced.

It is expected that manual and semi-manual working methods will be the most competitive alternative in all silviculture activities as well as in the felling of the trees. To increase productivity and to avoid heavy lifting and other dangerous operations, safe equipment and best management practice (BMP) should be introduced. Strict health and safety instructions must always be followed and necessary training implemented. When different kind of machinery such as chainsaws, winches and tractors are introduced special efforts must be made to train all involved personal in correct maintenance and safe operation. Personal protection equipment (PPE) must be; available, in good condition and used by all operators. First aid stations with first aid kits needs to be installed at all sites and all employees need to be trained in first aid. If animals are introduced in the different operations good animal stewardship must be applied.

There are several new IT-based tools introduced during the last decades to support forest management and trustworthy chain of custody. This include for example the use of digital maps and global position systems (GPS) as well as different laser scanning methodologies. Recently drones have been introduced in forest management, possibly a very useful tool also in management and monitoring of smallholder/community forests. Examples of areas were drones can be useful are; update old and make new (digital) maps, identify high conservation value forests (HCVF), watershed management, make (green) forest management plans, control wild fires and to fight illegal logging. There are also many technical and administrative systems developed to secure chain of custody including marking systems as well as reporting systems.

The program will evaluate, at local level and in co-operation with the different stakeholders, the opportunities for introducing new systems and technologies, at a relevant scale, to support sustainable and competitive forest management as well as reliable chain of custody.

Technology at the sawmill

The concept presented, based on “lean startup”, seeks to avoid high capital investment and unnecessary risks before wood supply and market opportunities are confirmed. Instead expansion is expected to be organic, “growing with the log suppliers and the customers”. Other key aspects of the concept are high value recovery (to utilize the maximum value of each log) and just in time delivery of high quality sawn wood products developed in co-

operation with industrial customers (for example; exact dimensions, selected colors and agreed moister content).

Unfortunately, neither of the two prevailing technical solutions; 1/ old large-scale sawmills, second or third hand import from Europe and often more than 20-30 years old and 2/very small "low-budget" sawmills, common in rural settings, fit into the proposed Fair Wood business model.

The old large-scale sawmills are designed to produce large volumes of commodity products at lowest possible unit cost. Initial investment is relatively high making a lean start up strategy impossible. Furthermore, maintenance and repairs are complex and expensive and involvement of external (oversea) experts are often necessary, maintenance is therefore often neglected. This often results in serious breakdowns. If spare parts and technical experts are not available locally, breakdowns result in long and costly stops. This situation makes any attempt for customer adapted production to order and "just in time" delivery impossible. Furthermore old sawmills suffer from low recovery rate (especially for smaller logs), limited dimension stability and low standards of health and safety.

Nor do small "low-budget" sawmills (as often provided under donor support) fit into the fair wood business model. Major problems with these are remarkably low value recovery, low standard on health and safety, very poor dimensional stability due to poor maintenance and poor sawing practices. The low quality of the final products forces this kind of sawmills to compete with illegal logging at local and regional markets resulting in very small incomes per cubic meter of sold wood.

Instead, small-scale high quality sawmill machinery and further processing equipment is a necessary and vital enabler of program goals. With focus on high value recovery, quality and customer satisfaction – rather than "high volumes at lowest cost per unit" - the program will support the introduction of innovative, but comprehensively tested and well established, technology for "precision sawing" (resulting in exact dimensions), artificial drying to customer requirement and further processing to blanks, components and final products processed in a modern joinery/prototype workshop equipped with small scale high quality machinery (see figure XXYY).

The "small-scale and high-quality" strategy delivers several competitive advantages;

- ✓ Small initial investments – low risk before wood supply and market is confirmed
- ✓ Step by step training of the employees
- ✓ The startup phase includes a joinery/prototype workshop
- ✓ Capacity for product development – supporting high recovery
- ✓ High quality of the final products secured by correctly maintained and properly adjusted by well-trained employees
- ✓ When supply of logs and demand by customers are confirmed expansion can be based on parallel lines
- ✓ All spare parts can be available at the site to minimize stop-time and reduce risk for delays in delivery
- ✓ All services and repairs can be done by the sawmills' own personal to minimize costs and stop-time and to secure continues and pro-active maintenance.

- ✓ Limited requirement for electricity
- ✓ High standard of health and safety compliance and relatively quiet working environment
- ✓ Attractive and safe working conditions improving access to qualified personnel and supporting the Fair Wood gender strategy (see also “Gender equality mill”)

The strategy also has some important limitations

- ✓ Small initial investments – results in small initial capacity. Can be difficult to meet demands from bigger customers until several parallel lines are established
- ✓ The small machines require careful and well trained operators. There is no space for “fixing the problems with a big hammer” and it’s often better if the employees do *not* have previous experiences from existing (old) sawmill industries
- ✓ The small-scale sawmill machinery is designed for logs up to a maximum size (diameter, length and weight). However, oversized logs can be safely pre-cut into smaller blocks with special equipment based on a chainsaw, rail-guides and timber-jigs.

It is important that the technical design is coordinated with the market plan. The advanced customers, most likely on the export market, is expected to appreciate that they are partners in a step by step process and accept that initial orders are adapted to lean startup model and the limited initial capacity of the mill.

Kilns and energy production

Sawmills typically reduce 50% of the roundwood input into waste biomass in the form of sawdust and offcuts. When further processing the sawn wood into products such as blanks, components and final products more waste is added resulting in up to a total of 70% of the wood becoming potential bio-energy. This waste is often burnt to dispose of it. It is however a precious energy resource and should be used at least to generate heat for drying timber in kilns. Other potential uses are

In addition, there is usually enough energy contained in the waste material to generate electricity as well as to heat the kilns. The Fair Wood research component is continuing to investigate small scale electricity generation equipment that is cost effective. Where electricity can be generated there is generally enough for all the needs of the mill and a considerable surplus that can be exported to local communities and result in additional income for the business.

Kilns should be of an appropriate capacity for the business and this will normally mean small kilns with a capacity of 20-30m3. Since there is a mixture of species, dimensions and final products, and each of this has its own drying regime so that they cannot be mixed during drying, it is not possible to use the commonly available bigger kilns. Also, timber should preferably be dried as soon as possible after primary sawing. Large kilns mean that timber often has to wait days or weeks before it enters the kiln with a significant loss of value during this waiting period as natural drying causes internal stresses in the wood. Even if there are some few small-scale kiln solutions available on the market these alternatives are still relatively expensive. The Fair Wood research component is continuing to investigate small scale kiln equipment that is cost effective. On interesting alternative is to integrate the

need for a boiler for heating of the kilns with the need for a boiler for generating steam to the electricity production – optimizing total costs. Competitive integrated solutions exist for bigger sawmill industries but are today not available at a reasonable price for small and medium size sawmills.

Example of small-scale high quality sawmill designed for LevasFlor

Below follows an example of sawmill designed for LevasFlor Ltd. in Mozambique. The total investment in machinery/equipment/installation (but not buildings) is estimated to approximately USD 200.000-300.000 (1500 m3).

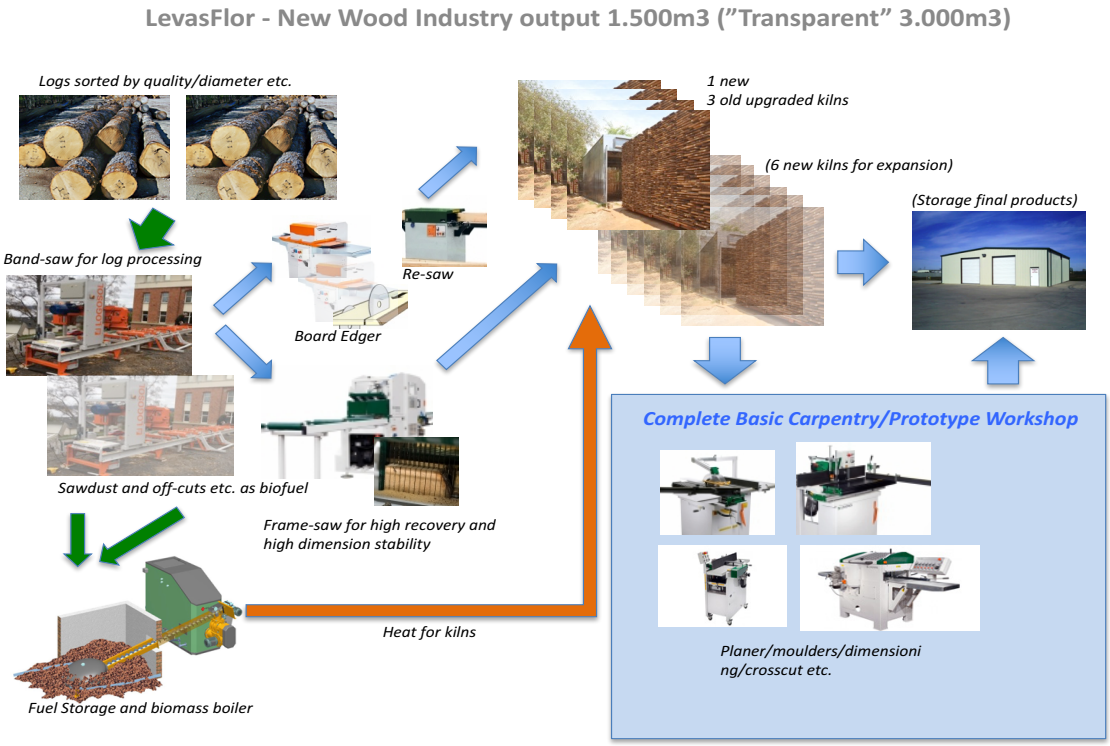


Figure XXX. Example of small-scale high quality sawmill equipped for a production of 1500m3 (3000m3 indicated in “transparent”) of sawn wood, mix of green and kiln-dried standard sawn wood, blanks and components.

Appendix 25: Proposal for integrating gender equity in the upgrade of the LevasFlor mill

A proposal for integrating gender equity into the practical implementation of the Fair Wood concept was developed based on an interview with Maria Ines Miranda and observations by the team members during the research phase. The proposal, presented below, was developed for a small-medium size sawmill industry, LevasFlor Ltd in Mozambique. This specific example only covers the primary industry (sawmill and local further processing) and does not cover log supply or marketing and sales.

Background
LevasFlor has an FSC certified forest concession of 40.000 ha and an old and wasteful sawmill consuming around 6.000 m3 of logs per year. All logs processed at the mill are from the companies own concession. As the dimensional stability of the sawing is bad and kiln drying capacity is inadequate, the market is limited to mainly low value and low quality products such as green, standard dimension sawn, timber and sleepers for railways. The efforts to enter high-quality markets are additionally hampered by old and inefficient machinery for further processing. Furthermore, poor health and safety performance at the mill is an issue. The methods used for processing of the logs results in heavy lifts and other dangerous working tasks.

LevasFlor is today very vulnerable from the financial point of view. To put it simply, income has not covered than costs for several years. LevasFlor is not today a financially sustainable business. The 150 employees, dependent families and the 40.000 hectare of well managed forest concession are continuously under threat of becoming “just another aid-failure”.

Business as usual, in many aspects, is just not good enough.

To dramatically accelerate value creation is a key aspect of survival for LevasFlor. To harness all accessible human capacities, obviously also including harnessing the capacities of women, will radically improve the possibility of successfully meeting the high demands of new and profitable markets. In this perspective, gender equity becomes an integral part of the turnaround of the business.

Opportunities for supporting improved gender equity when implementing the Fair Wood concept at LevasFlor sawmill industry

The proposed business plan for LevasFlor is dependent on the investment in a new sawmill and further processing facilities in combination with the introduction of the Fair Wood concept.

The establishment of a new mill and the introduction of the Fair Wood business concept is an opportunity to make *all* the necessary changes, including the necessary improvements in gender equity, needed to secure a sustainable and profitable business.

The key elements of the turnaround are discussed under the following seven themes:

- ✓ Accelerating value creation to secure sustainability

- ✓ Strengthening the marketing and sales organization
- ✓ A holistic set of priorities and long-term commitments supporting gender equity
- ✓ Improving health and safety
- ✓ Product development, improved quality performance and more effective customer communication
- ✓ Maintaining a high standard of governance and legality
- ✓ Establishing a well-defined change strategy to embody LevasFlor's responsibilities as a model company

Under each of these seven themes there are opportunities for supporting improved gender equity. A summary of actions proposed for LevasFlor:

- The companies vision (as embodied in its new 'Gender Equity Policy') should describe gender equity as an integral part of business success - the importance of gender equity for the successful development of the company cannot be undervalued because of, for example, short term financial challenges.
- The owners' support for the development and implementation of a new and improved gender equity strategy is of utmost importance. The opportunity to improve gender balance in the board of directors and management should be grasped
- The management at the sawmill and in the forest concession must share and communicate their commitment and take both concrete and symbolic actions
- LevasFlor needs to set gender equity goals and measure results
- LevasFlor should develop the new gender equity plan in partnership with representatives (men and women) for the employees and the local community. An important part of this work is to secure that FSC Criterion 2.2 on gender equality (see also figure 1) is well understood by management, employees and the local community. The gender equity plan need to meet minimum FSC criterion 2.2 and can result in both practical arrangements and strategic interventions, for example:

  <u>Practical issues such as:</u>

  - Ensuring appropriate childcare options
  - Designing the facilities to be female friendly; toilets, dormitories etc.
  - Female friendly work hours (part time, flexible time, split shift working).
  - Late pregnancy seen as an opportunity to mix light work with skills training etc.

  <u>Management issues such as:</u>

  - Introduction of Mentor Models to support and encourage women in the company
  - Securing support/mentorship for women to sustain career progression
  - Evaluating the possibility to involve downstream partners, civil society and public sector initiatives in the implementation of the gender equity strategy
  - Training of management on the value of diversity as an underlying culture of the organization, and imparting knowledge on how to manage a more diverse workforce and how to attract, retain and promote female talent.
  - Introduce strategies for equity in job seeking and career progression to

release the full capacity of the local community to contribute to the business development
    - Specific efforts to include women in training programs of operators. This can be linked to special mentor programs for women interested in becoming machine operators or (later) managers[473].

- To avoid accidents and other health and safety risks and to avoid any "reinforcement" of masculine/macho stereotypes
    - Machines purchased should conform to the highest standards for health and safety and special efforts should be focused on avoiding risky and heavy lifting
    - To keep a high (and third party verified) profile in legal, social and environmental aspects to be able to enter new markets and to attract new and competent partners and co-workers (zero tolerance policy on illegal logging, corruption, violence and sexual harassment)

- To move from traditional "product orientation" towards a more "knowledge intensive" set-up.
    - New tasks, such as product development and quality control will become more important. Knowledge and experience of wood properties, quality and markets will be more important than being "strong and prepared to perform heavy and dangerous working tasks". Commitment to accuracy, quality and to meeting customer demands become the key characteristics of new employees.
    - Production of high value, further processed products including a strong focus on product development, quality control and downstream integration. This will result in a need for training and mentoring programs. The strategy for selecting and promoting participation in these activities will be a major opportunity to improve gender equity at LevasFlor.

- As a "model-industry", with a high visibility and reach, LevasFlor can contribute, at national and regional level, to a more responsible, sustainable and gender conscious forest sector
    - LevasFlor should become not only a "technical" example showing different machinery producing products attractive on the market – it should also be a model of modern management where gender equity is one of the key components
    - As a model company, in a country where only very few rural companies see gender equity as a company responsibility and a business opportunity, LevasFlor needs to develop a communication and outreach strategy on gender equity.

When, in the future, LevasFlor expands business to include buying wood from surrounding FSC-certified communities it is necessary to develop a new set of gender equity responsibilities in relation to for example; equity in income sharing from collective forest

[473] Results elsewhere have shown that women are often better machine operators than men particularly for machines requiring hand eye coordination.

resources and improvement in womens' livelihoods due to community development.

Appendix 26: An Attempt to describe Forest Management, Challenges and Opportunities

Introduction

This short discussion paper is a response to the sometimes confusing internal discussion within the Fair Wood partnership about forest management and recognizing the need of a more coherent understanding to be able to communicate Fair Wood within a forest management context to an external audience. This discussion paper is an attempt to achieve this.

What is forest management?

Forest management is generally considered, at least in theory, to be measures taken towards achieving one or several predefined objectives. The objectives can be social, environmental or economical or a range of combinations.[474] Deliberately excluding silviculture activities to achieve deliberate objectives, usually conservation or protection of ecosystem services, can also be seen as forest management. The overall idea of forest management is that, in theory, it is based on an educated assumption on how management meets one or several prior defined objectives. If then these assumptions prove to be wrong, the management regime can be adjusted according to new knowledge and experience, i.e. adaptive forest management.

In short one can say that forest management is a way to deliberately transform or "sculpture" a forest to meet certain objective(s) which can be monetary either/or non-monetary value.

What is a forest management plan?

A management plan is a predetermined course of action and direction to achieve a set of results, usually specified as goals, objectives, and policies. A management plan is a working instrument that guides actions and that change in response to feedback and changed conditions, goals, objectives, and policies.[475]

Within FSC a management plan is defined as the collection of documents, reports, records and maps that describe, justify and regulate the activities carried out by any manager, staff or organization within or in relation to the Management Unit, including statements of objectives and policies.[476]

Hence, in short a management plan is what defines the objectives and future activities to achieve these objectives in forest management.

The challenges with forest management practice today

Hence, in theory, forest management assumes a full understanding of the dynamic of the forest ecosystem and how it will respond to management to meet the defined objectives. However, there are number of challenges with this assumption since what today may be called forest management often show weaknesses such as;

a. Lack of defined objectives (and therefore should not be termed as management) *or*
b. Being based on ignorance and/or lack of scientific data resulting in little evidence that management will achieve objectives *and/or*

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[474] The Dictionary of Forestry - http://dictionaryofforestry.org/dict/term/forest_management
The practical application of biological, physical, quantitative, managerial, economic, social, and policy principles to the regeneration, management, utilization, and conservation of forests to meet specified goals and objectives while maintaining the productivity of the forest —note forest management includes management for aesthetics, fish, recreation, urban values, water, wilderness, wildlife, wood products, and other forest resource values

[475] Ibid

[476] FSC Principles and Criteria for Forest Stewardship. FSC-STD-01-001 V5-2 EN
https://ic.fsc.org/en/certification/principles-and-criteria/the-revised-pc

c. Is guided by short sighted objectives and therefore risk to be unsustainable (e.g. overharvesting) *and/or*
d. Is skewed towards one/few objective(s) and thereby undermine other important objectives (e.g. favoring wood volume production to the extent of transforming natural forests into plantations or conservation objectives undermining economic viability or livelihoods)

Even in a well-developed forest country such as Sweden many of the above challenges apply today.

What is sustainable forest management?

Sustainable Forest Management (SFM) have a range of definitions[477] and often they assume that there is a win-win-win situation, i.e. that there are no tradeoffs between social, environmental and economic interests. This goes back to different theories of sustainable development but where implications of these theories are not adequately analyzed. Two of these theories are;

a) A confluence of the social, environment and economic dimension (figure 1)
b) The environmental dimension sets the boundary for sustainable development the other two lie within (figure 2).

Depending on ideology and representation there are different perceptions of sustainability theories. Not least amongst forest stakeholders (see below section on FSC).

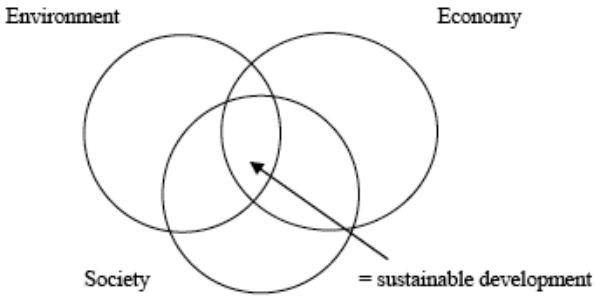

Figure 1

[477] The Dictionary of Forestry - http://dictionaryofforestry.org/dict/term/sustainable_forest_management
1. SFM; The practice of meeting the forest resource needs and values of the present without compromising the similar capability of future generations —note sustainable forest management involves practicing a land stewardship ethic that integrates the reforestation, managing, growing, nurturing, and harvesting of trees for useful products with the conservation of soil, air and water quality, wildlife and fish habitat, and aesthetics (UN Conference on Environment and Development, Rio De Janeiro, 1992)
2. SFM; The stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality, and potential to fulfill, now and in the future, relevant ecological, economic, and social functions at local, national, and global levels, and that does not cause damage to other ecosystems (the Ministerial Conference on the Protection of Forests in Europe, Helsinki, 1993) —note criteria for sustainable forestry include (a) conservation of biological diversity, (b) maintenance of productive capacity of forest ecosystems, (c) maintenance of forest ecosystem health and vitality, (d) conservation and maintenance of soil and water resources, (e) maintenance of forest contributions to global carbon cycles, (f) maintenance and enhancement of long-term multiple socioeconomic benefits to meet the needs of societies, and (g) a legal, institutional, and economic framework for forest conservation and sustainable management (Montréal Process, 1993) —see biological legacy, certify, chain of custody, criteria and indicators, criterion, ecosystem management

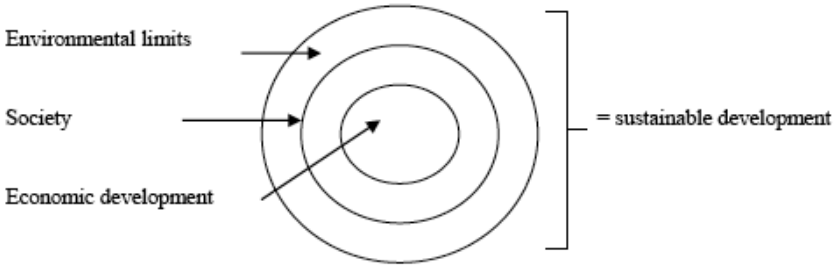

Figure 2

However, the degree of sustainability in forest management between dimensions depends not only on the balance between dimensions but also on the condition of the forest and the anticipated development if *"business as usual"* would be allowed to continue. This is best illustrated with examples of two extremes;

Example 1; Introducing forest management for production of timber into an intact natural forest, where largely natural dynamics has formed the forest, will always have some kind of negative impact on the integrity of the forest ecosystem. These negative effects can be large or minimum depending on the intensity of forest management. However, from a sustainability point of view introducing forest management could be the best alternative if there is a lack of other incentives to preserve the forest. i.e. preserving the forest is otherwise overruled by other land use options causing degradation/deforestation.

Example 2; In a heavily degraded area, where there used to be a natural forest but for short sighted reasons was deforested and where there are no other viable land uses, reforestation can create a win-win-win situation, i.e. both social, environmental and economic dimensions can be enhanced without immediate tradeoffs.

Hence, the degree of sustainability in forest management also heavily depends on the forest ecosystem base line where it is introduced.

Another aspect of sustainability is the landscape perspective. For instance, having a landscape dominated by e.g. monocultures in agriculture and/or forest plantation systems will likely undermine biodiversity, ecosystem services and potentially social sustainability. Furthermore, such systems are less resilient and may demand external inputs to function, e.g. pesticides. In the landscape debate the term "green infrastructure" has emerged which is linked to threshold discussions on natural ecosystem representativeness, e.g. protection of 17% of representative natural terrestrial ecosystems according to the Nagoya CBD agreement. Thresholds and design of green infrastructure will depend on the objectives set for the specific landscape.

In summary, the degree of sustainability within social, environmental and economic dimensions of forest management will depend on;

a) The base line of the forest ecosystem
b) The BAU scenario if there is no forest management intervention
c) The balance between social, environmental and economic considerations
d) How forest management relates to the overall landscape management

FSC and forest management

FSC is an important tool to introduce and promote what is termed as responsible forest management in FSC claims. FSC is recommending not to use the term "sustainable" in FSC-claims by certificate holders. [478] One reason being that FSC Principles & Criteria (P&C) and

[478] FSC Principles and Criteria for Forest Stewardship. FSC-STD-01-001 V5-2 EN

national FSC forest management standards based on these P&C are compromises between social, environmental and economic stakeholders. Another important reason is that the ISO 14 021 standard on environmental labelling & claims states[479];

"The concepts involved in sustainability are highly complex and still under study. At this time there are no definitive methods for measuring sustainability or confirming its accomplishment. Therefore, no claim of achieving sustainability shall be made."

The interpretations of FSC P&C in national FSC forest management standards are called *indicators*. These are usually negotiated normative prescriptions of what FSC forest managers should do to become eligible for FSC-certification and maintain this certificate. Tradeoffs have usually been made but it is expected to improve the social and environmental standard of forest management compared to the general practice in a region or country. The degree of this improvement will depend on the degree of influence, power (resources & strategic influence) and knowledge that environmental and social stakeholders have to argue for ambitious indicators. Hence, a national FSC FM standard is to a great extent a result from a "political" negotiation process. In fact, one can assume that a well-balanced FSC FM standard is achieved when social, environmental and economic stakeholders are equally satisfied or dissatisfied with the result - In summary a compromise, c.f. figure 1.

However, here arise credibility challenges for FSC as a system, since FSC P&C may be perceived as delivering higher level of social and environmental sustainability than national negotiated indicators actually prescribe and consequently effect on the ground. The former can be illustrated with an example from FSC P&C;

Principle 6 states; *The Organization shall maintain, conserve and/or restore ecosystem services and environmental values of the Management Unit, and shall avoid, repair or mitigate negative environmental impacts.*

Reading this principle, it can be assumed that a FSC-certified forest manager should have full knowledge about the biodiversity and ecological functions in the forest management unit and also understand the influence of the activities carried out and adjust these to maintain, conserve and/or restore these values. However, this is almost impossible for different reasons such as insufficient knowledge, limited degree of influence of these values on a forest management unit level (see landscape level under SFM) and not least the unwillingness by economic stakeholders to truly transfer this into their operations due to cost implications. Hence, as moving from Principle to Criteria and then to Indicator level the language moves from "political rhetoric" to "political compromise" and realism in what can be agreed to. Those that have been involved in stakeholder negotiations understand the difficulty to move economic stakeholder perceptions when profit is negatively affected.

Furthermore, some economic stakeholders criticize that FSC P&C does not sufficiently address economic viability. The latter is a discussion if FSC P&C needs to address economy or if the sole purpose is to strengthen the social and environmental aspects in forest management since economy as such already is a dominant driver.

In conclusion; FSC is not a certification system that verifies sustainable forest management, but a tool to improve forest management based on an agreed balance between social, environmental and economic stakeholders. As such it will have relevance as long as these

https://ic.fsc.org/en/certification/principles-and-criteria/the-revised-pc

[479] http://www.iso.org/iso/environmental-labelling.pdf

stakeholders see it as strategically beneficial for their aims. Other non-participating stakeholders may not see the benefits of FSC and criticize it accordingly.[480]

Fair Wood and forest management

A future Fair Wood program has the opportunity to enhance sustainability by supporting and incentivizing responsible forest management beyond certification contributions of today. It can build on FSC standards and possibly other standards, and identify opportunities to strengthen economic, environmental and social aspects beyond these standards. A future Fair Wood Program has the following comparative advantages in relation to general certification of forest management;

- It can link research and knowledge of forest ecosystem management to a specific forest context
- Based on this it can deliver strategic support to develop and strengthen the economic, social and/or environmental forest management objectives in a specific context
- It can monitor and evaluate the environmental, social and economic effects of forest management in a specific context
- It can communicate the benefits of forest management support with 100% traceability to consumers.

The overarching question is when and where should the Fair Wood Program intervene in forest management to deliver the above. Fair Wood interventions would be relevant where land tenure rights have been secured, and there are basic smallholder/community organizational structures in place regarding forest management.. Fair Wood would not intervene in sites where these pre-conditions are not in place., but would, if needed, strengthen and improve them. Furthermore, forest management should deliver conservation, livelihood benefits and within reasonable time span deliver economic viability throughout the value chain. In the table below illustrates where Fair Wood interventions would be relevant from a forest status perspective;

[480] E.g. Internationally; Rainforest Foundation http://www.fsc-watch.org/archives/2007/06/07/Study_explodes_myth_of__sustainable_logging__in_Amazonian_rainforests Nationally; Protect the Forest in Sweden http://www.skyddaskogen.se/en/svensk-skog/fsc

	Overall assumptions - All forests under smallholder/community tenure and management - Absence of effective responsible forest management - Non-existing functional & equitable wood value chains - Opportunity to deliver high quality wood - Sites meet screening and assessment criteria						
Status of forest	Intact Natural Forest	Intact Natural Forest	Low degraded Natural Forest	Medium Degraded Natural Forest	Highly degraded Natural Forest	Monocultures /Plantations	Monocultures /Plantations
Conservation Status	Effective Protection	Deforestation /Degradation threat	Deforestation /Degradation threat	Deforestation /Degradation threat	Deforestation /Degradation threat	Buffer zones to natural forests and/or soil/water degradation etc.	Only conservation opportunities apart from carbon
Fair Wood relevance	No go	Go	Go	Go?	No Go	Go?	No Go
Reason	Fair Wood could undermine protection	Mitigate Deforestation /Degradation threat Opportunity to retain natural state	Mitigate Deforestation /Degradation threat Opportunity to restore to more natural state	Fair Wood intervention would depend on state of degradation and time span to sustainably deliver timber	Time span to sustainably deliver timber would likely not justify a Fair Wood intervention	Fair Wood intervention would depend on conservation opportunity and time span to sustainably deliver	Only carbon and social opportunities does not justify Fair Wood intervention. At least in short term.


high quality
timber.

Support at site	FW intervention Yes/Possibly/No	Possible FW added value	Comment
Securing Land Tenure incl demarcation	No	FW would likely strengthen existing land tenure rights	A FW pre-condition Land demarcation is not necessarily the same as demarcation of forest management unit
Organizing Smallholders/ Communities	No	FW could lead to improvements in organization	Basic smallholder/community organization should be in place
Demarcation of Forest Management Unit	Possibly	FW could facilitate to defined relevant demarcation of forest land to be managed	If not already set this would like be linked to assessing forest resource and dvlp of forest management plan
Assessing Forest Resource	Yes	FW would enhance the understanding of forest resource in relation to objectives	The understanding of the forest resource will be key to define management in relation to objectives incl value chain expectations
Forest Management Plan	Yes	FW would likely contribute to improve: - FMU demarcation - The FM objectives - SFM to meet FM objectives	A well informed forest management plan is key to facilitate long-term timber value chains.
Forest Management Training	Yes	FW would facilitate training to enable the implementation of forest management plan	This will be challenge and where local trainers need to be supported
Forest Management Equipment	Yes	FW would likely need to assess the need of and support to source and use effective forest management equipment	This should be linked to corporate collaboration, i.e. producers of equipment and would need also to integrated in the training program
Forest Monitoring	Yes	FW would facilitate adaptive forest management based on monitored indicators	FW would need a cost effective monitoring program in any event.

FSCs definitions of natural forest and plantations [481]

Natural forest: A forest area with many of the principal characteristics and key elements of native ecosystems, such as complexity, structure and biological diversity, including soil characteristics, flora and fauna, in which all or almost all the trees are native species, not classified as plantations.
'Natural forest' includes the following categories:

- Forest affected by harvesting or other disturbances, in which trees are being or have been regenerated by a combination of natural and artificial regeneration with species typical of natural forests in that site, and where many of the above-ground and below-ground characteristics of the natural forest are still present. In boreal and north temperate forests which are naturally composed of only one or few tree species, a combination of natural and artificial regeneration to regenerate forest of the same native species, with most of the principal characteristics and key elements of native ecosystems of that site, is not by itself considered as conversion to plantations.
- Natural forests which are maintained by traditional silvicultural practices including natural or assisted natural regeneration.
- Well-developed secondary or colonizing forest of native species which has regenerated in non-forest areas.
- The definition of 'natural forest' may include areas described as wooded ecosystems, woodland and savanna.

The description of natural forests and their principal characteristics and key elements may be further defined in FSC Forest Stewardship Standards, with appropriate descriptions or examples.

Natural forest does not include land which is not dominated by trees, was previously not forest, and which does not yet contain many of the characteristics and elements of native ecosystems. Young regeneration may be considered as natural forest after some years of ecological progression. FSC Forest Stewardship Standards may indicate when such areas may be excised from the Management Unit, should be restored towards more natural conditions, or may be converted to other land uses.

FSC has not developed quantitative thresholds between different categories of forests in terms of area, density, height, etc. FSC Forest Stewardship Standards may provide such thresholds and other guidelines, with appropriate descriptions or examples. Pending such guidance, areas dominated by trees, mainly of native species, may be considered as natural forest.

Thresholds and guidelines may cover areas such as:

- Other vegetation types and non-forest communities and ecosystems included in the Management Unit, including grassland, bushland, wetlands, and open woodlands.
- Very young pioneer or colonizing regeneration in a primary succession on new open sites or abandoned farmland, which does not yet contain many of the principal characteristics and key elements of native ecosystems. This may be considered as natural forest through ecological progression after the passage of years.
- Young natural regeneration growing in natural forest areas may be considered as natural forest, even after logging, clearfelling or other disturbances, since many of the principal characteristics and key elements of native ecosystems remain, above-ground and below-ground.
- Areas where deforestation and forest degradation have been so severe that they are no longer 'dominated by trees' may be considered as non-forest, when they have very few of the principal above-ground and below-ground characteristics and key elements of natural forests. Such extreme degradation is typically the result of combinations of repeated and excessively heavy logging, grazing, farming, fuelwood collection, hunting, fire, erosion, mining, settlements, infrastructure, etc. FSC Forest Stewardship Standards may help to decide when such areas should be excised from the Management Unit, should be restored towards more natural conditions, or may be converted to other land uses.

(Source: FSC 2011).

Plantation: A forest area established by planting or sowing with using either alien or native species, often with one or few species, regular spacing and even ages, and which lacks most of the principal characteristics and key elements of natural forests. The description of plantations may be further defined in FSC Forest Stewardship Standards, with appropriate descriptions or examples, such as:
Areas which would initially have complied with this definition of 'plantation' but which, after the passage of years, contain many or most of the principal characteristics and key elements of native ecosystems, may be classified as natural forests.

· Plantations managed to restore and enhance biological and habitat diversity, structural complexity and ecosystem functionality may, after the passage of years, be classified as natural forests.

· B oreal and north temperate forests which are naturally composed of only one or few tree species, in

[481] FSC PRINCIPLES AND CRITERIA FOR FOREST STEWARDSHIP FSC-STD-01-001 (V5-0) EN

which a combination of natural and artificial regeneration is used to regenerate forest of the same native species, with most of the principal characteristics and key elements of native ecosystems of that site, may be considered as natural forest, and this regeneration is not by itself considered as conversion to to plantations. (Source: FSC 2011)

Discussion of Forestry Definitions.

Forest Management

The art and science of manipulating a forest system to meet predetermined objectives. These will normally include social, environmental and economic objectives. Social objectives can include all types of objectives required to satisfy human needs including spiritual and aesthetic ones. The forest system is taken to include the forest vegetation and all its accompanying life as well as soils, water and atmosphere. In addition, the forest system includes human populations that are resident in the forest or in some way dependent on it. For this reason forest management is not simply the application of science (biology, ecology, environmental science) but also the art of manipulating/guiding/influencing human interaction within the forest system.

In practice our understanding of the complex interactions within the forest system is inadequate to fully predict the outcome of management interventions so that when management intervention fails to deliver the required results it should be modified in an approach termed adaptive management.

Silviculture

The concise definition of silviculture is simply 'the growing of trees'. In practice silviculture is generally used to refer to the range of practices that can be applied to influence the growth and form of the forest. These practices include direct manipulation of the target tree by pruning or planting, practices carried out on the trees in the stand such as thinning and practices carried out on the site such as scarification or fertilisation. Silvicultural activities may be carried out with the objective of improving the quality of the stand or they may be carried out to improve the environmental services provided by the stand such as the flow of clean water or the provision of biodiversity.

Natural Forests v Plantations

Tree dominated vegetation types occur in a continuum of conditions from very simple situations involving single aged, single species stands to highly complex multi-aged – multispecies stands accompanied by highly diverse herbaceous plants and fauna. Such conditions may occur as a result of either natural or human controlled processes. Similarly the influence of humans on forests may itself be seen as a continuum from situations where humans have had little or no influence on the condition of the forest to those situations where the composition and structure of the forest has arisen almost entirely as a result of conscious human intervention. Thus single species even aged stands may occur naturally while highly complex forest systems may have been specifically created and manipulated by man.

FSC defines natural forest as: A forest area with many of the principal characteristics and key elements of native ecosystems, such as complexity, structure and biological diversity, including soil characteristics, flora and fauna, in which all or almost all the trees are native species, not classified as plantations.

Thus it effectively includes all wooded areas that cannot be defined as plantations. FSC defines a plantation as: a forest area established by planting or sowing with either alien or native species, often with one or few species, regular spacing and even ages, and which lacks most of the principal characteristics and key elements of natural forests. However this

definition is qualified in two ways, firstly that with the passage of time plantations of native species may become natural and secondly that in boreal systems that are often single species dominated the act of planting does not of itself qualify a newly established stand as a plantation.

We prefer definitions of naturalness that take into account both the intensity of human interventions and the objectives of forest management

Fair Wood Comments on Draft

Hello Peter Riggs, Berty, Klas & Fair Wood colleagues,
Great to hear that the forest management brief is helpful. Please see it as;

a) An internal document to align ourselves, i.e. it is not an external communication document
b) A living document that can be revised as we move along and agree.

If we then need to develop external communication mtrls on forest management we can use the internal to guide us.

Below some points raised and my response;

Natural forest
I agree with Berty that research indicates that most forests globally have been used and been affected by humans. Hence, the definition of natural forest can not be seen as excluding human activities. The question is instead how human activities have affected the degree of naturalness, i.e. the natural specie composition and structures of the forest. As stated earlier there is a continuum from 100% natural conditions with high conservation values to 100% human caused simple systems with low or no conservation values. In this sense the term degradation is not only related to carbon stocks but also to the degradation of conservation values. ***It is key that we have a common understanding about this since it should guide us where Fair Wood is relevant from a conservation perspective***. Hence, I still think we should use the term natural forest but we may wish to explore the definition further. Peter Riggs implies that the term "natural" is a distraction and it is better to use the term "sustainable forest management" (SFM). If we are talking about our internal common understanding I do not agree. First SFM is a term implying action and not a state of condition of a forest. Second SFM is an arbitrary term and, to be helpful, needs to be expressed in concise actions that deliver tangible "sustainable" outcomes.

Building on past/on-going projects & support
Klas asks to which extent it is important to say *"where there has been ongoing support*" and a risk of too much focus on "old" aid and NGO projects. I assume that Klas implies that such projects may be built on assumptions, objectives and vested interests which would not favor Fair Wood interventions. However, I am wondering to what extent are there other sites where there are secured land tenure and organizational structures in place and there has been no previous/ongoing support? Or is there now thinking that Fair Wood would intervene in sites where these pre-conditions are not in place? If the latter it would make me concerned.
I think we need to build on certain pre-conditions which we need to define and agree upon and these have to be assessed for each site. And to address Klas concern we need also address if other support and vested interests is supportive or would undermine Fair Wood interventions. But I think we will have to build on past/on-going local support/projects in the Inception Phase.

Forest Stewardship or Management
It has been suggested to use the term Forest Stewardship rather than Forest Management. Although not being a native English speaking person, the terms stewardship and management seem to imply different things.
Stewardship can be defined in many different ways but in ISO 20121 it is defined as *"Responsibility for sustainable development shared by all those whose actions affect environmental performance. economic activity, and social progress, reflected as both a value and a practice by individuals, organizations. communities, and competent authorities."*
To me this has a wider implication than the term "management". Hence, in the context of discussing the forest resource, defined management objectives and activities carried out to meet these objectives, I think forest management is more relevant.

The Fair Wood Forest Stewardship/Management Package
To assist the internal discussion about what Fair Wood could deliver in terms of forest management I have included another draft table (see below and in the attached updated FM paper).
If we can agree upon the different steps and where Fair Wood be relevant it may help us to communicate the FS/FM package.

Best regards,
Peter

Support at site	FW intervention Yes/Possibly/No	Possible FW added value	Comment
Securing Land Tenure incl demarcation	No	FW would likely strengthen existing land tenure rights	A FW pre-condition Land demarcation is not necessarily the same as demarcation of forest management unit
Organizing Smallholders/ Communities	No	FW could lead to improvements in organization	Basic smallholder/community organization should be in place
Demarcation of Forest Management Unit	Possibly	FW could facilitate to defined relevant demarcation of forest land to be managed	If not already set this would like be linked to assessing forest resource and dvlp of forest management plan
Assessing Forest Resource	Yes	FW would enhance the understanding of forest resource in relation to objectives	The understanding of the forest resource will be key to define management in relation to objectives incl value chain expectations
Forest Management Plan	Yes	FW would likely contribute to improve: - FMU demarcation - The FM objectives - SFM to meet FM objectives	A well informed forest management plan is key to facilitate long-term timber value chains.
Forest Management Training	Yes	FW would facilitate training to enable the implementation of forest management plan	This will be challenge and where local trainers need to be supported
Forest Management Equipment	Yes	FW would likely need to assess the need of and support to source and use effective forest management equipment	This should be linked to corporate collaboration, i.e. producers of equipment and would need also to integrated in the training program
Forest Monitoring	Yes	FW would facilitate adaptive forest management based on monitored indicators	FW would need a cost-effective monitoring program in any event.