Community-based forest management and timber harvesting - International experience and Ethiopian context

Key messages:
Based on international community forest management experiences and related to Ethiopien context we find that it holds definite promise to improve forest protection and inclusively improve livelihoods through increased access to resources for subsistence, employment and commercialisation of forest-based commodities. However, truly pro-poor, community forest management initiatives need dedicated attention to pre-existing social, cultural and ethnic patterns and preferences, and time to resolve potential internal conflicts and build uneven capacities. Market barriers can be considerable and primarily relate to framework conditions for forest management and economies of scale.

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KEY MESSAGES

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2. To be truly pro-poor, community forest management initiatives need dedicated attention to pre-existing social, cultural and ethnic patterns and preferences, and time to resolve potential internal conflicts and build uneven capacities;

3. Market barriers can be considerable and primarily relate to framework conditions for forest management and economies of scale.

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Contents

ABBREVIATIONS

ACC	Annual Allowable Cut
CBFM	Community-based Forest Management
CFE	Community Forest Enterprises
CFG	Community Forest Groups
CFUG	Community Forest User Groups
CRGE	Climate resilient green economy
FA	Farm Africa
FMA	Forest Management Agreement
FoW	Forests of the World
FSC	Forest Stewardship Council
FUG	Forest user groups
JFM	Joint Forest Management
MFM	Multiple forest management
MoEFCC	Ministry of Environment, Forest and Climate Change, Ethiopia
NGO	Non-governmental organisation
NTFP	Non-timber forest product
OFWE	Oromia forest & wildlife enterprise
PES	Payments for ecosystem services
PFM	Participatory Forest Management
REDD+	Reduced emissions and forest degradation
RIL	Reduced Impact Logging
SF	Social forestry
SFM	Sustainable forest management
SME	Small-Medium sized enterprises

1. INTRODUCTION/BACKGROUND FOR STUDY

The present study has been commissioned by Forests of the World (FoW) in collaboration with Farm Africa (FA), Ethiopia, and is precipitated on the intention of the two organisations to work together on promoting sustainable forest management and conservation in Ethiopia.

The situation for Ethiopian forests is critical with high anthropogenic pressures on resources based on widespread poverty and few alternatives to land-based production/extraction, a high degree of climate vulnerability and fragmentation of forests, and in recent years also increased presence of foreign investors in more intense land-based production. Much of the remaining forest tracts still contain very diverse flora and fauna, the former including the last remaining stands of the original wild coffee species, and certain areas in particular a high proportion of endemic species.

Across tropical countries some or other form of devolving rights and responsibilities to local communities in or adjacent to forests has become a favoured forest protection measure among both international donors and national governments failing to satisfactorily protect forest resources by command-and-control measures, and failing to satisfactorily address the basic needs of forest dependent communities.

The degrees of devolution of rights and responsibilities, and the institutional arrangements involved, has given rise to a variety of categories, definitions and denominations for forest management arrangements involving local communities; community forestry, community-based forest management, community managed forests, social forestry, collaborative forest management, participatory forest management, joint forest management, and forest co-management. Some denominations reflect cultural or political background ('social forestry' in Vietnam for instance), others seek to reflect the form and degree of community involvement spanning the range from local people being 'allowed' to participate in forest management towards a local governance approach where the management of forests is fully devolved to local communities or full ownership bestowed.

For practical purposes the present report will consider all forest management set-ups in which local communities are formally awarded an active role in both the practical use of forests and an influence on how these forests are used (managed). The term community-based forest management (CBFM) will correspondingly be employed as an umbrella term for all the various permutations and denominations of involving local communities formally and practically in forest management.

Farm Africa has already had initial experience with community-based forest management (CBFM) focused on non-timber products in Ethiopia, although with mixed success and sustainability. Valuable lessons have been learned, however, and the international climate, as well as the Ethiopian, remains favourably disposed towards CBFM. The value added by Forests of the World in this respect is found in their Latin American experience with sustainable agro-forestry systems and forest management for timber extraction, including certification of sustainable forest management, and the associated value chain.

However, rather than relying on one (or two) organisation's unique experiences with CBFM alone, the two organisations have wanted to pause, take stock and reflect on the accumulating international experience and lessons learned with CBFM and in particular where this has included timber extraction, before forging ahead. The present study/report is therefore meant as a background for further qualified discussions on the optimal design of future FoW and FA projects focused on CBFM involving timber extraction, highlighting design and intervention features and the internal or external conditions influencing CBFM success both positively and negatively.

2. INTERNATIONAL EXPERIENCES WITH CBFM IN GENERAL

2.1 Changing CBFM discourse(s) over time

When first introduced in the late 1970s[5], CBFM was primarily perceived as a tool for ameliorating rural poverty among forest dependent communities, whose forest resources were getting

increasingly scarce, thus threatening their livelihoods, and who had no alternatives for fulfilling their basic needs. Forests were in other words to be 'rescued' in order to feed people directly or indirectly; i.e. forests were the means, not the end.

CBFM was subsequently 'seized upon' by the conservation movement, seeing local communities as drivers of deforestation and degradation and thus CBFM as a solution against a backdrop of state protected areas (command-and-control) failing to effectively halt deforestation and degradation. As opposed to the initial discourse, this put forests at the centre, and considers CBFM as the means to an end.

From these two somewhat juxtaposed approaches, CBFM has since grown to include more democratic and equity related concerns blurring the lines between what is considered means and ends in relation to livelihoods and forest conservation, and promoting sustainable, but profitable use of forest resources. The recent decade has seen the latter notion taken further towards more professionally functioning forest-based enterprises comprised of communities or sub-sets of community households with ambitions of integrating these into local, domestic or global markets and value chains.

As a result, present day CBFM is expected to comply with all three overall objectives: conservation of the forest resource; economic improvement in communities' livelihoods; and improved inclusiveness and social empowerment - i.e. equity. Each of these goals is expected served by CBFM based on assumptions of causal linkages; these assumptions of causal links will be explored in subsequent sections together with the accumulating empirical evidence.

Error! Reference source not found. below provides an overview of the changing CBFM discourses over time.

Discourse	**Description**
Forest resource scarcity community forestry discourse	- Initiated by FAO - Focus: the perceived danger of forest resource scarcity resulting from unsustainable use would lead to a decline in rural welfare. Limited local resources seen as a constraint in fulfilling basic needs. - Implication: shift focus within development concept/agenda toward rural population and agriculture and to meeting the 'basic needs' of rural dwellers. Projects are aimed at reforestation and afforestation.
Forest conservation community forestry discourse	- Initiated by conservation NGOs - Focus: Deforestation as a worldwide issue needs to be halted, and community forest management through sustained harvesting and sales of NTFP is a more profitable use of tropical forests and at the same time contributes to tropical forest conservation. - Implication: conservation-development projects working with communities to identify marketable NTFPs and establish the related value chain.
Community enterprise community forestry discourse	- Development cooperation, forestry agencies and rural development NGOs. - Focus: CF as an abstract objective of communities who manage forest estates, mostly to produce forest commodities (sustainably). - Implication: promotion of CF enterprise following the western enterprise models with their related hierarchy and business management approach. Forest management plans that are prepared according to legally prescribed norms.

Table 1: Discourse on community forestry according to De Jong (2012)[5]

As illustrated above, the idea of CBFM as a remedy for poverty has persisted throughout the evolution of the concept, but has shifted from a more subsistence-based ('basic needs') approach to a view of effective integration of poor regions into global markets, and active engagement of the private sector as key drivers for economic growth and thus a basis for general development and alleviating poverty[8]. The assumption is in other words that effective integration of poor rural areas in markets will generate positive social and environmental effects at relatively low cost[8]. Whether this is a reasonable assumption for CBFM will be discussed further in sections below, seeing as how CBFM is also seen as a vehicle for devolution and restoration of rights, improved forest governance, empowerment and entrepreneurship and even - bluntly put - a mechanisms for reducing the burden of the state. Thus tasked with more than one and not necessarily complementary objectives, the gauntlet is thrown down for CBFM.

2.2 Common features of CBFM interventions

Before going into greater detail on the empirical evidence of CBFM outcomes and impacts, it serves discussions to describe the most common features of the CBFM interventions implemented, as these form the basis for lessons learned so far.

Pokorny *et al.* (2012)[8] describes the typical CBFM interventions as follows:

"To enable smallholders to cope with the technical, managerial and financial requirements of the ''packages" promoted and to ensure competitiveness in the envisaged markets, supporting organisations provided training, advice, material, equipment and funding (Pokorny and Johnson, 2008a). In essence, development organisations employed three types of support strategies:

(1) Extensive initial support often to be found in the case of public credit programs, and, much more frequent, programs promoting tree plantations. These programs generally establish nurseries for the production of plants, which are then distributed to the families for free or at highly subsidized rates. They also provide technical assistance and training, and occasionally financial incentives during the establishment phase, after which support is wound down (Hoch, 2009; Hoch et al., 2009);

(2) Pilot projects, often related to community forestry, foresee the implementation of technical-organisational packages in cooperation with selected families. The establishment of demonstration areas are expected to provide a visual understanding of the viability of the promoted models as a basis for further dissemination. Generally, the involved organisations invest considerable effort and resources over relatively short periods (generally between 2 and 5 years) to establish pilot sites (Medina and Pokorny, 2008);

(3) Intensive long-term accompaniment intends to create a long-standing relationship between the supporting organisation and the collaborating families to accompany the implementation of the technical-organisational package through to the management and commercialization phases".

Obviously, the 'packages' referred to differ in content, since they represent the differing legal and institutional settings of each country. However, despite this the interventions have very similar component types.

Box 1: Study of ten 'old' CBFM cases[12]

Based on ten CFM cases with more than two decades' existence from Africa, Asia, and Latin America, it is concluded that: (1) CFM does indeed present mixed results; (2) overall, CFM performs similarly on social and ecological parameters; (3) overall, community-based organizations are strongly engaged in CFM; (4) such strong engagement, though, is not sufficient for CFM to perform; and (5) in particular, the presence of a ''Community of Practice" that links local people to external forest professionals for mutual learning, based on respect and trust, makes a positive difference in terms of livelihoods and forest conditions.

2.3 Overall tendencies

Arts & de Koning (2017)[12] summarises the current consensus on CBFM results as 'mixed' (Baynes et al., 2015;

Charnley & Poe, 2007). Many projects have been reported as rather successful, while others have been considered failures (Persha, Agrawal, & Chhatre, 2011). Still, community forestry is widely reported as improving forest management, social cohesion and rural incomes (e.g. see Padgee et al., 2006; Charnley and Poe, 2007; Antinori and Rausser, 2008; Chhetri et al., 2013) although claims of increased income and livelihood benefits have been questioned[13], and reports often ignore the very different conditions surrounding or preceding CBFM introduction, as well as the age of the initiatives evaluated. Also, the relatively well-off are reported as often gaining more from these projects than the poor (Kumar, 2002)[12], i.e. elite capture is common.

Moreover, forests are generally reported as having benefitted more from CFM than people (Bowler et al., 2012), although this is not universally agreed[12]. Still, a fair share of research does support the view that community-managed native forests have lower and less variable rates of deforestation than protected forests (e.g. Porter-Bolland et al., 2012)[13].

The 'mixed' results cover a great variety of outcomes, a great number of complex conditions and correspondingly a large number of researchers have sought to identify and explain the parameters influencing success of CBFM, and subsequently propose anything from 5 general to 43 more detailed criteria promoting or obstructing CBFM success (see Box 1, Box 2 and ANNEX 1). These will be discussed further in sections to come.

Box 2: Five factors influencing CBFM success[13]

Although individual studies have addressed specific topics, a shared theme was the socio-economic or cultural conditions in which community forestry may thrive. The five factors are:

1. ***Socio-economic status and gender based inequality**, i.e. inequalities based on socio-economic status, caste or gender which if improved, would reduce CFG conflict and increase CFG cohesion, consequently improving the likelihood of CFG success.*
2. ***Secure property (tree and land) rights** in terms of Schlager and Ostrom's (1992) schema of a 'bundle of rights' in which security increases with the duration of tenure in which occupants may (1) access land and withdraw resources from it, (2) manage and improve the land, (3) exclude others from it and (4) sell or lease it. As these rights are lost, security of tenure decreases and peoples' motivation for community forestry is subsequently reduced.*
3. ***Intra-CFG governance** which, when democratic and/or equitable in terms of leadership, voting and benefit sharing, motivates people to engage in CFG activities.*
4. ***Government support to CFGs**, either as positive support (e.g. supportive legislation or capacity building) which increases bonding or bridging social capital. Alternatively, government interference, patronage or corruption reduces people's willingness to engage in community forestry.*
5. ***Material benefits to community members**, e.g. timber or NTFPs, employment or payment for timber rights.*

In summary, the literature on achieving CBFM objectives (alleviating poverty; social inclusiveness/ equity/empowerment; and forest conservation)[5] points to the following:

- Conservation and sustainable management of forest resources is generally positively correlated with the degree of ownership/influence exerted by local communities, but is in itself not a guarantee for sustainable forest management;
- The elements of social equity, empowerment and inclusiveness show mixed results. Where local communities are more homogenous and external monitoring and enforcement supportive and strong, CBFM initiatives produces more socially balanced outcomes. In practice, elite capture is common;
- Commercial, economic success (profitability) is elusive and found only in a small number of cases, which often benefit from massive external support over longer periods of time;
- Where benefits accrue they are often of a non-cash nature (environmental services, subsistence extraction activities and to some extent employment).

Where CBFM includes or focuses on timber extraction, the same lessons generally appear to hold true. If timber is expected to promise opportunities for higher income, this is often found offset by the heavy investments needed in equipment/machinery, the increased requirement for specialised skills (from planning, monitoring, extraction, across processing to marketing) and the associated bureaucracy dictated by legal-institutional requirements for documentation of both management *per se*, extraction, transport (*per se* and distances to markets), sales permits etc. In addition, the size of many CBFM areas do not allow for economies of scale.

Price premiums for timber branded as 'social/fair trade' or environmentally friendly (e.g. FSC) have also proved elusive or required substantial investments or outside interventions.

Overall, reconciling the multiple objectives of conservation, livelihoods, and governance expected from CBFM has proved challenging, and in many cases, conservation goals have been attained at the expense of local empowerment and/or livelihoods, indicating that in practice trade-offs are likely necessary as to which aspect of CBFM is priority[5, 16].

Insecurities surrounding the meta-studies relate to the time and maturity at which initiatives are measured and compared, and the differences in contextual complexity and conditions. Timing (maturity) and time horizon is less explicitly and frequently dealt with in evaluations, but where it is discussed, it is awarded great importance. Baynes et al. (2015) credit the short-term planning and implementation horizon of the majority of donor-funded projects (often three years, max. five years) as one of the main reasons for the failure of reforestation projects (Lasco, 2005; Snelder et al., 2005; Baral et al., 2007)[13] and draw attention to the fact that community-based organisations take time to establish (years in many cases) and the trust crucial to their well-functioning even longer, only to see them dissolved after funding dries up[13]. A field assessment of 80 case studies in Bolivia, Brazil, Ecuador and Peru[8] illustrates the phenomenon of an initial burst of project support and subsequent continued participation in - in this case - a plantation programme, with as little as 1-2% of the initially interested HHs seeing participation through to harvesting and sales.

Looking across CBFM experiences in general, forests with high biodiversity and anthropogenic threats seem to have received priority. While not surprising in itself, this may have introduced a bias in terms of outcome. On the one hand, high biodiversity/threatened forest areas may be subjected to stricter regulation of use and experience a relatively higher degree of competition for relatively more scarce resources. On the other hand, they may enjoy advantages over less highly profiled forest areas and biodiversity in terms of available funding, support and eventual marketing value of products - including more diversity in forest-based products (e.g. tourism)[3].

There is therefore a possibility that other less biodiverse and threatened forest areas/types might offer a better case for improved community and household welfare due to less restrictions on use (and less risk of degradation), but that this potential is not yet reflected by the present body of evidence[3].

3. SPECIFIC INTERNATIONAL EXPERIENCE RELATED TO THE EXPECTED CBFM IMPACTS

As evidenced by Figure 1**Error! Reference source not found.** (one example), different researchers have decomposed the CBFM experience into a number of component parts observed to influence the desired outcomes in terms of both livelihood improvement, inclusive community development, and forest protection.

Whilst nowhere near exhaustive in terms of total factors put forward as influencing CBFM outcomes, the figure does provide an overview of some of the most common factors identified and allows deliberation of which factors are likely to be influenced by short-term project level interventions and which require much more substantial changes to the framework conditions.

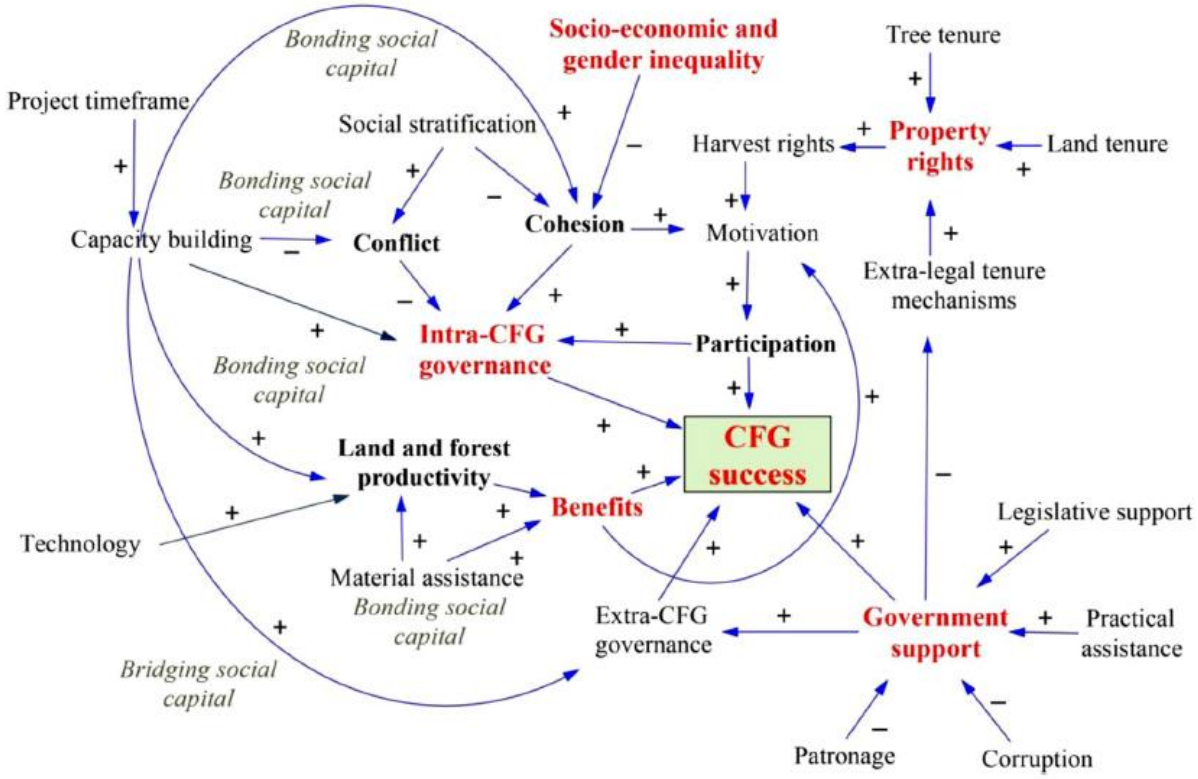

Figure 1: Causal diagram of the relationship between the factors influencing the success or failure of community forestry group success (CFG success)[13].

As a reflection of the three most common objectives of introducing and promoting CBFM, the following sections discussing factors affecting CBFM success are organised accordingly; forest protection, community empowerment and materially improved livelihoods.

3.1 CBFM leads to improved forest protection

3.1.1 Assumptions underlying the expected impact

Underlying the expectation that CBFM will lead to improved (sustainable) forest management and protection is the assumption that people will care better for assets exclusively available to themselves (as a specific group or individuals) than for those of others or free access resources where first come, first serve principles apply to accessing assets and benefits. With a secure long-term access guaranteed by either ownership or legally assured user rights, it is assumed forest resource planning will be optimised over the longer run instead of a shorter, more opportunistic perspective. The latter, however, also implicitly assumes that forest managers can afford (or are willing) to wait for the total optimal bundle of benefits to materialise over time, and will not encounter the desire or need to 'violate' the optimal extraction of assets by untimely (over)harvest to mitigate external shocks (death, disease, failing harvests etc.). This risk is typically foreseen mitigated by means of incorporating different types of products, harvest cycle durations and generally income diversity patterns, so families or communities have resources to draw upon both continuously and if disaster strikes.

What is more seldom discussed, is the assumption that communities or households are happy to optimise community/HH welfare/income ***within*** the framework (limitations) of forest protection and sustainable use. Put illustratively or perhaps in a provocatory manner, one could pose the question of whether HHs would choose sticking with a sustainable level of timber harvest enabling e.g. secondary education for two children or overharvesting to some degree and sending four children off to secondary school? Which might also be viewed as an investment in a sustainable future for the

community and families. In other words, do negative incentives for overharvesting match positive incentives for 'sticking to the rules' and/or the long term benefits of sustainable use and forest protection in a reasonable and just manner.

Also relatively implicit is the expectation that once given formal rights (whether ownership or use), communities/HHs are indeed confident that these rights will be respected by the state devolving such rights, and secondarily a general expectation that communities/HHs are willing and able to enforce such rights, internally as well as in defending their territory/rights externally against outsiders.

Lastly, a hypothesis that local - and particularly indigenous - communities have habitat-/site-specific knowledge of their traditional area and thus a comparative advantage in managing these, is often encountered. Indeed, the local management for multiple goods and services is thought to enhance the ecological, economic, and social functions of tropical forests (Panayotou and Ashton, 1992) by promoting greater resource access (Charnley and Poe, 2007) and by including the voices of different stakeholders (Kant, 2004).

In addition, indigenous communities are often assumed to have inherent values associated with culture and belief systems dictating conservation of their forest habitat. In a similar vein, local communities are often expected to show greater ability than outside companies or agencies to protect forest resources from risks like encroachment, illegal harvest, fire and social unrest, because of superior capacity for monitoring and community interest in forest protection[10]:

> *"Because local institutions have better knowledge of local needs, costs, and resources, decentralized management is seen as a way to incentivize local communities so that they will take ownership of their resource management decisions, better monitor use of the local commons, and internalize transaction costs (Ribot, Agrawal, and Larson 2006)".*[16]

One assumes part of this is due to their actual *a priori* location in/by the forest in question, which they must therefore reasonably be expected to both know better and be able to patrol with less (additional) cost than external parties: external parties required to investment in building up familiarity with both physical layout and forest diversity, as well as potentially infrastructure before becoming effective.

On the ecological side of the equation, forest protection by communities may or may not be effective in terms of 'policing' and sustainable levels of harvesting, but the mere size of the area involved has a bearing of its own on ecological sustainability. As pointed out by Zarin et al. (2007)[9] *"it may be impossible to manage smaller landholdings for sustained production of timber at the species level in species-diverse forests, where many commercial species exist at low densities and/or in clumped distributions.... Under these circumstances, management that takes population and stand dynamics into account requires large areas"*. In other words, sustainability can be considered at various levels of detail, and appropriate management measures vary accordingly.

CFBM is subjected to a large array of legal regulations, which aim to ensure either sustainability or minimise environmental damage associated with forest use. The point of departure is obviously an assumption that (1) these regulations are complied with by communities and HHs; and (2) they guarantee a certain degree of sustainability. Investigating internal assumptions in the various sets of regulations is beyond the scope of this study, but a few should be briefly mentioned. Most common are requirements to apply some variation of Reduced Impact Logging (RIL), which is sometimes seen as indicative of sustainability. However, strictly speaking RIL addresses minimisation of environmental damage related to forest management operations and not sustainability (harvest levels, species composition) *per se*. A forest management system demonstrating environmental sustainability and corresponding monitoring system demonstrating compliance is also a commonality.

Also, even though verification of legality and/or forest management certification is rarely an explicit legal requirement from state governments, it is often part of the packages/solutions promoted by

organisations promoting CBFM, and particularly sustainable forest management certification is perceived as a guarantor of sustainability. and certification/verification of legality also comes at a cost, which does not necessarily lead to a comparable price premium. More often than not verification of legality and/or forest management certification 'merely' allows *access* to certain markets, rather than a price premium.

3.1.2 Emerging empirical lessons

A large number of meta-studies find a positive impact of CBFM on levels of deforestation and forest degradation, lending credit to the discourse that locally managed forests *are* better protected in a developing country context. This does not necessarily mean net reforestation, though, nor that the overall tendency holds true at individual case level (CBFM areas).Others, e.g. Casse & Milhøj (2011) examine the link between CBFM and forest conservation based on 56 case studies presented in 52 papers and find the evidence for a positive correlation wanting. Instead they find for the state and presence of a legal structure as a determining factor, even when the transfer of management rights to the forest resources is genuine. They point to such an adequate structure as the exception, more than a rule in developing countries[31].

Bowler et al. (2011) find evidence that CBFM is associated with greater tree density and basal area, but not with other indicators of global environmental benefits. They do, however, also note the general difficulty in assessing said evidence due to the heterogeneity of project case design and reporting[32].

Compared to e.g. protected areas, however, CBFM is on a whole found better at delivering local benefits[15] - despite the vast majority of CBFM experience being based predominantly on utilisation of non-timber forest products.

Real transfer of tenure

A general tendency is observed in favour of sustainable forest management, where tenure is secure and forest product markets are stable, which tallies with insecure forest tenure being identified as one of the drivers of environmental problems in developing countries, and a disincentive for investing in long-term forest management (White and Martin, 2002; Kaimowitz et al., 2005; Cubbage et al., 2007)[17]. It is also noted that despite increased presence of commercial actors is often observed to cause intensification of harvest by HHs leading to temporal overuse and degradation of forests - particularly in the case of timber (Medina et al., 2009c) - this seems to level off where markets offer a certain stability, and lead to more active management of natural assets[8], supporting the long-term positive effects of secure tenure.

Box 3: Example from Kalimantan, Indonesia[5]

In Kalimantan, the decentralization in 1999, allowed local communities the right to log their forests. This led to a logging boom benefiting local people, but also leading to some environmental damage. In 2002, this right was re-centralized to the province and communities were no longer allowed logging rights.

In Vietnam, there are cases where large, often state owned companies took over the land already allocated to individual households. Although the grassroots democracy decree promises protection of local rights, State interest takes precedence in practice. Indeed a contested evolution[5].

However, the very basis of realistically expecting that CBFM leads to sustainable long-term protection of forest resources, namely real devolution of tenure (ownership or rights) to local communities simply because a policy dictates it, is questioned by a multitude of studies. The basis for questioning the real devolution of rights is the accompanying array of demands for documentation, permits, formal legal community organisation and more put forward by States as a precondition for actually being able to legally benefit from CBFM. So while formally communities have the *right* to use forest resources, they often do not have the *ability* to do so legally. This either means not doing it at all or doing it illegally, e.g. paying bribes to circumvent the legal requirements (see Box 8). Indeed, some researchers subscribe to the phrase *contested devolution*[5] in deference to the discrepancy between the official objective of

CBFM policies and the reality on the ground (see Box 3). Several studies do indeed find that community forestry has failed when governments, often as a result of pressure from development agencies, pay lip-service to community forestry, but are unwilling to genuinely cede power and resources to local people (see Hodgdon, 2010 in Laos; Lamb et al., 2009 in Liberia; Hajjar et al., 2011 in Brazil)[13].

However, stand-alone decentralization and devolution processes do not in and by themselves necessarily ensure, or even promote, sustainable forest management. The evidence regarding the impacts of decentralization on forest is rather mixed: there is no sign that decentralization generally leads to more forest conservation (Tacconi, 2007). Sometimes, this can be blamed on deficiencies in the decentralization process itself, e.g. only partial delegation of power and resources to the lower level, or local elite capture. As for devolution, even when it gives complete tenure security and power to the landowner, it can actually sometimes lead to accelerated deforestation. This is because secure tenure and other enabling conditions (e.g. good governance, credit access, or market information) tend to promote the long-term most profitable land use. In many Latin American frontier settings, these best long-run returns may come from land conversion to pastures or agriculture, rather than from MFM (Wunder, 2000; Kaimowitz, 2002)[17].

At the other end of the spectrum, decentralization and devolution may constitute an opportunity for States to transfer their unresolved forest problems and financial deficits to communities, while maintaining central control over valuable assets and resources via retained ownership and/or through complex permitting applications and reporting obligations[5]. Even where legislation e.g. mandates 'empowerment' of communities, it does not specify what, how, and by whom. Empowerment is thus often simply interpreted as some degree of community participation, which some argue does not always empower since often only community elites are able to participate. In that case, participation might even be disempowering for the poorer segments of communities (Agrawal, 2001, Cooke and Kothari, 2001)[5]. So what seems empowerment of and increased autonomy for communities at first glance, is actually driven by a need of the central state to "*dispose of its wicked problems*" (Arts, 2014)[5]

Forest management systems

Part of the success of CBFM in reducing deforestation and forest degradation, when timber extraction is part of the activities, relates to sustainability criteria and the almost default use of Reduced Impact Logging (RIL) techniques as a component of forest management, although this in itself does not guarantee sustainable harvesting levels or optimal regeneration of all species.

The design and implementation of reduced impact logging (RIL) techniques in the late 1980s was a first practical step to improve timber-harvesting practices by reducing damages to the remaining vegetation and to soils (Pinard and Putz, 1996; Sist et al., 2003). RIL guidelines are exclusively timber-focused, and were developed to deal with mechanized operations in large-scale logging. They only deal with non-timber forest products (NTFPs) and environmental services (ES) values as passive side-concerns. Hence, more recently RIL guidelines have come to be seen as insufficient to comply with increasingly diverse demands on forests (Sist et al., 2005; Putz et al., this issue). However, RIL are certainly still valid technical guidelines in scenarios where sustainable timber extraction remains the prime management goal. Additionally, some impediments determining the poor adoption of RIL in the tropics (Putz et al., 2000; Applegate et al., 2004) will also be significant obstacles to MFM adoption (Table 2)[17].

Factors	Reasons	Relevance to MFM guidelines
Implementation too expensive	Contested by several studies (Pearce et al., 2003; Applegate et al., 2004), but still part of the conventional wisdom of most loggers	+++
There is no need for the improvement of current practices	Profits of unsustainable logging tend to be high and regulations enforcement too weak	+
Lack of adequate governmental incentives	Tax incentives and other compensation schemes are still rare and untested. If not well planned they can be insidious (Cubbage et al., 2007)	+
Forest will be converted anyway	High short-term timber profits and/or forest conversion to more competitive land-uses, as agriculture or cattle ranching, makes long-term planning unattractive	+
Lack of trained staff	Few applied training programs and materials to disseminate research findings to forest managers and field workers	+++
Opposition against SFM approaches by some environmental groups and researchers	Lobbying for the establishment of parks and other strictly protected areas (Bowles et al., 1998; Rice et al., 2001)	+

Table 2: Main factors identified in the poor adoption of RIL techniques in logging operations in the tropics and their potential relevance (+++: highly relevant; +: fairly relevant) to multiple forest management (MFM) guidelines[17].

Sustainability criteria - insofar as they are well understood and perceived as legitimate by communities - go a long way towards securing forest integrity. Community forest regulation allowing timber extraction predominantly follow traditional forest management planning and standard operational procedures, establishing a baseline inventory of species, distribution and biomass, sub-dividing areas into smaller compartments, which form the basis for calculation annual allowable cut and harvest planning between compartments based on rotation periods. Doing this in a participatory or better yet in a learning by doing manner is likely to increase community ownership and dedication to compliance. Individual forest management objectives and plans differ, naturally, according to the ecosystem in question, but may also be designed to accommodate the socio-economic conditions of the community in question by incorporating multiple forest use and timbers with different rotation periods. While long rotation periods are predominantly seen as a challenge to short-term livelihoods, pilot projects have highlighted extended rotation times as a major strategy for increasing carbon storage in forestry production systems, both plantations and natural forests. This enables access to carbon markets, and increases the potential for financial benefits for forest owners, or may at least compensate for the postponed income.

However, a number of studies have shown that CBFM initiatives, being mostly externally promoted, also predominantly promote externally devised production systems and are generally invoking more or less unconditional faith in the words of experts despite communities not always fully understanding the offered explanations of new systems[8]. Commonly, local production systems are ignored, and, in particular in the case studies of indigenous and traditional communities, a secondary effect typically observed was a process of erosion of local knowledge and capacities regarding traditional land use practices (Lange, 2008; Porro et al., 2008; Pokorny et al., forthcoming)[8]. The demarcation of areas for sustainable forest management is also typically found to induce a certain segregation and specialisation of previously integrated land use systems leading to a more simplified uni-dimensional understanding of landscapes[8].

Community monitoring

Monitoring of forest condition by communities have received a lot of the credit for the positive environmental impact of CBFM. Local familiarity with the resource does certainly provide a definite advantage, which may be further enhanced or undermined by the support enjoyed by CBFM in the community, and the degree of pressure on the resource.

In a developing country context community monitoring is frequently on a backdrop of poor law enforcement by state agencies, so delegating responsibilities to communities may be a way for governments to shift the burden. Leaving communities to 'patrol' their designated area without any real backing may thus not fairly reflect community interest or capacity[17].

Through external support, training and new digital technologies such as smartphones, apps and cloud drives (as used in e.g. Prey Long, Cambodia) have increasingly allowed effective community-

based monitoring even under poor rule of law conditions. There is indeed growing consensus amongst practitioners in the field that adequately trained local monitors can produce data comparable to that derived from professionals, and that at lower costs, while enhancing local ownership, ensuring greater cultural relevance and improved institutional strength at the community level, and without compromising on accuracy of information produced. This may prove doubly useful with the arrival of RDD+. Monitoring of tropical forests has historically been an expensive, expert led process, carried out by external consultants in conjunction with the local population, but the scale of REDD+ MRV cannot support this level of monitoring costs[28].and may just well look to communities for cost-effective for the required ground-based monitoring to complement remote sensing of forest condition, creating local employment in the process[28].

3.2 CBFM leads to inclusive improvements in livelihood options

This second objective of CBFM goes by many different names and guises. Common is the ambition to - on an inclusive, equitable and democratic basis - foster the ability of rural communities, households and individuals to help themselves, i.e. instil/develop both confidence, skills, knowledge, organisation, entrepreneurship and networking opportunities as lasting characteristics, which may serve to further improve livelihoods after initial externally originated interventions end.

To this effect literature, development agencies and agents speak of variously developing social capital, empowering communities, employing participatory approaches and building capacity. However, it is often less than helpful to use such imprecise buzzwords (Pawar, 2006; Smart, 2008, Fine, 2007) instead of encouraging precise definition of factors such as socio-economic class, race, power relationships and conflict (Fine, 2007)[13].

3.2.1 Assumptions underlying the expected impact

Along with the expectation of CBFM as a tool for alleviating rural poverty in general, the assumption has been that CBFM would have a community-wide impact on livelihoods and help particularly the poorer segments of the rural population. At the outset, particularly CBFM models working with communities as a whole were expected to be inclusive, open to and offering benefits to all community members across income groups and gender. These models were predominantly based on democratic ideas, i.e. that newly formed organs would offer equal influence (access, voices and votes) to all community members and hence offer the opportunity of livelihoods improvement and empowerment to all parties. The logical consequence of this is disruption of former power structures.

Most state-led CBFM programs and policies require a legally incorporated entity with which to anchor responsibilities. Commercialisation of forest products, timber in particular, also requires the ability to enter into legally binding contracts. For that reason, legally registered community-based organisations (CBO) or community forest groups (CFG) are also a common component of development agent/agency interventions.

Typically, such CFGs are new institutions in both a formal and informal sense. They are a requirement or necessity imposed by an externally promoted CBFM initiative and thus does not necessarily relate either formally or informally to existing formal or traditional community institutions. Where the strategy is to consciously work with a sub-set of community HHs, the disconnect is particularly pronounced.

The organisations formed to manage community forests define the structure (e.g. leadership positions and voting rights) of the organisation, the style of management (e.g. autocratic or democratic) and the sharing of responsibilities and benefits within the community or user group. Such governance, however, is also about the power to make, implement and enforce decisions, rather than just the formal arrangements about how decisions are supposed to be made (Fisher, 2003)[13].

Particularly, the newer discourse focused on community forest enterprises also presupposes an altogether rational behaviour *á la* homo economicus, i.e. that communities and individuals will pursue economic self-interest/private profit or benefits if and when opportunity presents itself.

3.2.2 Emerging empirical lessons

There have been no discernible reported preference for models working either with a sub-set of households in a community or the whole community or village, all included, as the recipient/target for CBFM interventions. Examples of both models abound, although in some cases the choice has not been an up-front deliberate choice. Obviously, it affects the tools employed and perception of success whether the equitable, community-wide livelihoods improvement is a specific objective or an improvement for a sub-set of HHs is the target.

One factor potentially promoting collective action is found to be resource scarcity; simple demand for forest resources alone is not sufficient for successful community management. Without scarcity, communities may have little incentive to undertake collective management (Gibson, Dodds, and Turner 2007). This argument is supported by empirical studies on the Himalayas (Baland et al. 2010b; Tachibana et al. 2001), which find that institutions tend to develop in areas with forest degradation[16].

Internal community cohesion

Empirical findings point to internal community cohesion (also called 'bonding capital' by some academics), i.e. mutual trust and respect, as being highly influential in (although neither necessary, nor sufficient for) CBFM success[13].

Baynes et al. (2015) observe that socio-economic and gender inequality produces social angst, which in turn affects community cohesion and subsequently intra-CFG governance and conflict, and ultimately people's motivation and willingness to participate in CBFM[13].

The first generations of CBFM projects did to a large degree overlook that "a community comprises a complex set of actors, with different social, economic, and political characteristics such as wealth, gender, age, ethnicity, and castes (Agrawal and Gibson 1999), with different access to resources and power, and different interests in, and claims over, various environmental goods and services (Leach et al., 1999, Nygren, 2000; Chomba et al., 2016)"[5]. This has worked to undermine the expectations from CBFM to deliver equitable and widespread livelihood improvements in rural communities, as a growing body of evidence points to such heterogeneity of communities as - all else being equal - being negatively correlated with social/community cohesion and CBFM success.

This has led to an emerging consensus that there is an upfront need to 'unpack' communities, i.e. identify key stakeholders including elites, identify and address engraved distrust and misunderstandings, rectify skills and knowledge gaps of sub-groups to subsequently be able to negotiate a meaningful and longer-lasting outcome (e.g. see Sharpe, 1998 in Cameroon; Sheil et al., 2006 in Indonesia; Matose, 2006 in Zimbabwe; Salam and Noguchi, 2006 in Bangladesh; Kobbail, 2012 in Sudan)[13].

Insofar a re-distribution of resources and power has indeed been the objective, the lessons learnt from community forestry experiences in Latin-America carried out under the umbrella of CIFOR concluded that the initiatives ***did*** help to rupture the historic feudalism and dependency prevalent throughout the Amazon based on unfair relations between smallholders and powerful actors such as landlords, timber companies and traders, who form the economic and political elites of the region[8].

However, the studies also revealed that apart from the *intended* and desired changes in daily routines and power relations within communities, the interventions also provoked unpredicted and negative consequences (Medina et al., 2009a)[8].

The Latin American study also exemplified that inclusiveness likely comes at a cost; operations in a more egalitarian setting were less effective than the typical hierarchy of commercial enterprises[8]. For this reason some CBFM interventions consciously choose to work with more streamlined organisations, encompassing only a sub-set of community HHs. The choice by development agents or communities themselves to work with a smaller group of (active) HHs may also be based on the level of resources available for distribution. With relatively sparse resources available, the benefits - if evenly shared - to each community member may be too small to motivate participation in CBFM. By concentrating these benefits within a small group of people, incentives may become sufficient to maintain active management. Although inequitable, it is likely that the level of forest protection offered under such an arrangement may be greater than under exclusive state management or open access regimes[3].

Looking at CFG sustainability, Pokorny et al. (2012)[8] reports that success stories remain isolated without replication, and typically depend on external support for continuation. In many cases, only a limited number of HHs provided with privileged support have been able to overcome technical, institutional and financial hurdles to benefit from existing market opportunities. In some cases, interventions have generated conflicts and even weakened pre-existing social organisation[8].

Many of the CFEs cases have benefited from outside technical and financial support from government and NGOs, and from donor-assisted funding. Where this support has been directive, however, it has limited the emergence or growth of the CFEs. The community concessions in Petén, Guatemala are an interesting example of this. Because of the high conservation value of the lowland forests, a large number of donors, government and NGO programs operated in the Petén before and during the emergence of the community concessions. Community organization was not effective, however, until an internal process of mobilization and consolidation took place within the communities. Those models of support that emerged as instrumental were from those NGOs, which had been the most flexible in providing guidance and services, and built their assistance in recognition of the local knowledge of both settlers and long-term residents of the resource base and its productive options (Sundberg 1998)[21].

This seems in line with the logic behind practice theory, which assumes that CFM works best when it can align itself with socially-embedded logics that predates the CFM initiative, for example through engagement with local practices and social learning (Arts, Behagel, van Bommel, de Koning, & Turnhout, 2013)[12]. This is supported by other authors, e.g. Brown & Lassoie (2012)[33].

Box 4: Mexican example

For example, the most cited success cases of community forestry in Latin America, Quintana Roo (Mexico) and Petén (Guatemala), demonstrate the difficulties of combining social and economic goals, as a new elite of enterprise managers emerged and many families became dissatisfied with the level of participation and mechanisms for benefit sharing (Taylor, 2001; Nittler and Tschinkel, 2005). The benefiting families, however, naturally start to explore economic opportunities to re-invest accumulated capital, and, therefore, become interested in more attractive alternatives such as oil palm and soy bean, resulting in the abandonment of forest management[8].

Internal benefit distribution and elite capture

Failing to understand and address the aforementioned social complexities is likely to lead to elite capture of potential CBFM benefits, which is very commonly found in joint forest management arrangements (Kumar, 2002; Adhikari et al., 2006; Blomley, 2006; Meshack et al., 2006; Pfliegner & Moshi, 2007)[3]. Such inequitable decision making can be particularly pronounced in high-value forests, where the stakes are also higher (Iversen et al. 2006)[16].

The root causes of elite capture are obviously pre-existing power structures, which again are based on financial and social status, land holdings, education and in some cases ethnic or political affiliations. These patterns may be passively propagated or exacerbated by poor facilitation of participatory forest management planning and establishment processes[8], preferences for working with educated, wealthy, or high caste men (as in the case of government foresters in India; Balooni et al. 2010); the

complexity and cost of new activities; resources limiting the number of HHs that can be included in the required, often considerable capacity building needed; and a short intervention period in which results are required.

This asymmetry is facilitated by the fact that productive activities are generally based on clearly separable family units (Chirif, 2009), it is mostly the better off and well qualified families that managed to adopt the externally defined models and to benefit from support (Rogers, 2003). This bias of development efforts has the tendency to strengthen historical, paternalistic structures and to cause accelerated economic differentiation of local systems (Chambers, 1997), even more as the concentration of resources further reduces the possibility for poor families to participate and replicate the projects. Needless to say, this can create conflicts and stimulate social division in communities[8].

As an illustration, Pokorny et al. (2012) classify their study cases into five broader scenarios:

(1) in the – rare – success scenario, not observed in a case study, the supporting organisations manage to replace local structures with the externally defined social-productive system;

(2) more common is the promotion of local elites, where leaders or local elites take advantage of their social position to ensure individual benefits. This scenario was especially observed in those case studies where external organisations concentrated their often intensive long-term support on the most qualified and better-endowed families with high probability of success (Depzinsky, 2007). The concentration of efforts implies the danger that poorer, less able families may fall even further behind (Hoch, 2009);

(3) in the other extreme, supporting organisations may consciously intend to avoid, or simply do not manage, to collaborate with the local leaders and elites. In these situations, they invest in people with minor social status, but high individual potential. In the case studies related to this scenario, the selected individuals, when supported with training, access to information and communication facilities, often made considerable individual progress, which, in some cases, led to the establishment of parallel power structures which naturally created conflicts with traditional institutions and authorities (Medina et al., 2009a).

(4) In other cases, it was observed that the empowered individuals, often younger people, were unable to assert themselves and left their families to search for new opportunities in the emerging urban centres.

(5) However, the majority of the observed initiatives, in particular the more extensively supported initiatives, had no significant effects on the families because of their inadequate operational frameworks, lack of qualified staff, limited resources, and the short time horizon (Hoch, 2009)[8].

However, whether elite capture is exclusively bad or not depends on the objectives at outset. A relatively strong, existing elite *can* have a positive effect by providing leadership, organizing communities, and standing up to powerful stakeholders such as the Forest Department (Balooni et al. 2010)[16] or other external pressures. If objectives run more towards forest protection or any kind of economic development regardless of benefit distribution, working with relatively more capable and resourceful HH allows faster progress, all else being equal[8].

Other factors - Size of user groups

The size of the user group (per unit area) is thought by many to have a bearing on successful CBFM. Beginning with Olson (1965), scholars have long argued that small groups are ideal for collective management because they allow members to interact with each other and thus discourage them from defaulting on agreements[16]. Presumably this also relates to the probability of higher

homogeneity and trust in smaller groups. However, midsized groups have larger resources to participate in rule formation and enforcement and their transaction costs may be lower. In fact, recent research suggests that midsized groups do particularly well with forest management in South Asia (Agrawal and Goyal 2001; Nagendra 2007)[16].

Forest use by different community segments

Community HHs enter into CBFM possessing different assets, determining both their ability to exploit a number of forest products and their dependence on the same. In Tanzania, Meshak *et al.* (2006) finds a significantly different return on investment (C/B ratio) between community members categorised as relatively poor, medium or better off with the better-off HHs doing best. This is partly based on better access, but also better use of the same resources (subsistence for the poorest, value added for the better-off) and ability to use more of the same resources (more fodder representing a larger value if you have more cattle, for instance)[14]. In a similar vein, there is also evidence that community forestry programs discriminate against women, who are often responsible for collecting fuelwood and NTFPs (Agarwal 2001; Sarin 1995)[16].

The relatively higher dependence (not income) for the poorest on NTFPs has raised hopes for NTFPs as offering an opportunity to specifically help this group, especially as the aggregated value of NTFPs was in some studies found to be higher than that of timber (Myers, 1988; Cavendish, 2000; Shanley, 2000; Demmer and Overman, 2001)[17]. Nevertheless, numerous subsequent studies have given a more sobering assessment of the real potential of NTFPs (Arnold and Ruiz-Perez, 1998; Wunder, 1999; Neumann and Hirsch, 2000; Lawrence, 2003; Ros-Tonen and Wiersum, 2003).

Despite offering lower start-up costs (in many cases none), NTFP-based strategies are jeopardized by a combination of species usually occurring in low densities, with irregular distribution patterns, and small and uneven yields per area (Panayotou and Ashton, 1992; Phillips, 1993). Harvesting is generally labour-intensive, supply can fluctuate unpredictably between harvests, and products are thus susceptible to substitution for synthetic derivates. Also, NTFPs markets have proven to be more opaque and less expansive and dynamic than anticipated by the optimists (Belcher, 1998; Belcher and Schreckenberg, 2003; Marshall et al., 2003). Overall, the trade of NTFPs has increased steadily, but slowly (FAO, 2006)[17].

External relationships

CBFM is usually accompanied by the introduction of rule sets of a certain complexity. Added to this are the normal rules guiding the forestry sector in general, e.g. extraction, transport and sales of timber.

With these obstacles, the ability of communities to engage in collaboration with external parties (dubbed 'bridging capital') for funding, learning, market access, access to knowledge and information, networking and permits is quite decisive for CBFM success. The existence of such a sphere of partners collaborating to achieve sustainable CBFM is one of the best predictors of success, given an existence of its component parts (networks, knowledge, learning and trust). For example, several scholars address the relevance of having both professional and local knowledge for CBFM (Agrawal, 2005; Agrawal & Chhatre, 2006; Fernandez-Gimenez et al., 2008)[12]. Others conceive of social learning as a necessary part of CBFM (Berkes, 2009; Dang, 2014)[12]. Some scholars also cover the importance of cooperative networks that stretch beyond the local level—particularly forest agencies, NGOs, donors, universities and companies (Baynes et al., 2015; Charnley & Poe, 2007; Mustalahti & Lund, 2009; Wiersum, Humphries, & Van Bommel, 2013)[12]. A final group emphasizes the relevance of mutual trust among those involved in CBFM (Baynes et al., 2015; Berkes, 2009)[12]. The latter is particularly difficult to establish, root and maintain, given the different interests, positions, cultures and discourses of all the agencies involved (Mustalahti & Lund, 2009). Governments, while expressing support for CBFM, do little in the way of action, financial support by

NGOs is often only temporary, and forest professionals generally find it hard to work with locals on an equal level (Dang, 2014), and such proceedings easily undermine trust[12].

3.3 A market-based (value chain) approach to CBFM leads to increased income for the poor

Economic growth is currently emphasised as the most important driver of poverty reduction. However, the role of the forest sector in lifting significant numbers of people out of poverty by contributing to employment generation, trade and economic growth is remarkably poorly analysed. Forestry's role in many economies is certainly significant; it provides 10% or more of GDP for some of the poorest countries, and 5% of GDP for many more developing countries[23].

However, a World Bank review of 17 studies from three continents on the income that forests provide to those, who live in or near them showed that income from forests was important at every income level and on every continent. On average, income from forests was 22 percent of total income – the equivalent of $678 per year (adjusted for purchasing power parity worldwide) – in the households examined. Timber was the source of only 2.3% of this income (Vedeld et al 2004)[23]. Being important at all levels of income does not equate to equal distribution of benefits, though. Rather, a perception of 'timber is for the rich, NTFPs are for the poor' has dominated due to high entry costs into the timber value chain, combined with high value of many timbers attracting better equipped, capitalised and connected actors.

Box 5: *Three examples to illustrate forest value to the poor[23]*

***In Kenya**, the formal forest sector officially generates only about $2 million in earnings per year from sawn timber, pulp and other industrial wood products (a surprisingly low figure given the substantial pulp mill and ply mills in the country). This is dwarfed by the value of the informal forestry sector, which has been estimated to contribute some $94 million in value to rural households in the form of charcoal, fuelwood and many other forest products. This does not include the recreational value of forests for leisure and tourism which could come to $30 million – and is also accrued largely informally (Mogaka, 2006).*

***In Lao PDR** the formal forest sector contributed 3% of GDP, about $52.5 million, yet wood fuel is estimated to be worth $6.5 million per year, while the value of wood for house construction is estimated at $13 million per year. Here, after rice, forest products dominate daily diets – with over 450 edible species consumed. Very rarely is any reference made to household value of tree products, or to the market values of such products (Emerton, 2005).*

***In Tanzania,** amongst the 833 villages approximately 2.22 million people) of Shinyanga region, the value of restored woodlands to rural people's livelihood is $14 per person per month (or about $1,200 per household per annum), which is significantly higher than the national average monthly spending per person in rural Tanzania of $8.50 (Monela et al, 2005).*

3.3.1 Assumptions underlying the expected impact

Generally, a well-functioning market in itself (for whatever commodity) requires clear property rights and a certain rule of law to instil confidence in contractual arrangements among parties. Where insecurities are high, transaction costs are generally also very high, as people try to protect themselves against being cheated or other potential dangers. For markets to optimise cost-effectiveness, a relatively high degree of information and transparency is also required.

Advocates of market-based conservation highlight this cost-effectiveness of the market-based approach. In theory, environmental and social goals are achieved at relatively low costs, and families, once integrated with markets, continue to expand their economic activities in a sustainable way[8]. Indeed, proponents of managing tropical forests for timber production argue that doing so will conserve forests and provide significant financial returns to their public and private owners[9]. So the effective integration of poor regions in national and global economies has been and is still understood to be crucial pre-condition for the development and

Box 6: "The world's most effective model of tropical forest management"[21]

According to Richards, the relative success of community forestry in Quintana Roo, one of the most effective models of tropical forest management in the world stemmed from a "unique combination of advantages" including secure land tenure, strong producer organizations, high commercial value of forest products, ease of extraction, market accessibility, political support, low demographic pressures and political and social stability (Richards 1991; Synnott 1993; Kiernan 1997).

improvement of the often precarious situation of the rural poor[8]. In other words, development agents expect 'the market' to deliver on its potential in a context, where ideal conditions for markets are few and far between.

Opponents argue that timber production inevitably leads to forest degradation and that, from a financial perspective, predatory logging and subsequent conversion from forest to agricultural use, including pasture, will always outcompete forest management (Pearce et al. 2003)[9] - in other words that CBFM is competing on "an uneven playing field of … social inequities and economic hurdles" (Larson and Ribot, 2007)[5]. There is no doubt that relative to unregulated or conventional logging, sustainable forest management carries restrictions on timber harvesting intensity, imposes non-declining flows of products and services over time, and thus requires long-term planning, and that all this has financial implications. Apart from some of these conditions requiring relatively high initial investments of time and/or money, a common feature of the cash-poor rural populations of developing countries is high time discount rates. In economic terms; it is simply not worthwhile to wait for the second (or any subsequent) timber cut (Putz et al., 2000; Kaimowitz, 2002, 2004; Pearce et al., 2003)[17].

So there is, to some extent, a recognition of a 'profitability gap' in SFM/CBFM *vis-a-vis* conventional forestry, which does not provide the range of environmental benefits SFM does. As most of this is due to higher cost levels (and to some extent foregone income), higher income/price premiums are required to offset the additional costs to render SFM a competitive land use, all else being equal.

Some see a partial solution in a niche of the global (timber) market, where environmental sustainability and social aspects are part of the desired commodity characteristics. The original expectations were that such a market existed and was willing to pay a premium price for such forest products, and forest management certification schemes exist to exploit such willingness to pay.

More recently, another potential solution to the profitability gap has emerged in the form of payments for ecosystem services (PES), promising to reward the production of cleaner and more stable water supplies, sequestration (or avoiding the release) of carbon (REDD+), and protection of biodiversity. Markets are, however, still non-existing, immature or one-offs between unique parties, which are not immediately replicable.

Apart from the 'carrots', there is also a recognition that 'sticks' play a vital part of framing the conditions under which sustainable forest management - and thus CBFM - is a viable option, not least the strictness of forest legislation and degree of enforcement.

3.3.2 Emerging empirical lessons

While nobody perhaps expected market conditions in developing countries to be perfectly aligned with theory, a picture is emerging where the transaction costs associated with these imperfections and insecurities vastly exceed the expected.

Firstly, and as discussed in section 3.1.2, property rights (tenure) are rarely well defined. Secondly, the up-front abilities of the poor rural population for participating in markets have proven weak and hence costly to remedy. Even where initially overcome, continued higher transaction costs as a consequence of e.g. mere physical distance to markets, seasonal constraints and other biophysical factors are frequent and typically contribute to uncompetitive production prices compared to conventional large-scale forestry operations.

Most evidence does indeed show that ''business as usual'', i.e. conventional logging and/or forest conversion, remains economically more attractive than SFM or MFM models, either because time-discounted profits are higher and/or because less upfront investments in planning and capacity building are needed (Pearce, 1996; Pearce et al., 2003)[17]. Simultaneously, the hoped-for premium prices for sustainably managed timber do not appear to have materialised *en masse*, and PES/REDD+ has yet to deliver on more than an individual case basis.

Evaluating costs and benefits in practice is further complicated by the fact that there is a considerable time lag issue with measuring community costs and benefits, since benefits often materialise over longer time spans, and both output prices and costs vary greatly over time as well[16].

On top of these normal market insecurities, the less than ideal market conditions of rural economies in developing countries require, as a minimum, a keen understanding of these shortcomings, their consequences and a cost-effective way of remedying these, where this is within the realistic possibilities of typical development interventions.

The following sections will first summarise CBFM achievements in terms of overall commercial success, and then look at the two sides generating potential profits - costs and benefits - in turn, until finally concluding on the competitive advantages and disadvantages of CBFM enterprises in global and local markets.

Success rates of CBFM

Commercial CBFM success is generally a mixed lot. In Mexico, larger and more successful CFGs employ hundreds of community members in industrial-scale harvesting operations (see ANNEX 6), whereas the land managed by small CFGs often holds insufficient resources for sustainable harvesting at any significant commercial level (Antinori and Rausser, 2007). These small CFGs often receive only small dividends from the sale of logs and little or nothing is reinvested in the forest (Mitchell, 2005). So, although Mexican community forestry is often regarded as a success, severe challenges remain[13]. Moreover, even commercially successful CFGs are reported to suffer internal distributional challenges, which have translated into a risk of land use change as more capital becomes available allowing investment in more profitable land use (see Box 4 and Box 7).

Box 7: Southwest Sumatra

The 'damar' agroforests of Krui (South West Sumatra, Indonesia) have been portrayed as a paradigm of integrated forest management (Torquebiau, 1984; Michon, 2005). The system offers a stable and diversified portfolio of incomes to local communities (Wollenberg et al., 2001), where damar trees provide a regular damar resin yield and occasional valuable timber revenues (De Foresta and Michon, 1997; Petit and De Foresta, 1997) in a forested landscape of high environmental value (Michon and de Foresta, 1995; Nyhus and Tilson, 2004). But forest multi-functionality is currently in jeopardy due to a combination of improved transport infrastructure and changing prices: declining demand for damar resin has been accompanied by increasing timber prices, and road building has favoured new production options. Hence, revenues from quicker timber harvesting are locally being reinvested in transport equipment to reach new markets for agricultural products and to boost off-farm incomes. This is accompanied by a decrease in traditional cultural values, pushing a conversion process that local people expect to accelerate (Kusters et al., 2008)[17].

A meta-study by Pokorny et al. (2012) selected case studies, which included some of the most promising CBFM experiences from across the region, but their analysis revealed only limited financial attractiveness of externally promoted approaches for market-based conservation. The financial analysis of community forestry experiences in the Brazilian Amazon, for example, identified high production costs ranging between 15 and 50 US$/m^3 for round wood, to 350–420 US$/m^3 for boards processed with chain saws and 190–600 US$/m^3 for boards produced with portable saw mills in the forests (Medina and Pokorny, 2008)[8]. Success stories remained isolated examples and were limited to very specific techniques characterized by simplicity and possibilities for local adaptation (Pokorny & Johnson, 2008). This suggests incompatibilities of the promoted package with local realities, but also indicates more general limitations of smallholders acting in highly competitive (global) markets[8].

Evidence is also mounting that both costs and benefits differ significantly in quality and quantity between CFBM enterprises and conventional FM operations, perhaps not surprising given the additional expectations of CBFM to deliver on social and environmental objectives.

COSTS

One category of total costs pertain primarily to the legal framework regulating (community) forest operations, others pertain more directly to forest operational and forest product processing activities and subsequent marketing of products. For both categories of costs, the scale of

operations is important, and both differ in type and size along the value chain and between start-up and running costs. We look first at costs associated with the start-up phase, and subsequently costs associated with the actual operations and activities of forest management, harvest and forest product sales. While foregone income may also be considered a cost, it is not discussed as the CBFM/SFM framework would dictate activities allowed.

Costs of bringing communities to the market - start up costs

Even before entering the market, a significant effort is required for most poor rural communities to establish the foundations for future forest management, benefit generation and distribution. Legal requirements govern the costs associated with set-up of the managerial entity with which both State and buyers contract, as well as the prerequisites for obtaining basic extraction rights.

Most CBFM policies mandate establishment of new governance structures (as opposed to simply contracting with existing administrative or traditional entities) due to a perceived lack of equity and inclusiveness in existing structures. While this is a legitimate concern and ambition, for new structures to be stable and functioning according to intentions, a substantial investment is necessary to map power relations and potential conflicts related to traditional or customary 'ownership' *vs.* formal legislation, conflicts related to gender, ethnicity and age; conduct stakeholder consultations to resolve such conflicts, facilitate rules for transparent and accountable governance and build understanding and capacity to maintain achieved results.

Legal requirements also dictate the extent of technical prerequisites for being allowed or awarded the right to extract resources from forests; demarcation, forest inventories (be it timber, NTFPs, ecosystem services or even fauna), zonation, monitoring systems & techniques and corresponding capacity building all implies significant investments in time or money needed long before commercialisation at any significant scale can take place.

In most CBFM policies, preparation of management plans for the area in question are mandatory. These range from *relatively* simple, as in e.g. Nepal and India, where communities are expected to develop forest micro plans with the help of the central Forest Department. Micro plans are documents prepared through "bottom-up" planning and are a tool for developing, implementing, and monitoring forest-related activities tailored to the needs of, and for the benefit of, local communities[16].

Box 8: Amazon countries study[8]

In a meta-study in the Amazon, regulations passed included the need to employ professional foresters to prepare management plans, the presentation of legal land titles, the existence of formal community organisations, and sometimes even the filling of forms only accessible on the Internet. Some countries like Bolivia prohibited the use of chain saws to process timber in the forests. Management standards often constituted part of the technological package, including certification processes and proof of origin demanded by international groups and processes to fight against illegality. All of these prerequisites in combination with a notorious lack of institutional capacity for effective law enforcement hindered local forest managers from legally using their forests and made it more difficult for locals to participate on equal terms in the markets.

In practice, these requirements have obliged many local forest users to act illegally and further weakened their negotiating position in their relations with timber enterprises, intermediaries, traders and consumers, forcing prices down or obliging them to pay backhanders to local authorities to obtain the necessary authorization (Thomas, 2008).

In general terms, the reforms have undermined existing local institutional arrangements to control the use and management of natural resources, particularly in the case of traditional communities (Medina et al., 2009b), often legitimising the ransacking of the forests in traditional lands.

In other cases, forest management plans are comprehensive documents (see e.g. Box 8) requiring detailed forest inventories, traditional compartmental divisions (where customary individual HH user rights may conflict with biophysical characteristics), technically complicated measurements and calculations of annual allowable cut at species or stand level, rotation periods and corresponding monitoring systems, which may wholly or partially need inspection and approval by forest agency officials. Each element requires training of community representatives to perform these functions

adequately with associated costs, or may imply a loss of ownership and control if relegated to 'outsiders'.

While some costs are proportional to forest size (e.g. physical work related to delineation, inventories) and thus potential benefits, others are either fixed (e.g. approval processes, equipment) or only indirectly proportional to area size (e.g. training costs, internal and external stakeholder consultations).

Empirical evidence does indeed point to costs for development organisations engaging in building such 'preparatory' CBFM capacity as significant, and that even the most successful initiatives have continued to depend on long-term external support[8]. In support of this, Pokorny *et al.* (2012) find that in the Amazon no 'spontaneous' replication of the proposed practices took place without significant subsidies and support[8], suggestive of the hurdle start-up costs pose to CBFM.

Costs of entering and participating in the market

Once in a legal position to extract forest products and services, producing to and transacting in markets carry their own cost.

The legal framework guiding forestry in general or CBFM specifically, where this is catered for, is quite decisive in terms of both fixed and recurrent costs. In many countries, even those politically in favour of CBFM, the rigour of rules guiding extraction, transport and sales are prohibitive for smaller enterprises. A number of studies have indeed pointed to overregulation of timber harvesting as a major institutional obstacle that prevents the flow of benefits to local communities from forest tenure reform in community forestry[2]. In other words, what some communities have received in the reform process are “bundles of responsibilities” instead of “bundles of rights”, incurring costs without obtaining realistic access to benefits - at least not without substantial additional investments.

In Indonesia, despite well-intended policies, SF is simply considered a permit to manage forests with implementation rigidly regulated and/or tied within a web of complex regulations around forest products harvesting, transporting and selling (Ministerial Decree P.83, 2016)[5]. A similar situation is encountered in the Philippines, where during harvesting operations, it is often considered better to ‘cut and bribe’ rather than try to deal with government officials up front (Alzula et al., 2005)[13]. Evidence for high levels of transaction costs also comes from other studies[14]. For all transactions, the absence of trust between transacting parties is found to increase costs.

As with start-up costs, the costs associated with recurrent production and sales can be either fixed regardless of volume produced and traded, or variable proportional to volume and therefore benefits generated. All else being equal, high fixed costs would disadvantage smaller operations. While not all CBFM areas are small, many are indeed, and fixed costs are therefore of particular importance to profitability, since no economies of scale exist to offset them. Moreover, some of the most significant fixed costs are 'front-loaded', i.e. typically occur before any income from the investment is generated (e.g. equipment, inspection/approval of ACCs).

A number of studies indicate both types of cost as significant, and commonly report an exorbitant proportion of costs vs. benefits for smaller initiatives[8]. Economies of scale (or lack thereof) in productivity is one aspect of this as illustrated in **Error! Reference source not found.** below.

	Size and initiative			
	Community forestry			Enterprises
	Mini *Oficinas Caboclas*	Small *Mamirauá, Pedro Peixoto, Boa Vista dos Ramos*	Large *Ambé, PAE, Porto Dias, Costa Marques*	Large[a] *Cikel, Juruá, IBL*
Demarcation (ha/day)	2	3	9	18
Inventory (ha/day)	2	3	11	12
Tree felling (m^3/day)	<1	14	40	55
Skidding (m^3/day)	<1	3	59	75

Table 3: Productivities of timber harvesting operations in relation to scale and organisational approach[8].

In terms of fixed costs, investments in machinery and equipment makes up for a large initial investment, particularly where value addition is sought. It is often found, to exacerbate this, that very few CFBM enterprises depreciate equipment, i.e. set aside savings for repairs and eventual replacement of equipment.

Illustrating the importance of both types of costs, Pokorny *et al.* (2012)[8] found that "for initiatives processing round wood with chain saws or portable saw mills, machinery costs were most significant, and also taxes on processed wood represented major cost items". In larger initiatives with mechanized operations, heavy machinery used for road construction, skidding and the landing operations constituted the major proportion of total costs, perhaps not surprisingly. These would however, at least have subsequent economies of scale to offset the initial high investment.

It is also found[8], that initiatives attempting to commercialize products directly to external markets showed elevated administration and management costs. Despite receiving relatively attractive prices for their timber from non-local buyers, due to the facilitation by the accompanying development organisations (which would have saved additional costs to CBFM operations), the production costs rendered profits modest at best. Even with generally low levels of local salaries, only the larger initiatives with a low level of vertical integration managed to cover labour costs and, in a few cases, generated meagre profits. All other initiatives were unable even to cover the operational costs of logging, however, in some cases at least managed to pay some of the local labour costs. Furthermore, the expectation of enhancing income by adding value from further processing timber or production of manufactured products was not fulfilled, although attractive prices for the products were paid. This was mainly because the production costs increased disproportionately, as a consequence of more complex administration and the need for essential investments in machinery and equipment. These cases point to costs possibly being a larger hindrance to profitable CBFM than the potentially achievable product prices (under current policy and market conditions). While maybe not a bad idea as such, it could be questioned whether substantial value-addition should take place immediately or only be included at a later stage, when communities have mastered the initial steps of the value chain. This could serve to minimise capital-related risk, and reduce risk of overload in terms of labour and skills requirements.

Box 9: ***Decriminalising, and working with, chainsaw loggers[23]***

Proposed ways to gain some control over widespread illegal chainsaw logging in Guyana are illustrative of new thinking needed in many countries in Latin America, Africa and Southeast Asia where chainsaw logging is perceived to be out of control. Ideas revolve around harnessing chainsaw loggers' high levels of productivity and flexibility within small but no less rigorously monitored concessions. To derive more recovery from chainsaw ripping, boardmills rather than free hand ripping could be promoted. A culture of re-sawing could be initiated with chainsaws used as prime saws, cutting cants to be re-sawn at lumber dealers with band saws, thereby increasing both the productivity and the recovery of the chainsaws in the concessions. This would allow those who cannot afford the more expensive portable mills still to take part in the sector (Mendes and Macqueen, 2006). There are clearly challenges ahead in ensuring that decent work, not unsafe and unrewarding work, results from this kind of transition. Whether, and to what extent, global capital could be harnessed in a reformed sector of this kind, is another major question.

Further light on this, comes from a large number of projects, which have assisted communities in introducing processing by means of sawmills. Outcomes from this are also mixed with explanations including low quality input resulting from poor air drying, and having to split larger trunks into smaller dimensions to be able to carry them out of the forest, thus reducing recovery rates. Also, many sawmills carried a social obligation to buy all qualities and dimensions of timber harvested from the CBFM timber productions and at certain prices, which may not be correlated with regular market prices, rendering sawmill output uncompetitive or non-profitable. Combined with communities producing logs regardless of demand (i.e. not to order, but e.g. according to ACC), demand and supply was decoupled and prices were insufficient to generate profits[23].

Smoother, more gradual transitions might be considered to provide time for learning less expensive lessons. In Guyana, for instance, instead of establishing larger permanent sawmills, portable technology is available in the form of chainsaws, with or without frame attachments called

boardmills, and circular blade or thin kerf bandsaw blade portable mills. Lumber cut by chainsaws show recovery rates of between 30-45%, boardmills 50-55% and portable mills 50-60%. By changing the method of forest harvesting, it is thus thought possible to more than triple the initial productivity, create substantial gains in employment, and greatly increase benefits to communities – between 50-75% of the final sales price would be retained in the source community (Mendes and Macqueen, 2006)[23]. Significant value could thus be added without necessarily going all the way in terms of capital investment and building all skills at once, allowing time to explore markets more fully at lower cost.

Another option for communities to avoid large investments in machinery, and possibly also some of the bureaucratic costs, is for them to subcontract commercial timber operators to exploit the forest. This is, however, found associated with a higher risk of elite capture and negative environmental consequences. An illustrative example comes from Brazil, which has seen an enormous rise in number of forest management plans in smallholder forests in Brazil executed by timber enterprises as the commercial sector has seen an opportunity to take advantage of the simplified rules for small-scale forest operations established by many Amazonian governments. As described by Lima et al. (2003), in these agreements, the companies assume the responsibility for complying with the legal requirements such as the elaboration of forest management plans, providing technical support and carrying out the field operations, while paying the families for the product, and sometimes also receiving some advanced payments to cover local investments in time and material. The analysis of a pertinent case study in Rondônia, however, indicates that such agreements may induce predatory behaviour of commercial logging operations, with the benefits for the smallholders remaining little better than under the former illegal schemes (Martins, 2008). Were 'savings' to benefit smallholders instead of companies, though, and environmental obligations safeguarded somehow, this would still fulfil the original purpose of introducing simplified requirements in order to improve the livelihoods of forest-dependent communities.

Box 10: Outgrower schemes

In the Philippines[2], smallholder farmers can plant forest trees in their private lands, which later can be harvested to provide income. The history of smallholder forestry can be traced back to the tree farming contract program of the Paper Industries Corporation of the Philippines (PICOP) in the 1970s. Under this program, Paraserianthes falcataria were planted in individual lots and, upon maturity, bought by the company to augment its wood supply for the production of pulpwood. The assured market encouraged farmers to raise pulpwood in their private lots. This has expanded to include other species such as Gmelina arborea and to a lesser extent, Acacia sp. and Eucalyptus deglupta ,which were promoted as "million-peso trees". The program became a profitable enterprise and an alternative to costly reforestation programs of the government until it reached market saturation that eventually resulted in a price decline. A study by Santos-Martin and others indicated that this can still be reversed if the government would provide an enabling environment in the form of market access and tax exemption for harvesting native species planted by smallholders[2].

In Brazil[23], pulp and paper company Klabin works with timber outgrowers in a variety of joint ventures that have generated annual income for farmers ranging from US$76 to $217 per hectare. In South Africa, outgrower schemes involve some 12,000 smallholder eucalyptus growers on about 27,000 hectares of land. The two schemes with the largest membership are operated by the country's biggest forestry companies, Sappi and Mondi.

The schemes have contributed substantially to household income, providing participating households with an annual income of about US$ 130 per hectare – averaging about 20% of the income needed to be just over the national 'abject poverty line'.
The South African schemes have been available to even the poorest and most labour deficient of smallholders, because of the credit extended by companies, while non-landowners have benefited in some areas through employment as weeding, tending, harvesting or transport contractors to the landed smallholders.

Outgrower schemes could also possibly serve the same purpose as subcontracting external, commercial timber companies. Although not directly applicable in their original form, outgrower schemes have had some success in attracting smallholders to reforestation programmes (see Box 10). However, if outgrower schemes offer attractive features such as minimising risks and investments by communities/HHs and providing a stable market, the use of "tied" credit deals that

oblige local producers to sell to individual private traders/companies often consolidates control and market power in the hands of the buyer.

In a similar vein, Molnar *et al.* (2006) identifies a need to reduce forest market monopoly and diversify the pool of market intermediaries, if optimal flexibility and price is to be attained [21]. Likewise, local producers harvesting in public forests should be free to sell to any buyer and should not be restricted to selling to a forest agency monopoly, which is theoretically also an option to achieve economies of scale in reaching markets.

Forming e.g. cooperative, producer-owned second-tier organisations across individual CBFM organisations could potentially also serve the same purpose (over time) as contracting external private companies. This would require the same type of investments as capacitating individual CBFM organisations, but would allow a higher degree of specialisation and economies of scale. Where these organisations thrive, CFEs can reduce certification and technical service costs, group capital and group market share[21]. Getting them to thrive is not a straight-forward venture, though.

In Guatemala, 11 out of a total of 16 first-tier CFEs (12 community concessions and 4 cooperatives or municipal *ejidos*) have joined a cooperative group of producers (FORESCOM), which emerged during the phase-out of a USAID-funded project. This new regional structure for secondary wood transformation, group marketing and enterprise investment looks to be an interesting business model for addressing scale and capacity, but also a potential source of conflict. The potential lies in a clear labour division between CFEs, engaged in primary wood transformation and commercialization of precious woods (mahogany, tropical cedar), and second tier associations and cooperatives in charge of secondary transformation of precious woods, primary and secondary transformation of lesser-known species, and commercialization of the derived products[21].

Actual and potential conflicts lie in the competition between CFEs and second tier cooperatives, in particular in terms of employment generation and benefit sharing; these conflicts result in lack of planning security for FORESCOM, when first-tier CFEs are reluctant to commit certain volumes of wood for processing and marketing by FORESCOM (Stoian and Rodas 2006a, 2006b)21. Indeed, some members of FORESCOM are ambivalent about collective marketing, and continue to sell wood and non-wood products in parallel, and to invest in their own milling capacity to keep their options open[21].

A similar 'unsolidarity' is found by Pokorny et al. (2008). They found that during high price periods, producers tended to ignore designated marketing channels (often a cooperative) and started to sell their production directly to traders. Besides seriously affecting existing contractual obligations or the operation of rural marketing cooperatives, this sometimes led to the complete loss of certain lines of production as in the case of agro-forestry systems established with considerable effort over several years (Hoch, 2009)[8].

Isolated case studies *do* suggest that communities could earn a substantial income from the forest if they take control of harvesting and processing themselves (see e.g. Box 11), but ties it firmly in with substantial investments in capacity building (see Guatemala case in Box 11) to build organisational and technical skills far beyond the usual capacity of local communities[6]. The break-even point is unfortunately not a one-size fits all.

An illustrative example is found in Nepal, where an analysis was sensibly conducted to determine the point along the concrete production chain at which the greatest net value could be realized by the CFUG, i.e. the point at which the product should be sold for profit maximisation. The CFUGs in question could sell stumpage (i.e. the standing tree), logs at roadside, logs delivered to a sawmill or sawn timber depending on how much profit they wanted to make and how much they wanted to invest and extend their activities (i.e. take on risk). The product value along the production chain increases, but so do the production costs and related risks. Despite CFUG-owned sawmills, this analysis concluded in favour of selling logs[23].

Whether or not the poor returns to forest owners from selling to the CFUG sawmill are indeed offset by additional local employment and occasional profits generated by community sawmills is not easy to determine, but the specific case suggests that log harvesting and transport actually employs more, particularly poor, people further reinforcing the attractiveness of selling logs, compared to sawmilling[23]. The project has compiled a checklist for future sawmill ventures (see ANNEX 5).

The abovementioned trade-offs prove representative of possible solutions to the disproportionate costs for small-scale CBFM. Maximising net profit and minimising risks is achievable, but comes with a trade-off; decreased gross and potential net income, curbed maximisation of profits (captured by companies instead) and risks associated with depositing decisions (and potential profits) at a level one step further removed from local communities (e.g. decreased transparency and accountability, elite capture, mismanagement of natural resources). It will take case specific assessment to judge, which trade-off balance is preferable in economic terms, and putting tailored measures in place to minimise risk of elite capture and environmental degradation.

CBFM organisations also frequently encounter disproportional barriers from discriminatory taxes, fees, royalties, and subsidy systems. Instead, forest agencies could potentially avoid front-loading permits; more money may be raised by back-end taxation, as is done in most other economic sectors, which would lower barriers for low-income producers[21]. Similarly, national trade policies commonly disadvantage community forest producers; for example, Indonesian policymakers earlier imposed high export taxes on both sawn timber and logs to promote domestic wood processing, in the process harming millions of rubber farmers, who sell rubberwood (ASB 2001)[21].

Income is not only potentially shared with government agencies; middlemen along the timber value chain influence final profits to communities significantly. In many cases they play a substantial role in the grading, valuing, harvest, transport and further trade of smallholder timber. All else being equal, this limits the share going to smallholders. Most regional studies indicate this share as typically below 15% of the value chain up to the sawn timber stage.

Above and beyond? Costs of environmental and social branding

Where suppliers of timber in particular wish to enter markets in developed countries, typically representing a higher price opportunity, formal or informal requirements for either verification of legal origin (e.g the EU) or sustainability must be met. These markets are expected to provide opportunities for supplying higher value products (finished products) and/or price premiums in return for such documentation of social and environmental consciousness.

However, even where verification of legality is tied in with recognition of national rules (as with the EU VPAs) some additional costs are placed on communities. See Pulhin & Ramirez (2016)[2] for a breakdown of all costs associated with legal compliance, and along the timber value chain in the Philippines for CBFM operations.

Where voluntary third party certification is sought, this also carries additional and often quite substantial costs. Several authors have questioned if the potential price premium for sustainably produced timber and other wood products is likely to match the incremental costs of SFM (FAO, 2005b; Sengupta and Maginnis, 2005). Though admittedly permitting wider access to markets, they found the costs associated with e.g. FSC certification to be disproportionate in relation to the benefits generated[21], although some CBFM organisations have been able to turn FSC certification into additional profits (see Box 11 and Box 12).

For the majority of the emerging CBFM organisations, the main barriers to their success are much more important to resolve than certification and for most, the likely buyers are not interested in certified forest products, particularly those in domestic market chains. Were additional funds made available to these CFEs, it is questionable that they would prioritize investment in certification over

more pressing priorities, particularly as their failure to remain in business is a greater present threat to the resource, than less than optimal SFM practices[21] or having sound SFM externally certified.

Ecosystem services

While yet to materialise on a significant scale, payments to communities for ecosystem services hold a certain promise. Carbon sequestration sales look set to be facilitated via state-wide systems for benefit sharing, lowering potential earnings to communities, but on the other hand also implying that investments in building systems marketing ES, generating knowledge of carbon sequestration rates and developing measuring and monitoring systems predominantly fall to governments or other development agents outside communities. Community involvement is required for site-specific quantification, but can often be tagged onto pre-existing inventories and monitoring systems. As of yet it is difficult to find examples of concrete costs to local communities for participating in ecosystem markets. Some authors point to community-based monitoring as an opportunity, though, for generating income, reference is made to the section on community monitoring (p. 16).

Accessing the ES market on an individual case basis, on the contrary, implies significant costs. It requires identification of potential buyers, facilitation of agreements and determination of the quantity and quality of the service in question, and conditions of supply and payment. Once agreed, service delivery will have to be monitored and transactions supervised. Ultimate selling price and division of costs will be decisive, but up to individual negotiations - possibly with intermediaries such as NGOs sharing costs as well.

BENEFITS

There is widespread agreement that for community forestry projects to succeed, they must indeed supply an early and regular supply of material benefits to CFG members (Calderon and Nawir, 2006 in the Philippines; Tenenbaum 1996 in Mexico; Pokharel, 2011 in Nepal)[13].

Benefits from CBFM may be harnessed by either the private HHs in the community or the village or community as a whole, or some combination thereof. The choice is likely to influence basic service delivery (investments in community public goods) and social cohesion[13]. Benefits may accrue from an increasingly wide array of forest-based timber, non-timber or service commodities; each type of commodity with its own set of cash or subsistence benefits associated, as well as potentially non-tangible social or cultural benefits. Often (not always), the degree of sophistication implied for 'harvest' and commercialisation increase from NTFPs to timber to ecosystem services, from subsistence use to commercialisation of value-added, finished products.

Both pre- and post-CBFM use, access and dependence patterns show differences between HHs of different social and ethnic standing and gender, reflecting internal power relations, and impacting CBFM benefit size and distribution. This has implications for the motivation of different segments to participate in CBFM and naturally the social profile and legitimacy of CBFM. In other words, the choice of which forest management objective(s) and products to pursue has distributional consequences, and should thus be a conscious choice.

This is supported by a comparative analysis of environmental income from approximately 8000 households in 24 developing countries collected by research partners in CIFOR's Poverty Environment Network (PEN). Environmental income accounts for 28% of total household income, 77% of which comes from natural forests. Environmental income *shares* are higher for low-income households, but differences across income quintiles are less pronounced than previously thought. The poor rely more heavily on subsistence products such as wood fuels and wild foods, and on products harvested from natural areas other than forests. In absolute terms, however, environmental income is approximately five times higher in the highest income quintile, compared to the two lowest quintiles[26].

In the following, benefits accruing from timber are the chosen focus with shorter sections on the benefits stemming from NTFPs, multiple forest use and ES. The internal and external distributional issues associated with each category are also discussed. First, however, we look at the implications of choosing an individual HH-based organisation of CBFM vs. the village or community as the formal beneficiary entity of forest management privileges.

Community versus individual households - benefit generation and distribution

Analysing differences in benefit generation and distribution as a result of more or less collective CBFM organisation is complicated by the myriad combinations found. Moreover, CBFM usually implies the right to regulate internal use, i.e. benefit distribution, which means this may also change over time by conscious decision or default. Some CBFM organisations have indeed started out with high participation only to see it dwindle over time. In other cases the whole village/community has been invited to series of meetings on CBFM, but only those with persistent motivation and (self-?) interest have persevered and ultimately formed a group of motivated HHs/individuals with whom government agencies have signed a CBFM agreement. In other cases yet again, a democratic election decides on community representatives to form the management entity. Selection of and change in participants may thus happen both before and after a formal CBFM agreement has been signed.

There is general consensus, though, that a minimum of private benefits to individual/HHs is necessary and some proportionality is required between the inputs provided by individuals/HHs and the privately obtained benefits.

Where timber extraction is concerned, collective action is a more obvious choice if standing trees or stumps are not the commodity. The harvesting, transportation and potential processing efforts call for more muscle (physical, financially and skill sets) than individual HHs can typically muster. Also, as pointed to under costs discussions, one of the largest obstacles for CBFM profitability is economies of scale.

In most cases, retaining part of the income generated from CBFM operations would mean a more pro-poor impact. Where membership of the CBFM organisation is more inclusive, it is also more likely to exhibit preferences for 'welfare services' and collective profit sharing, since the poorest/most marginalised segments with less ability to seek out alternatives are likely to favour basic livelihood security. They are typically in a position, where if part of the profits are not used for public benefit, the funds will be captured by better-off HHs anyway, and they are usually in a disadvantaged position to exploit the full potential for capturing private benefits.

Communities with community funds typically investment in schools, scholarship funds, communal halls, health and pension funds, emergency services, micro-credit funds, employment in new activities, training and specific skills building and investment in road infrastructure[21]. In Nepal, “forestry funds” are a core feature of community forestry. The income for these funds comes from timber sales, NGOs, and penalties and fees. For instance, Pokharel (2008) found that CFUGs earned an average income of 63,000 Nepali rupees (a little less than $1,000US) per year, thus increasing local development funds significantly[16].

Despite their benevolent intent, however, it is not clear that community investments from these funds (such as schools or community halls) create the right incentives since they provide equal benefits to households that do and do not follow community rules (free-riding). Furthermore, there is some evidence from India that the infusion of funds at the beginning of a reform program may not have sustainable impacts because communities lose interest in the program once the funds have been used and allow forest use rules to lapse (Ghate and Nagendra 2005; Kumar 2002; Matta and Kerr 2004)[16].

Timber-related benefits to communities

Cash benefits from commercialisation are typically considered the most important timber-related benefits, whether accruing from wages or trade profits directly.

Differences across national policies allow anything from full *de jure* and *de facto* ownership and commercial extraction of timbers from CBFM to conditional NTFP collection for subsistence use only, which naturally affects the potential for timber-generated income. As indicated in previous sections, the theoretical possibilities for timber-generated profits are modified by costs generated by capacity building, equipment, legal and bureaucratic requirements (management planning and monitoring etc.), the benefit sharing between communities and external parties (revenue sharing or taxes, transaction costs and middlemen), and the caps put on the amount of harvestable timber by sustainability criteria.

Box 11: Commercially successful timber-focused CBFM cases[1]

In Mexico, with an investment of $1.1 million over three years, the operation increased sawmilling efficiencies and lowered production costs by 43% without sacrificing jobs. A greater focus on secondary processing and investment in their business led to a change in annual profits from minus $561,646 to plus $1.7 million.

In Guatemala, FSC certified community concessions increased their revenues by 209% to $5.8 million. Improved saw milling efficiencies and higher grades of mahogany along with FSC certified mahogany price increases drove the increase in revenues as did the addition of a FSC certified non-timber product. Employment increased for women through value added processing for non-timber products. Investments by communities themselves have been modest but donor investments in training and technical assistance have probably exceeded $10 million.

In Honduras, cooperatives banded together to provide semi-processed mahogany for export to certified markets, changing their production chain and adopting sustainable forest management practices. With only a 19% increase in volume harvested, revenues have increased by 128% to $579,375. Actual production costs rose 40% from 2006 to 2008, due to increased costs of forest management and taxes, as well as the extra care needed to produce quality mahogany grades. The cooperatives have invested over $113,000 in simple machinery.

Nepal is at one end of the spectrum, as all timber and non-timber benefits from village forests accrue to communities as long as pre-agreed rules of extraction are followed (Kanel, 2008)[16], which naturally provides a much better background for making timber a profitable venture, all else being equal. In India, communities' access under JFM is mainly to NTFPs, small timber, and fuel wood, which is similar to the traditional rights enjoyed prior to JFM (Upadhyay, 2003). Timber benefits under JFM are shared in varying degrees with the state, which is in charge of harvests (Balooni et al. 2010; Behera and Engel 2006)[16].

While there are some examples of significant timber benefits from community forestry[16] (see e.g. Box 7, Box 11 and Box 12), sharing these returns with the government can reduce profits significantly. Communities have therefore in some cases been shown to be less interested in the returns from timber than in the more regular benefits from NTFP and wage employment. In a study of West Bengal, Dutta et al. (2004) find that the annualized value of timber returns, where timber was actually felled, was only approximately 30 US cents per person per year. In addition, state timber payments are net of costs (such as supervision and transport costs) that are not clear to villagers, and government inefficiencies can increase these costs over time (Behera and Engel 2006; Sarker 2009; Shylendra, 2002)[16].

Despite implying a risk of premature harvest of trees, a timber/tree related benefit to many smallholders is their value as savings, which may be capitalised in case of emergencies, such as is known from livestock. On a small scale this is only a plus. On a larger scale it is obviously problematic, and does occur in e.g. Indonesia and Lao PDR, where smallholder plantations are often harvested prematurely before the timber reaches optimum diameters, and subsequently optimal value per volume. Several studies in the region identify immediate cash needs of the smallholder producer as the dominant factor in deciding on rotation times overriding long term economic benefits, thus stressing the pertinence of incorporating short-term income options in CBFM. Proof of documentation of legal rights over forest or plantation management has also made it possible for standing trees to be used as collateral in microfinance schemes, even without actual ownership of

land. The ability of such schemes to 'unlock' the capital tied up in standing trees may effectively reduce early harvesting of plantations to meet immediate cash needs.

Subsistence use or internally subsidised purchase of timber is naturally also a benefit to local communities. There are, however, also distributional issues related to the subsistence use of timber. For example, although CFUGs in Nepal sell surplus timber at market prices, they also sell timber to local households at a less-than-market rate. However, since the poor generally do not buy timber for building houses, these rather large timber subsidies mainly benefitted wealthier households (Pokharel, 2008; Yadav et al. 2003)[16]. Even without subsidies, equipment out of reach for the poorest may be needed to benefit from access to timber sources.

Where CBFM is focused on reforestation as an element of managing for timber production, cash benefits accruing from either supplying (casual) labour in e.g. reforestation projects or 'payment for reforestation performance/results' may be a substantial motivation for participation. Being of a temporary character, however, such community forestry projects were found likely to stagnate without longer-term income generating activities (Calderon and Nawir, 2006; Pandit et al., 2009) or render local participation passive rather than active (Méndez-López et al., 2014)[13].

Potential for job creation

Employment in timber production generally tends to be less labour intensive than agriculture – thus forestry's employment creation and general success has been greatest where agricultural potential is lower (Angelsen and Wunder, 2003; TFD, 2006). Timber production is also generally considered less labour-intensive than NTFP, but still holds significant potential; how much depends on forest management system and intensity and degree of subsequent processing.

Also, different scales of commercial forestry have very different costs of job-creation. A typical Chilean lumber mill creates one job for every US$1.3 million invested, while the Nuevo San Juan community forest enterprise in Mexico creates a new job for only US$12,000 (Jaffee, 1997 cited in Scherr et al, 2004)[23]. This may in part be due to technology and general productivity, but may also reflect a not uncommon community preference for additional employment rather than additional profit payments. Medina and Pokorny[8] indeed found that smallholders were more interested in maximizing employment opportunities, and instead of saving profits, they preferred to distribute such eventual profits. They also showed resistance in specializing in the new activities, and instead continued to value their traditional productive activities with flexible working agendas. This tallies with other studies, were the spatial and temporal distribution of work in more traditional production systems is preferred compared to more specialised or focused production systems, which are perceived to involve greater risk for participating families and communities.

Pulhin & Ramirez (2016) estimate that in the Philippines at least 60,000 full-time jobs could be created if communities were given rights to harvest and sell 500,000 m^3 of timber per year[2]. Other examples mention 25,000 ha (pine) forest providing fulltime work for 120 persons in its milling operations and another 180 part-time/seasonal work for timber harvesting and management.

In comparison, the number of jobs created by plantations seems to be in the order of 1 to 3 per 100 ha of plantation (Cossalter and Pye-Smith, 2003). However, these jobs may displace other jobs from the land. They are also primarily concentrated where processing facilities are located[23].

Benefits from forest management certification and social branding

Globally, forest management certification is one successful incentive for SFM, which is gradually becoming a standard requirement for timber suppliers and timber markets to many developed-country markets. In Kilwa, Tanzania, results show that annual average household forest income from FSC-certified forests is significantly higher than that of households in non-FSC-certified forests[27], and several Mexican ejidos are among the classic community FSC success stories (see Box 12).

Whether certified timber as a general rule actually fetches a premium price is however questioned, but not being certified can become an effective obstacle to market access[17]. To exploit the access to more lucrative markets with net profit as a result, though, sellers typically have to perform to a professionally very high standard and supply value-added products of high quality on par with conventionally produced timber products[26].

The possible explanation for the general absence of a price premium for certified wood may lie in the fact that the most important commercial successes in placing certified wood have occurred with large global retailers like B&Q, IKEA, HomeDepot and Lowes as key buyers. Unlike e.g. the specialty coffee market's small roasters, the markets controlled by these giant retailers are not readily accessible to small-scale or community-based forest producers in the South, but tend to seek out large-scale suppliers capable of providing them with raw material of consistent quality, specifications and timing. Also, the interest of large retailers in certification is often associated more with reputational risk management than a desire to brand themselves positively by voluntarily going 'above and beyond' the necessary.

Box 12: An FSC success story with numbers[21]

El Balcón is an ejido in the state of Guerrero in the highly diverse temperate forests in southern Mexico. This 25,000 hectare ejido of 750 inhabitants has one of the most advanced FSC-certified, sawnwood operations of all CFEs in Mexico, producing first-grade, dried pine lumber from its natural forests and surrounding communities along with roundwood logs and fuelwood. Its forests have received good management prizes on a number of occasions and are renowned for their pine and oak forest biodiversity, more than 4000 hectares of protected forest area, and endemic wildlife. The enterprise employed more than 120 people in its milling operation and another 180 temporary jobs for timber harvesting and management. Workers are covered by health and accident insurance and proceeds from the enterprise sales are also allocated to worker pensions, community emergency funds, and a number of social projects, including roads, water supply, community buildings, scholarship funds, and higher study grants.

El Balcón evolved in a zone characterized historically by violent, social conflict related to control of the area by powerful elites, rapacious timber exploitation, and land tenure conflicts. The residents of El Balcón colonized the area in the 1930s as part of a wave of immigration, into lands that were large estates of mainly absentee landlords. In the 1960s, the population radicalized in opposition to local elites and large timber concessionaires and government created a forest parastatal to reduce conflict. Ejido unions emerged in response to this, and conflict increased again in the 1980s with the rise of the drug trade. The CFE emerged in 1975 as a contractor to the parastatal. In 1985, El Balcón developed a new forest management plan and in 1987 installed a sawmill in the town of Tecpan, hiring a foreign mill manager in 1989 to run it. In 1997 the mill burnt to the ground, and the CFE replaced it with a world-class mill. By 2002, an ejido member became the CFE manager. Until recently, El Balcón sold most of its wood to an FSC certified US company, Westwood. In 2005, the ejido had a profit of US$ 3.6 million after taxes—82 percent of which was reinvested in the CFE, including environmental investments, and 18 percent invested in social goods and services.

Part of this reluctance may relate to mixed evidence on consumer willingness to pay; although several studies suggest that Northern consumers *would* be prepared to pay a significant premium for certified goods (Vlosky et al., 1999; WWF, 2001b; Rametsteiner et al., 1998; Thornber, 1999)[7]. And while environmental NGOs in developed countries have laboured to raise awareness, the characteristics of many wood products - unlike coffee - do not easily lend themselves to the personalized symbolic consumption strategies underlying the success of many organic or fair trade food products. Many wood products, furthermore, do not offer the consumer the low cost, low risk purchasing decisions associated with coffee consumption. Supporting a Fair Trade premium for high value non-perishable goods such as lumber or furniture requires a significant outlay by consumers. And - again unlike e.g. coffee - consumption of many wood products, such as construction materials, may not occur in public, and thereby may not provide the same range of social opportunities for a consumer's 'identity work[7].

No label identifying pro-poor forestry is yet available, but would constitute a means of distinguishing CBFM in the market. The fair trade system could potentially be employed, but has not been so far related to forestry.

Benefits related to non-timber forest products and multiple-use forest management

The total volume of benefits generated by a community forest may potentially derive from both timber, NTFPs and ecosystem services. Pursuing all three types of commodities - multiple forest management (MFM) - at stand level might theoretically optimise forest value, but would also require different management plans, skill sets and markets, and hence multiply costs (albeit also employment opportunities).

Also, in terms of temporal distribution of labour and biophysical forest management some of these uses may conflict, i.e. it may not be possible to optimise both timber and e.g. ecosystem services production at the same time, and some silvi-cultural treatments may damage NTFPs. Pursuing multiple-use forest management at landscape level would curtail some of these difficulties, but also imply more non-overlapping forest use.

Boscolo (2000) reports that most of the studies on trade-off curves between competing timber and non-timber outputs lack empirical testing, but uses a simulation model with data from a 50-ha research plot in a primary tropical forest in Malaysia to show that in most situations dominant use is likely to yield superior returns to multiple use at the stand level. This is due to high fixed cost of forestry operations (infrastructure planning, inventories, mapping, etc.) - combined with technical complexities of MFM (lack of silvi-cultural knowledge and expertise to integrate multiple products). However, in circumstances where the influence of these aspects is reduced, e.g. logged-over forests with lower fixed costs associated with re-harvesting, or community forestry at smaller scales and with less need for infrastructure, multiple uses within the same management unit may yield superior returns to land-use specialization[17]. Initial investments in inventories, zonation, in mapping temporal labour patterns and income gaps under these circumstances, and other benefits than cash, may prove MFM desirable based on the perceived sum total of benefits.

Box 13: NTFP Butterflies[21]

The Amani Butterfly Community Based Enterprise (ABE) is located in the East Usambara Mountains in highland forests, and is one of the few cases of CBE and pilot Participatory Forest Management (PFM) in Tanzania. ABE breeds and exports dry butterfly specimens and butterfly pupae to live butterfly exhibits in the UK, Europe and North America since December 2003. It also conducts conservation, social development and training activities among local communities, and work with ABE fits in well with the remaining agricultural calendar.

In 2005 the company made US$ 45,000 in sales, up from US$ 20,000 in 2004, and has a potential annual income as high as US$100,000, partly due to the extensive market and the limited competition of African suppliers. Proceeds from sales are divided as follows: 7 percent goes to a Community Development Fund, 28 percent is used for ABG management salaries and running costs, 65 percent is paid back to farmers, which has led to an average 15 percent increase in their household incomes.

ABE is an exemplary CBE because it simultaneously addresses in a sustainable fashion several local issues: promotion of forest conservation, particularly that of biodiversity 'hotspots'; gender conflicts; underemployed populations' needs; communal development; farmers' needs to produce as individuals rather than as groups; and the need for more successful models of CBEs in Africa. The enterprise manages all stages of production and sales.

Benefits from NTFPs

As mentioned briefly in section 3.2.2 (p. 20) NTFPs have been considered primarily for the poor (and timber for the rich). Many CBFs work deliberately with diversification, both to create more employment as well as reduce risk, at the very least until markets for a wider range of timber species are available. The Bolivia, Cameroon, Guatemala, Mexico, and Papua New Guinea enterprises all seek greater diversification, in part because investments in non-timber activities tend to be less capital-demanding, and financing sources continue to be limited[21].

Employment estimates in the NTFP sectors are extremely complicated, however, because of the multiple income streams of most collectors and traders of NTFPs and because of the large, undocumented domestic collection and trade (Lewis et al. 2004)[21]. The typically high labour-intensity of finding and collecting NTFPs plus the low entry costs suggest a certain potential for job creation if sufficient income can be generated from the activities. Highest potential for income generation is

likely found with species with a certain density at stand level, which is perhaps less likely in very biodiverse forest.

Substantial income from NTFPs are seen, though, as in the case of e.g. rattan, coffee, and certain spices and some have been so profitable that they have been domesticated in agro-forestry systems. Management of NTFPs in a multi-purpose forest system is, however, potentially faced with a range of intricate technical trade-offs in forestry production and marketing. Still, managing forests for multiple purposes remains a valid management alternative under specifically favourable local context conditions, especially when practiced at the landscape scale, but these conditions are less frequent than commonly assumed[17] (see more below).

Recent studies in Mexico and Bolivia (Marshall et al. 2006) have documented that commercialization of the NTFPs does not restrict its accessibility to the poor in the wild, that women are seldom the only ones involved in NTFP markets, but take more responsibility for processing and cultivating, but also that most markets are informal because of the lack of legal treatment of NTFP collection and commercialization[21]. The latter suggest an opening for getting women involved (even more) in value-addition and commercialisation of NTFPs.

Benefits related to ecosystem services

Ecosystem services provide benefits both in the form of possible payments for ecosystem service provision, but also in the form of the services themselves. Some ES provide global benefits, such as carbon sequestration for climate change mitigation, others local or regional services such as provision of clean and ample water. The latter typically has a more immediate importance to the poor, since they have fewer resources to seek out alternatives (the classic example is buying bottled water, when local water sources dry up or are polluted). Maintaining locally scarce and/or important ecosystem services flowing thus have important implications for the livelihoods of the rural poor. Some researchers and practitioners speak of environmental (in)justice, where such ES provision is neglected and impacts different social strata differently.

While payments for ecosystem services do not yet flow to local communities in quantity, some countries have put policies in place to facilitate such payments and some are working on the more operational aspect of putting mechanisms in place for benefit transfer.

A few countries have functional systems, though. Vietnam, for instance, has linked different payments for environmental services, such as the PFES (Payment for Forest Environmental Services) and REDD+ (Reducing Emissions from Deforestation and forest Degradation and enhancement of carbon stocks) to forms of community-managed forests. The PFES program has been implemented nationally since 2010. As an incentive to encourage communities to get involved in forest protection and management, the PFES scheme compensates communities for forest protection activities[5]. The Costa Rican PES raising funds from petrol taxes is probably the oldest national scheme in existence to support forest protection, but the additionality is probably not 100%. Landholders in critical watershed areas in Costa Rica have annually been paid between US$ 30 and US$ 50 per hectare of land. In Mexico, similar levels of payment are also planned (Khare 2005)[21].

In the recent years, a larger number of REDD+ pilot projects have emerged to complement the individual project-based PES initiatives. Both types have yet to mature and thus provide evidence of sustainability of particularly funding in the case of individual project approaches.

If and when PES becomes available to CBFM, it holds the potential to offset some of the additional costs and/or foregone income associated with SFM compared to conventional logging and thus render SFM products more competitive.

The potential for job creation related to PES stems primarily from an initial stock taking and subsequent monitoring of ES delivery. Whether this will mean a net profit depends on the payment size, and the distribution of monitoring costs between buyer, facilitator (national agencies) and

suppliers. Where communities only have user rights, i.e. state retains ownership, communities may gain regular employment in monitoring ES (See also p. 15).

Benefit distribution between communities and external parties

Since costs to some are simply benefits accorded to others, the factors detracting from community benefits are dealt with in the previous sections on cost. The focus here is thus on the basic issue of provisions catered for in PFM/CBFM agreements with state governments.

Across developing countries benefit distribution between communities and state take on quite varying proportions. A major factor in deciding this is, naturally, the degree of devolution of tenure. In Nepal, as mentioned, all benefits from CBFM accrue to the CFUGs. Uganda is representative of CBFM policies in many other developing countries. The distribution of benefits are negotiated and concretised into an area-specific agreement or memorandum of understanding. The flexibility that comes with negotiations is good, but in most cases, community groups do not have sufficient capacity or clout to effectively negotiate with government institutions as equals. Even after formal agreements have been signed, institutions on both sides may sometimes flout the provisions of the agreements without fear of any legal consequences under circumstances of weak rule of law or high corruption levels; conditions common to many developing countries[34].

Competitiveness in global markets as a consequence of CBFM costs and benefits

Development agents have highlighted the inclusion of local poor in value chains and markets as a crucial prerequisite for the successful environmental protection of forests since the 1990a (Schmink and Wood, 1992; Nepstad and Schwartzman, 1992; Becker, 2005), and consequently promoted products from CBFM (timber as well as NTFPs) (Homma, 2005; Almeida et al., 2006; Hoch et al., 2009). In search of attractive prices, most of these initiatives have oriented production to external, often international markets. Many initiatives also considered possibilities for adding value, by cutting out intermediaries or involving locals in processing of the harvested products (Amaral and Neto, 2005)[8]. As indicated in the section on costs, smaller CBFM are born with an economies of scale disadvantage, and going up against commercial actors supplying identical products should therefore be carefully considered before venturing ahead.

The considerable start-up costs (incl. capacity building) are typically insurmountable for local communities, even if they are collectively organised in some shape or form; with the possible exception of 'organically grown' self-started initiatives. Start-up costs are therefore usually met by external (to communities) development agents, and is a large factor in bringing CBFM closer to markets. While this - despite costs occasionally being exorbitant - enables targeted communities to move ahead, it does not bode well for potential, spontaneous multiplier effects and implies huge investments to reach critical mass for commercially successful CBFM, if the ambition is to take local communities from the present general state to participation in global markets in one fell swoop.

Potential competitive advantages of small producers

However, while small scale producers, incl. most CBFM areas, are generally disadvantaged by their sheer size, they do potentially hold some competitive advantages in certain circumstances. Some small-scale farm producers may be able and willing to supply products at a lower cost than large scale or corporate suppliers, because of lower opportunity costs for land and labour, lower production costs from intercropping, or because they value collateral benefits such as local employment, environmental services or local lifestyle in addition to cash benefits. Timber trees can be managed and harvested during periods when labour demands for other activities are low. Farm trees can increase agricultural productivity when grown as windbreaks, fodder banks, live fences, or nurse trees for perennial cash crops. Local producers may be more familiar with local product and processing preferences, more flexible in supplying small quantities as needed to local traders or even

niche SME buyers in the global market, or providing fresh supplies of perishable NTFPs (Current et al. 1995)[10].

In other geographical areas, large-scale logging companies may be associated with heightened reputational risks, e.g. in areas where governments are not considered a legitimate guarantor of legality, sustainability or social responsibility. In such cases, smaller community areas may present more legitimate sources of forest products. Indeed, the likelihood that local people may have a greater ability than outside companies or agencies to protect forest resources from risks like encroachment, illegal harvest, fire and social unrest, because of superior capacity for monitoring and community interest in forest protection is considered a critical factor by insurance companies in assessing forestry risk and insurability[10].

Also, when dealing with ecosystem services, economies of scale may be cancelled out by the site specificity; i.e. a specific watershed of crucial importance to downstream rain-fed agriculture is not easily substituted by a larger reforestation scheme elsewhere.

In practice, however, many initiatives have failed to generate the desired commercial outcomes[8]. An analysis conducted by Pokorny et al. (2008)[8] in the Amazon Basin is illustrative of many of the challenges faced by CBFM: in a global market, the region competes with other production sites around the globe and suffers some significant competitive disadvantages, in particular long distances to markets, poorly developed infrastructure, limited soil fertility, risks of flooding and drought, pests and diseases, high fire risks, and a conflictive social dynamic with regard to land-use caused by inequitable land distribution (Clüsener-Godt and Sachs, 1995). Many NTFPs, which are often perishable, require additional investments in logistics or processing, while for timber, only highly productive mechanized harvesting schemes or investments to generate further added value may generate acceptable profit margins. Successful cases generating profits are often associated with unique, interested buyers paying an extraordinary high price for products[8].

The latter willingness to pay is often associated with products being branded as particularly environmentally friendly or socially just, such as 'organic' or 'fair trade'. Whenever products are ultimately consumed or displayed in a social setting this reinforces the chance of success, as does a product profile where end consumer involves low cost and low risk[7]. Coffee is mentioned as an example of a product, where - because cost per unit and risk is low to the end consumer - a disproportionately higher premium is achievable, as opposed to e.g. timber[7]. The coffee commodity chain is also illustrative of the relative challenges faced by timber products. Despite a potentially high number of intermediaries, the coffee commodity chain is a relatively simple one; green coffee is a semi-processed raw material that is used to make only a few final products—roasted, brewed, or instant coffee for final consumption. Very few other inputs are used in the growing or processing of green coffee or its manufacture into final consumable forms[7]. Attempting to harvest, process and add value to timber products is typically more demanding in terms of both knowledge, skills, equipment and capital investment.

Competitiveness in local markets

Not many CFBM experiences reported on focus on developing local markets. One such experience, though, reports honey, furniture, doors and coffins sold at local markets against very low prices (as a results of the low buying power of local people). This use (of otherwise valuable hardwoods) takes place in competition with Chinese loggers operating illegally, but who are willing to employ or compensate locals to access the valuable hardwoods in the area[3].

While low-income producers are unlikely to be competitive in export markets for commodity-grade timber, which require large volumes and high product consistency there is potentially a large market for low-income producers in commodity-grade products for segments of domestic markets that do not trade in very large volumes. Urbanization, rural housing and infrastructure construction all demand large quantities of commodity-grade wood; intensification of agriculture demands wood for

fencing, storage structures, crop and tree supports, and packing crates. Iron and steel production depends heavily on wood energy. More than half the total roundwood harvested in developing countries is burned directly as fuel wood or charcoal, and wood fuel demand rises in the early stages of economic growth, even as growth in use of substitute fuels accelerates[10].

Indeed, the fastest-growing demand for wood products is in domestic markets of developing countries. These markets could offer significant economic opportunities for hundreds of millions of small-scale agro-forestry producers, in market niches where they can offer competitive advantages such as control over commercially valuable tree resources, lower cost structure or national branding for domestic markets[10].

4. Present status of community based forest management in Ethiopia

4.1 Background for PFM in Ethiopia

Pressure on Ethiopian forests and drivers of land degradation are expansion of agricultural lands, overgrazing and trampling by livestock, and the demand for fuel wood (the source of 90% of Ethiopia's energy requirements), as well as timber poles for construction[29]. The latter points to a market for CBFM-produced timber. Moreover, the resettlement programs undertaken by the Ethiopian government (in the 1980s) and expansion of foreign investment has also been cited as a major challenge for the remaining forest resources of the country[19].

The current government of Ethiopia clearly articulated the seriousness of forest destruction in the Climate Resilient Green Economy (CRGE) document (FDRE, 2011) and as a solution, the reduction of demand for fuel wood by disseminating fuel efficient stoves; increasing afforestation and reforestation schemes; and promoting area closure via rehabilitation of degraded pastureland and farmland are forwarded as a viable strategy[19]. The strategy for agriculture and forestry specifically, also identifies JFM and PES/REDD+ as means to protect the future forest resource (see also annex 12). Social justice is an explicit consideration in all forest-related interventions, and PFM is highlighted as an intervention area[38]..In the Ethiopian context, PFM is recognized as a co-governance institutional arrangement where forest management responsibilities and use rights are legally shared between a government agency and a community-based organization (CBO), such as forest user groups or forest cooperatives[1]. A PFM implementation guideline entitled: 'The Key Steps in Establishing Participatory Forest Management: A field manual to guide practitioners in Ethiopia' has been drafted (see Figure 2)[1].

Ideally, communities organise themselves into community-based organisations (CBOs). These comprise villagers, recognised by all as forest stakeholders, who voluntarily enrol as members, develop internal byelaws to govern relations of their members with the forest, elect managers of their organisation and formally register with the appropriate government agencies[22].

The key steps to establish the village-level institution are typically (1) screening forest users to be included in the new arrangement; (2) delineating the forest boundary to be managed; and (3) preparing the forest management agreement (FMA). Roles and responsibilities were grouped into forest development, forest protection, forest harvesting and forest monitoring, i.e. development activities, how much and which products to utilise, where and how frequent forest patrolling and protection need to be conducted and monitoring procedures to review the effectiveness of joint operations[22,1].

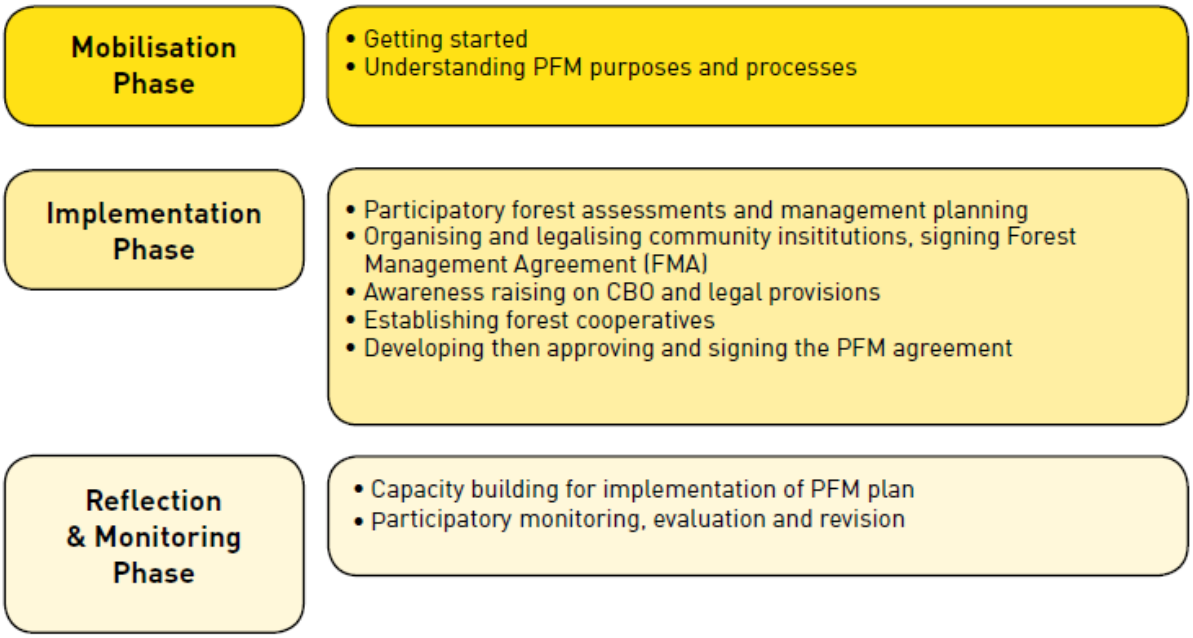

Figure 2: The PFM model presented in Ethiopia's Harmonised National PFM Guidelines[22]

Legalised CBO enters into a Forest Management Agreement (FMA) with the relevant government body, specifying roles, responsibilities and rights of both parties. The FMA also includes the internal rules (bylaws) that define the day-to-day decision-making process of the community organization. The FMA is considered a legally binding contract when it is signed between a community organization and a government agency[1].

4.2 PFM implementation in Ethiopia

At least five of the nine regional states are practising PFM today and have included it in their forest proclamations[22]. The forest laws of some regional states even include provisions for community-based organisations to share carbon credit benefits when realised. In Oromia state, an agreement has already been reached between the Oromia Forest Wildlife Enterprise (OFWE) and Forest Managing Cooperatives in the Bale REDD+ project that communities will be entitled to 60% of carbon credit revenues once realised[22]. Inventories of carbon stocks and sequestration potential of dry forests under community management have been conducted[20].

Over one million ha are under PFM agreements in 2017, but the majority is not currently under sustainable forest management[36]. Six substantial PFM projects operate in Ethiopia, mainly piloting buffer zone-cum-co-management developments in state forests in Oromiya Region. A particularly innovative approach is emerging in respect of the Adaba-Dodola Forest Priority Area (53,000 ha), in which forest dweller groups receive full rights over specific blocks of the forest on payment of rent for unforested areas in those blocks and on agreement to use the forest in a sustainable manner[18].

A general characteristic of the Ethiopian context is the pronounced ethnic mix of groups. This provides an additional challenge for effective and robust CBOs, but also constitute a problem, which PFM - if properly grounded - can help solve. A number of Ethiopian case studies fully illustrate the magnitude of the challenge, but also potential for successful outcomes when it comes to reconciling these conflicts:

- In one Farm Africa PFM project, ostracised groups such as the Manja community in south-western Ethiopia were better able to integrate with other groups and express their voices following the introduction of PFM (Lemenih and Bekele 2008)[22].

- Even though the PFM approach encourages women's participation, most of the female-headed households were not members of the PFM program owing to their double burden of work and cultural barriers[37].
- Findings by Tadesse *et al.* (2017) from the Gebradima PFM initiative revealed that the level of the forest users' participation was 65.7%, 59%, and 54.9%, respectively, at the planning, implementation, and monitoring stages. Gender, family size, education level, income from the forest, distance of the forest from home, restriction on charcoal and timber harvesting, elite domination in decision-making processes, and lack of incentives were found to be statistically significant predictors for the level of participation[37].
- In the Agama area, traditional collided with new as traditional forest management institutions recognized the customary use rights of the Kaffa and the Manja people, who are believed to be indigenous to the Agama area., as well as the Kambata people, who came to Agama in 1987 as a consequence of the resettlement policy, to use some forest products, such as firewood and farming materials, but only for subsistence. However, they are not allowed to harvest economically important forest products, such as honey, coffee and spices, as they are not generally perceived as legitimate 'owners' of forest plots[1]. Within this setting the new PFM CBO promotes an officially recognized communal arrangement in which all members have equal rights and responsibilities. However, the traditional arrangement was organized on the basis of individual holdings in which a few indigenous family members own adjacent forest plots that constitute the Agama forest block. Moreover, the traditional holdings are only informally recognized by locals' common knowledge. Consequently, the establishment of the new CBO spurred the already ongoing (but latent) struggle for resources, space and status between the settlers (Kambata people, the majority in terms of number), the Kaffa people (privileged by traditional institutions) and the socially disadvantaged Manja people[1].

It has been found that villagers often use the legal use rights induced through the new organization to defend their forest land from external competitors, particularly agricultural investors, rather than to change their forest management practices and internal (the community) power relations[1].

The performance of new institutional arrangements may be undermined not only because it lacks roots in the community, but also by lack of support from the outside. When an FMA is signed, it usually clearly states the division of responsibilities, i.e. that the CBO is not a replacement for the forestry department, which is to continue its usual regulatory and service delivery roles. In Ethiopia, FMAs typically state that the forestry department is expected to provide technical support (including legal support) and conduct a regular performance evaluation of the PFM implementation. However, in practice, these commitments are rarely fulfilled in accordance with the plan[1].

The importance of external support is also recognised in MoEFC's own forest sector review, which states that in areas where local communities are organized into community-based organizations (CBOs) and have taken on forest management responsibilities (e.g. in PFM), it is critical that these CBOs are supported by the judiciary systems (court) and police forces at local levels, and that woreda judges, police and administrators' decisions do not counteract the forest-protecting bylaws of CBOs. A possible solution to this dilemma is to more fully engage these state administrations in all steps of the PFM process, and organize regular awareness campaigns[36].

It has not been possible to find information on the average size of PFM areas. From south-western Ethiopia comes an example providing at least some figures for potential guidance on the characteristics of PFM participants: average household family size was 6.1, which was larger than the regional mean family size of 5.4 (CSA 2016). The average livestock holding per household was about 5.8 tropical livestock units (TLU). On average the respondents possessed 1.92 ha of land, which is higher than the national household average land holding size of 1 ha (CSA 2016). The size of the land owned by respondents varied from a minimum of 0.25 ha to a maximum of 4 ha. The average annual

income from the forest was 5948 Ethiopian Birr (1.0 US$ was approximately 22.0 Ethiopian Birr at the time of the study)[37].

4.3 Figures for the forest sector in Ethiopia

The domestic market demand for timber

General economic growth is a major driver for certain forest sub-sectors, especially pulp and paper consumption and industrial wood product consumption in the construction sector[36]. In recent years, Ethiopia has experienced double-digit growth rates and a conservative future estimate of 8% is employed for most projections, indicating a significantly growing market for forest-based products.

In 2013, Ethiopia consumed roughly 124 million cubic meters of wood, of which 116 million m³ is woodfuel (fuelwood and charcoal). The construction sector was the second largest wood consumer in Ethiopia with a total of roughly 6.6 million m³ consumed for new housing construction and replacement. Furniture production accounted for around 0.8 million m³. Additionally, more than 0.5 million m³ round- wood equivalents of paper products were consumed[36].

With population growth and economic development projections, total wood product demand will increase by about 27% over the next 20 years, reaching an annual consumption of 158 million cubic meters by 2033. Woodfuel (fuelwood and charcoal) will continue to be the main forest product consumed. However, with rural electrification and urban development, the relative share of fuelwood demand is expected to decrease, explained by growing needs for industrial roundwood, driven by the expanding construction industry and consumer demands of the growing middle class. Demand for wooden furniture – a high value adding sub-sector – is expected to grow by nearly 400% over 20 years to roughly 1.8 million m³ in 2033. Moving forward, investments to enhance the competitiveness of small and medium companies should be prioritized. In addition, the MoEFC Forest Sector Review suggests that a green and competitive public procurement policy could play an important role in securing demand for high quality and sustainably produced wood products, which could have a direct impact on natural resource protection[36], and potentially provide a comparative advantage for PFM.

Domestic supply and potential PFM suppliers

Current natural forest area in Ethiopia is estimated to be around 2.9 million ha. It is highly likely that a certain share of the roundwood in the Ethiopian market originates from illegal activities. Experts estimates suggest that between 30% and 50% of Ethiopian construction and furniture timber production is based on illegal harvesting, amounting to 2 - 3 million m³. Most of the woodfuel is provided from natural forests and woodlands (109 million m³). Small-scale woodlots and plantations account for roughly 7 million m³ of the woodfuel supply in 2013[36].

To meet the needs of Ethiopia's growing economy, a supply gap of 4.4 million cubic meters industrial roundwood will need to be closed over the next 20 years[36]. While establishment of huge new plantation areas is envisioned to supply the majority, timber can also be sourced sustainably from natural forests, given safeguards are in place to prevent unsustainable practices. The MoEFC Forest Sector Review (2017) suggests that participatory forest management (PFM) arrangements with forest communities could also contribute to closing the projected gap, if capacity is developed and policies are aligned and implemented. Over one million ha are currently under PFM agreements, but the majority is not currently under sustainable forest management. Around 2 million m³ could be sourced from sustainable forest management[36].

PFM arrangements cover approximately one million ha in Oromia. However, the extent to which this area is under regular management is generally unclear and industrial roundwood extraction volumes from PFM are unknown. The area could produce volumes of around 2 million m³ (sustainable

harvesting rate of 2 m³/ha/year). However, at the time of this Review, the only known PFM Forest Management Unit (FMU) extracting timber is Dodola, with marginal volumes supplied to the market.

In terms of potential producers, a 2017 UNDP survey indicated that as many as 11.6 million rural households (HH) in Ethiopia are relying on some aspect of timber and non-timber forest products (NTFPs) for their livelihood (see Table 4 and Table 5 for distribution). And an estimated 57 million economically active people among the rural population in Ethiopia are engaged part or full time in the collection of one or more of the forest products - typically combined with agriculture and/or timber.

Forest product	Woodfuel	Wood tooth brush	Animal feed	Construction wood	Traditional medicine	Twinning material	Natural honey	Coffee	Thatch grass	Wild plant food	Wild spice	Wild animal food	Incenses and gums	Support services to forestry	Bamboo
%	98.5	81.9	76.1	58.8	22.1	18.9	18.9	17.8	17.5	13.9	5.2	3.4	2.8	2.4	2.0

Table 4: Composition of forest product used by rural households in Ethiopia (sample: 3,360 HH across five vegetation strata of Ethiopia[30]

The gross extraction of forest products and income from support services to forestry for the survey year was Birr 10,782±451 per rural HH/yr (app. USD 513±21.5). Rural families make use of forest products locally to a greater extent (74%) than selling them (26%). The aggregate gross value of different forestry products and services produced by rural HH in 2014/15 was Birr 130.7 billion.

Forest related product and services	Mean gross direct use value of timber and NTFPs per actual collectors				
	Birr/HH/yr			Proportion of HH value	
	In-kind	In-cash	Sum	Share of in-kind income	Share of in-cash income
Livestock forage	5,795	49.3	5,844	99%	1%
Twinning items	139.5	6.5	146	96%	4%
Wood tooth brush	21.2	1.7	22.9	93%	7%
Wild animal food	1,457.6	145.7	1,603	91%	9%
Thatch grass	417	57.5	474.5	88%	12%
Bamboo	426.7	73.1	499.8	85%	15%
Wood fuel	2,458.2	554.5	3,013	82%	18%
Wild plant food	168.3	47.6	215.9	78%	22%
Wild plant based traditional medicine	244.7	103.3	348.0	70%	30%
Construction wood	1,345.8	974	2,320	58%	42%
Wild spice	298.5	360.4	658.9	45%	55%
Natural honey	707.3	1,095	1,803	39%	61%
Incenses & gums	172.2	1,647	1,819	9%	91%
Organic coffee	534.7	6,338	6,873	8%	92%
Support services to forestry		4,412	4,412	0%	100%

Table 5: Mean gross direct use value of forest products and in-kind (subsistence) vs. in-cash (sales) designation[30].

Based on Ministry of Finance and Economic Development (MoFED) estimate, the contribution of the forestry sector was about 3.7% of GDP of Ethiopia in 2014/15. If the net value added of all 15 sub-categories of forest products and services from the rural economy were attributed directly to the forest sector, the forestry sector provided 11.2% of national GDP in 2014/15[30].

In terms of the income resulting from engaging in the activities in **Error! Reference source not found.**, coffee scored as the 8th most profitable activity for rural HHs among all the potential activities, but the most worthwhile of forest-based activities given present conditions for forest use (see **Error! Reference source not found.**).

5. Relevance of international experience to Ethiopian PFM

The international experience provides significant lessons of use to PFM implementation in Ethiopia. It indicates which parameters are crucial for CBFM/PFM success by either their presence or absence and indicates the potential trade-offs in designing a PFM intervention. In general, trade-offs exist in the balance between:

- forest conservation *vs.* maximising income from forests (and thus poverty alleviation)
- full devolution of rights *vs.* risk of unsustainable use (in light of internal and external capacity to enforce)
- assurance of sustainability vs. costs of control and bureaucracy
- commercial effectiveness of CFUG *vs.* elite capture
- inclusiveness *vs.* quick(er) progress
- long term institutional sustainability *vs.* preparatory investments in funds and time
- complexity of intervention vs. time to self-reliance of PFM organisations
- value added vs. risk (higher investments/costs, more specialisation, distant markets)
- domestic vs. international markets (given limited human and financial resources)
- timber vs. NTFP vs. ecosystem service provision (given ecological and skills constraints)

In terms of factors influencing success of CBFM, all of the international findings apply, but some are particularly pertinent to the Ethiopian context.

One of these factors is the internal community/CFUG cohesion, which influences inclusiveness and sustainability of the CFUG. As seen from the Ethiopian PFM case studies, the heterogeneity of communities - further complicated by state-led resettlement programmes - has given rise to a number of distributional problems and conflicts. In addition to this, traditional individual user right tenure structure has been found to collide with new formal legally embedded collective tenure systems. Both aspects lay the grounds for elite capture, and international experience clearly demonstrates that CBFM schemes with elite capture and insufficient benefits results in poor participation. Given the complexity of Ethiopian land/forest tenure, elite capture is thus a very real risk, which would undermine broad participation and perceived legitimacy of the intervention. This would indicate that a substantial investment in laying the groundwork - consulting forest users and stakeholders broadly and thoroughly, resolving internal conflicts - is warranted. If not, any social objectives are likely to be foregone.

There is also a strong indication that interventions originating outside communities have had a tendency to ignore local work and use patterns at their peril. As with social cohesion, thorough preparation in the form of mapping such local preferences to ensure compatibility (or at least nothing contradictory) with proposed future management may be a very sensible investment to ensure adherence to FMAs, once developed and agreed.

Another prominent lesson is that economies of scale play a significant role in rendering many CFUGs uncompetitive in the marketplace. A number of potential solutions have been employed across global CBFM cases (social or environmental branding, second-tier collective organisation/ specialisation), but no one-size fits all conditions has emerged. In this context, there is also a hint of a suggestion that a step-wise approach to value-addition may make sense, instead of attempting to move communities from predominantly subsistence use of forests to full vertical integration in the course of one intervention of typical project duration.

The policy framework in Ethiopia, on the other hand, does contain a number of promising components. The apparent flexibility of regional states in entering into FMA with communities is good news, and presents a potential opportunity to adapt bureaucratic requirements to the proposed scale of the PFM operation and/or possibly alter such requirements over time, as and when community capacity and opportune use of the forest resource changes. Such flexibility of institutional arrangements surrounding PFM has been highlighted as critical in PFM success in the CBFM literature, provided involved parties trust one another or credible mechanisms exist to resolve differences of opinion. It might even be possible to build a systems of performance-based progressive rights for communities into FMAs.

Moreover, the forest sector review by the MoEFCC points to PFM, smallholder woodlots and SMEs as important elements of a climate resilient green economy and further specifically includes mention of PES/REDD payments as additional sources of income for communities. The same Review also projects a significant present and future domestic market for timber and wood products, and mentions outgrower schemes to allow rural households to benefits from timber production at low risk, as well as the establishment of second-tier organisations and sector associations to advocate for improvements in the policy framework.

While no non-governmental second-tier organisations tied to the forest-sector presently exist (with the possible exception of agro-forestry/agriculture organisations willing to include forest-based products), government institutions already seem to fill some of the gaps (e.g. Oromia Forest and Wildlife Enterprise). Forming at least temporary links to such agencies may help to achieve either economies of scale for individual CFUGs and/or continue to enjoy technical support. Successful collaboration in this vein has been seen from e.g. Acre, where the State government established agencies dedicated to the logistical and technical support of communities engaged in sustainable timber management (Medina and Pokorny, 2008; Hoch, 2009)[8].

6. Best practices going forward

More than anything else, the accumulated CBFM experience indicates the importance of exceedingly thorough preparation. It is a general lesson from all community development work than raising expectations higher than realistically achievable causes a set-back in mutual trust that most interventions (and communities) never fully recuperate from. Building trust, respect and understanding between parties to a CBFM initiative is typically as slow as it is essential, unfortunately, and maintaining a realistic time horizon for generating results is vital for the mutual confidence of all, including potential donors.

In terms of realism, it is worthwhile to also investigate foregone income/opportunity costs related to SFM/CBFM and the restrictions usually implied. Whether legal or illegal, alternative land or forest use with higher returns on investment is likely to be a very real factor; either before, during or after interventions. As seen from some cases, a successful CBFM intervention may actually be the factor paving the way for a change in land use by generating investment capital needed to shift to a higher return-on-investment land use. This emphasises the fact that foregone income is not fixed, but may change as income generation increases. If possible, addressing it openly and upfront to build consensus on how to handle it if and when it occurs is ideal (without compromising the privacy of individual HHs or putting them on the spot).

Opportunity costs will also typically differ significantly between HHs according to human and financial resources and go a long way towards explaining reluctance by some HHs to join a PFM scheme. Addressing this early on in the preparation of the FMA and CFUG set-up, e.g. by discussing the benefits of a community fund to remedy some of the pre-existing inequalities, must be considered due diligence.

History does indeed suggest that it is not a part of human nature to voluntarily release power and privilege, and so an uncontested transition from customary individual tenure to collective tenure

present a bit of a conundrum. However, redistribution of part of the benefits (a kind of intra-community tax to a community fund) may make the transition more palatable to both the better-off and the poor, if the funds benefit the community members equally (e.g. school building) or favour the poorest/most marginalised members, and can be designed without incentivising free-riding or elite capture in disguise. The funds may even be used with inspiration from the Ethiopian RPSNR programme, i.e. to provide a safety net for the most vulnerable in return for labour on public works beneficial to the community. This could enable poor users to participate in PFM, as they are otherwise frequently in no position to contribute labour to CBFM without compensation; they needed full time engagement elsewhere to meet even subsistence necessities. This had led to poor users leaving CBFM initiatives early on - opportunity costs were simply too high.

In certain areas, where the Ethiopian Rural Productive Safety Net and Resilience (RPSNR) is working, it could even be explored if some of the CBFM start-up costs (labour) could be covered by RPSNR recipients (community members), who are working in return for the RPSNR support, i.e. serve as an external infusion of resources to the PFM initiative.

The international experience shows that spontaneous duplication of even successful CBFM initiatives is very rare indeed, primarily because of massive start-up costs (related to capacity building, with timber potentially also equipment). To overcome this, it could be considered whether modified versions of outgrower schemes could facilitate such a multiplier effect (within or outside original communities). If and when successful timber-related PFM entities are created, they could potentially source from neighbouring areas along the lines of outgrower schemes, albeit maybe at a smaller scale. This could help the original CFUG to achieve better economies of scale, all else being equal.

In a similar vein, it could be explored if partnerships with private companies can be established with some sort of joint benefit sharing across the CFUG/company 'divide' - again with the purpose of providing relatively cheap(er) access to specialised skills, thus lowering especially start-up costs, but also running costs from better economies of scale. Alternatively, regional agencies such as Oromia Forest and WIldlife Enterprise may serve a similar purpose, with the caveats of risking a near-monopoly and bottleneck in the value chain.

Branch organisation(s) should definitely be encouraged, as is also suggested in the MoEFCC Forest Sector Review (2017), as should any kind of cross-CFUG fertilisation and exchange of experience. Building trust between potential partners is an important first step to promote an enabling environment for CBFM and economies of scale via collaborations at same level or access to shared second-tier processing or marketing services.

Box 14: Package solutions? Another type of synergy than economies of scale.

Can forest-based commodities be bundled locally to make sense - e.g. sale of wooden furniture, coffee, honey, spices (to put in coffee) and sales displays for coffee and spices to Starbucks or similar retail outlets?

Integrating both social and environmental branding in one story-telling package in surroundings, where consumption is public and the audience somewhat captive.....

In retail chains each outlet could feature a specific 'estate', e.g. Bonga in one coffee shop, Bale Mountains in another etc.

Might this even work in Addis?

While perhaps not ideal in the long run, regional state (as opposed to federal state) solutions to PES could also be investigated. In the longer run, regional initiatives collecting funds (taxes?) for PES may be considered a competitive disadvantage in attracting investors compared to other regional states. It seems possible, even probable, though, that a national mechanism for PES re. carbon may emerge in the near future. Alternatively, local companies (most relevant e.g. water supply, hydro-electric or agro-industry companies) may be explored as sources of PES for watershed protection. If and when a national scheme emerges they might likely continue to pay, either directly or via the national programme.

In summary, the overriding international lesson of no one-size-fits-all has the main implication that thorough preparation and continued mutual learning in a flexible and adaptive manner, respecting

the different points of departure for all parties in ideally the 'community of practice' (see Figure 1) provides the best chance of success. This is not to say they are not a myriad of issues to be dealt with, but the manner in which they are discussed and resolved is more than half of the solution.

Nevertheless, it is useful to draw on the international lessons to also identify the issues and trade-offs, which are most commonly involved in bringing CBFM to fruition. In an attempt to compile something more practical than simply listing the up to 43 factors mentioned in some research as influencing CBFM outcomes, the below is a more hands-on 'quick and dirty reminder' of the most pertinent issues. It is organised roughly in the order in which issues ought to be clarified, and should be discussed and agreed with as wide a circle of stakeholders as possible in order to secure their buy-in and support:

WHY:

- Decide if forest protection is an end in itself or a positive side effect of CBFM;
- Decide if safeguarding livelihoods is enough or pulling people out of poverty is the objective
- Discuss, decide and separate ends from means: e.g. is it an objective in itself to alleviate poverty or simply a means to forest protection?

WHAT is presently done, by WHOM, WHEN and WHERE:

- Map framework conditions outside the scope of the CBFM intervention;
- Map power relations and tenure systems;
- Map current forest and land use practices and preferences, discuss their compatibility with intended interventions and commercialisation of timber;
- Careful mapping of what people do NOW, build on that in terms of proximity, temporal labour distribution, products presently used and expand to products within same categories;
- Can present niches - such as the poor and women depending more on NTFPs - be used to carve them a niche in commercialisation/value-added NTFPs?;
- Identify safety net functions of forests in poor peoples' lives to safeguard these functions;
- Inclusiveness never comes automatically - careful consultation and design is necessary;
- Is a community fund/tax a solution to bridge opposing interests and secure legitimacy of and support to PFM?

BIOPHYSICAL CONDITIONS:

- Which forest commodities (timber, NTFPs, ES) are compatible?
- Is the area of sufficient size to 1) provide enough benefits to motivate all or only a sub-set of the community HHs to participate?; 2) provide any economies of scale?

HOW FAR TO GO:

- Conduct a thorough market analysis of for timber and wood products, including a C/B analysis providing initial indications of possible returns at each level;
    - Are domestic or international markets preferable - does the added value/income compensate the additional costs or more?
    - Is value added the best option for short and/or long-term profit/benefit maximisation?
- If international market access is pursued, dedicated buyers *vis-a-vis* environmental and/or social branding seem the safer bet, either niche companies or institutional buyers;
- Do communities prefer higher levels of employment to cash profits?;
- Choose your (and the community's) battles carefully. Spreading resources too thinly by pursuing too many products to far along the value chain is likely to jeopardise achievement of results in a project context.

HOW TO GET THERE:

- Due attention should be paid to short and medium as well as long-term income; and a contingency set aside for emergencies (whether cash or standing trees);
- Facilitate reciprocal monitoring between communities and local government may aid forest management compliance and protection;
- The community risk profile should correspond to the chosen strategy ('full understanding and prior consent');
- If market and economies of scale permit, intra-community processing and specialisation may be possible - particularly where employment is considered a valuable benefit compared to profit maximisation;

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7. Annexes

ANNEX 1: Summary from literature - factors influencing CBFM success

ANNEX 2: Organizational Types for Case Study CFEs

ANNEX 3: Market characteristics that enable small-scale producers to compete

ANNEX 4: Reduced Impact Logging (RIL)

ANNEX 5: Lessons and checklist from Nepal - sawmilling

ANNEX 6: Success case from Mexico - Ejido Noh Bec in Quintana Roo

ANNEX 7: Costs and benefits associated with timber production in the Amazon

ANNEX 8: Example from Philippines - 5-year work plan steps and requirements[2]

ANNEX 9: Social and environmental benefits from CBFM

ANNEX 10: Example of profitability/numbers from the Amazon

ANNEX 11: Ministry of Environment, Forest and Climate - REDD+ fast track implementation

ANNEX 1: Summary from literature - factors influencing CBFM success[13]

Extracts from ten papers from the general literature which address factors which influence the success of community forestry[13].

Success factor	Author and citation
Socio-economic status and gender based inequality	Larson (2004, p. 33): 'Representative and effective institutions should be supported to build greater consensus among stakeholders at all levels, with particular emphasis on promoting the participation of marginalised groups'. Pulhin et al. (2007, p. 879): 'Benefits are often captured by leaders and more educated members . . . ' Le et al. (2012, p. 10): 'The most important socio-economic requirements for reforestation success appear to be enhanced livelihood planning, active participation and involvement of local people . . . social equality, absence of corruption . . . '
Security of property (tree and land) rights	Fisher (2003, p. 18): ' . . . the absence of real tenurial rights are major factors behind the absence of progress in providing livelihood benefits'. Chokkalingam et al. (2006, chapter 3, p. 125), Philippines: 'Government should focus on three main enabling factors for success: secure resource rights . . . ' Charnley and Poe (2007, p. 325): 'Evidence suggests that local control over forest management . . . on communal lands can have positive . . . outcomes'. Pulhin et al. (2007, p. 876): 'Local communities continue to experience a strong sense of insecurity over their CBFM areas despite the issuance of rights as a result of frequent government policy changes regarding timber utilisation'. 'A ban or suspension on timber harvesting often means the loss of an important timber resource'. 'Another coping strategy is to engage in illegal timber harvesting'. Hodgdon (2010, p. 71): 'Strong and secure community tenure and rights to forest resources are clearly important prerequisites'. Le et al. (2012, p. 13): 'Clear land tenure to enable the sustainable management and use of rehabilitated forests need to be in place in order to prevent . . . conversion to other land uses'. Cronkleton et al. (2012, p. 101): 'A central finding is that the partial devolution of management rights by the state creates persistent significant barriers to the adoption of community forestry . . . ' Fisher (2014, p. viii): 'The importance of clear tenure rights held by communities is widely recognized as crucial to community forestry'.
Intra-CFG governance	Larson (2004, p. 2): ' . . . meaningful discretionary powers over forests should be turned over to representative and accountable local institutions under a clear and unified legal framework'. Charnley and Poe (2007, p. 324): 'Other factors that contribute to success include the capacity of communities to create local institutions that are accountable and fairly represent the interests of all community members . . . ' Pulhin et al. (2007, p. 881): 'The small number of members in many POs appears to have benefited mainly members of the villages' elite'.

	Hodgdon (2010, p. 71): ' . . . the ability of communities to organise themselves . . . was a key element to success in both Nepal and Mexico'. Le et al. (2012, p.12): 'Corruption can also result in a lack of participation of local people in reforestation projects and a lack of project support'. Hodgdon et al. (2013, p. 1): 'Key internal tensions include the difficult coexistence of business administration with traditional governance, inefficiencies in traditional decision making processes, lack of accountability and, in many communities, the continuing prevalence of corruption'. Fisher (2014, p. 14): 'The design principles for common property regimes (CPRs) identified by Nobel laureate Elinor Ostrom . . . are an excellent indicator of what makes common property management work at the local level'.
Government support to CFGs	Fisher (2003, p. 18): ' . . . the absence of real devolution of decision-making power . . . are major factors behind the absence of progress in providing livelihood benefits'. Larson (2004, p. 2): ' . . . democratic decentralisation is rarely implemented: substantial decision-making power, resources and benefits from forests are still centralised . . . ' Chokkalingam et al. (2006, chapter 3, p. 123), Philippines: 'Communities and farmers would need long-term support from government and non-government agencies . . . ' Charnley and Poe (2007, p. 325): 'Without real devolution of power, the goals of community forestry will be difficult to achieve because they are premised on this transfer'. Pulhin et al. (2007, p. 881): ' . . . communities need a comprehensive and continuing capacity building . . . ' Hodgdon (2010, p. 71): ' . . . there must be more genuine support for (community forestry) amongst Lao government decision makers . . . ' Cronkleton et al. (2012): ' . . . efforts at control by governments need to be balanced by increased technical assistance . . . to promote participation by communities'. Le et al. (2012, p.12): 'Strong and appropriate institutional support is critical'. Hodgdon et al. (2013, p. 1): 'Despite devolution of rights, the Mexican forest sector is overregulated . . . Some of these requirements are appropriate, but others are cumbersome, expensive and redundant. Such bureaucratic inefficiency has been cited as an important factor in the decline of timber production over the last decade . . . ' Fisher (2014, p. 14): 'An issue faced by community forest groups is their relative lack of power vis-à-vis government and other powerful interests'.
Material benefits to community members	Fisher (2003, p.18): 'Poor performance in terms of improved well-being is a major flaw . . . ' Chokkalingam et al. (2006, chapter 3, p. 123), Philippines: 'These projects failed to address a key underlying cause of degradation, the livelihood needs . . . ' Charnley and Poe (2007, p. 321): 'Forest products help households meet

	their subsistence needs, provide a safety net in times of emergency, and help fill seasonal economic gaps. Therefore, securing, increasing, or restoring access rights to forests is often a main objective of community forestry initiatives'. Pulhin et al. (2007, p. 879): 'In general sustaining and spreading benefits to a greater number of people . . . remains a key challenge . . . ' Le et al. (2012, p. 8): 'For reforestation to be attractive to local communities, it needs to provide socio-economic benefits'. Hodgdon et al. (2013, p. 1): ' . . . successful CFEs substantially contribute to local development . . . ' Fisher (2014, p. 14): 'The extent to which communities obtain benefits from community forestry is . . . central to any vision of community forestry that includes livelihoods and/or poverty reduction . . . '

Extracts from 45 empirical case studies of community forestry which illustrate the influence of: (1) socio-economic status and gender based inequality, (2) secure tenure over property (tree and land) rights, (3) equitable intra-CFG governance, (4) the positive effects of government support and negative effects of government interference and (5) material benefits to community members[13].

1. Socio-economic status and gender based inequality
Agarwal (2001, p. 1635–1639), South Asia 'Women have little say in fund allocations. Many resent this'. 'Incorrect perceptions regarding women's abilities also impinge on men's reluctance to include women. Men often view women's involvement in CFGs as serving no useful purpose and tend to downplay their potential contributions'. ' . . . not all the noted inequities can be cured by women's presence in decision making . . . This division of labour is unlikely to change solely by women's participation'.
Chakraborty (2001, p. 348, 351), Nepal 'Income inequality does not appear to be a hindrance to the stability of community forestry user groups'. 'The evidence on poverty alleviation effects is ambiguous: while all members of a user group benefit in the long run, the poor are more severely affected by restrictions on forest use in the short run. Furthermore, there is an equity problem between members and non-members of a user group'.
Agarwal (2010, p. 108–109), South Asia 'The finding that executive committees with a higher percentage of landless women have greater female attendance and voice indicates that being poor and female does not necessarily confine a person to the bottom of the pyramid. Landless women are less constrained by social norms and status considerations, and have more stake in forest access, compelling them to attend and speak up'.
Sunam and McCarthy (2010, p. 378–380), Nepal 'The so-called upper castes discriminate against lower castes; rich people repress poor people and men dominate women'. 'The findings of this study show that poor people are benefiting less and bearing more costs in comparison to well off households, despite the fact that all users were supposed to share costs and benefits equally'. 'Poor people's dependency on well off households hindered them from speaking out . . . ' 'They don't feel worthy of participating in the decision-making process . . . '
Giri and Darnhofer (2010, p. 55), Nepal ' . . . men's outmigration provides a 'window of opportunity' to increase women's participation, as the left-behind wives were more likely to attend and voice their opinions during the general assembly.
Coulibaly-Lingani et al. (2011, p. 292), Burkina Faso 'In addition, increasing women's participation and more equitable benefit-sharing among user groups are essential in improving the success of the participatory forest management program'.
Kobbail (2012, p. 1), Sudan 'Women have possessed positive attitudes toward community forestry

although they were not fully involved in community forestry practices'. .

Chhetri et al. (2012 p. 121), Nepal 'Differences based on party politics, ethnicity and caste inhibit agreement on investment on public services and infrastructure in CFGs'.

Khadka and Vacik (2012, p. 7), Nepal ' . . . upper castes have dominated the decision making and have more benefits from forest management activities . . . ' 'Poor ethnic members . . . feared being rejected'.

Chhetri et al. (2013, p. 6) Nepal 'Women and individuals from lower castes demonstrated lower levels of participation in decision-making processes. Low participation was associated with education level and traditional customs, which may result in low representation of some social groups in forest user group committees'.

Lund et al. (2014, p. 119), Nepal 'The results indicate an overall bias against poor and Dalit households in terms of access to CFUG funded public infrastructure'.

Persha and Andersson (2014, p. 265), Nepal 'We find not only strong evidence for increased local rule-making under decentralization, but also significantly higher risk of elite capture of forest harvest benefits'.

Ruiz-Mallén et al. (2014, p. 273), Mexico ' . . . social inequalities privilege some individuals above others and define the way that information is shared and cognisance is promoted'. 'Direct communication and education actions focused on enhancing training and information-sharing about conservation-related issues could be directed at sectors that are typically excluded or marginalized, such as women and those with less formal education'.

2. Tenure over property (tree and land) rights

Thanh and Sikor (2006, p. 405–6), Vietnam ' . . . legal rights did not translate into analogous changes in actual rights and practices. Three years after devolution, actual rights remained the object of intense negotiations among local actors'. 'In Cham B, forest recipients' rights to the forest suffered from a lack of support from local authorities . . . ' 'Migrants did not have any rights to timber after devolution . . . They increased extraction levels, however'.

Sheil et al. (2006, p. 23), Borneo 'Conservation planning without adequate local consultation alienates local stakeholders, and many conservation interventions are seen as just one more attempt by outsiders to gain control over land and natural resources'.

Murti and Boydell (2008, p. 6, 14), Fiji 'Often conflicts are based on confusion over property rights related issues. Conflicts stemming from differing views on ownership, tenure and property rights within forest management in Fiji, have led to delayed implementation of critical environmental management plans, loss of economic benefits and disintegration within landowning (mataqali) units'. 'There have been intra-mataqali rows among i-Tokatoka units (household units), mainly over unclear land demarcation, land allocation and rights. Such disputes lead to lower productivity and slow down the progress of projects . . . '

Ellis and Porter-Bolland (2008, p. 1971), Mexico ' . . . forest conservation or maintenance was shown to be influenced by local community forestry institutions and a landscape zoning provided by larger management goals from the part of the communities'.

Coleman (2011, p. 855) 'Overall, the results indicate that user groups with more complete property rights are more likely to rank forest conditions favourably'.

Arifin et al. (2009, p. 2040), Indonesia ' . . . farmers are most concerned about the length of the contract, and relatively unconcerned about requirements on tree density and species composition'.

3. Influence of intra-CFG governance

Chakraborty (2001, p. 351), Nepal: The reason is that the groups were able to solve the problems of credible commitment, monitoring and enforcement. Furthermore, the external environment played a supportive role . . . p. 347 'An important reason is that user groups build on existing power

structures in the villages . . . ' ' . . . powerful community members increase their influence through the control over the forest as a resource that is of central importance to rural livelihoods'.

Engel and Palmer (2006, p. 444–445), Indonesia ' . . . communities for whom self-enforcement is very costly – because they have high opportunity costs of time or low ability for collective action – are less able to claim an effective share in logging benefits. Our results are consistent with collective action theory in that greater ethnic homogeneity and social capital in form of existing organizations appear to be associated with higher community payoffs'.

Barsimantov (2010, p. 53), Mexico: 'I argue that (1) strong internal governance is necessary . . . for community appropriation of forest management'.

Van Laerhoven (2010, p. 545) 'Forest used by groups that have rules and engage in monitoring and maintenance are more often improving than forests used by groups that do not engage in these expressions of governance'.

Coulibaly-Lingani et al. (2011 p. 292), Burkina Faso: 'The results indicate that participatory management program can be enhanced by changing the administrative structure of forest management groups in order to empower members in decision-making processes.

Gurung et al. (2013, p. 387), Nepal: Nepal's community forestry program is shadowed by numerous issues and challenges in implementation. Social disparity, elite capture, exclusion of socially excluded people, inequitable benefit-sharing and lack of transparency are the notable challenges Nepal's community forestry is currently facing.

Barsimantov and Antezana (2012, p. 851), Mexico: 'Therefore, it was the breakdown of local governance and the potential to sell illegal lumber that initiated deforestation, rather than the expansion of avocado production. These results indicate that the resilience of local governance to policy changes may be a determinant of a community's ability to manage natural resources'.

Persha and Andersson (2014, p. 270): 'First, we find strong evidence for an increased risk of elite capture of forest product benefits under decentralization . . . ' ' . . . this risk is substantially reduced when an external agency was involved in the organization of the user group . . . '

Lund et al. (2014, p. 123), Nepal: Overall, most members seem to perceive that the current distribution of benefits from CFUG management is fair and appear satisfied with their share of these benefits, albeit with slightly lower levels by the poor and Dalit members. The lower levels of knowledge about CFUG expenditures among poor and Dalit members may be one possible reason for their relatively high level of satisfaction.

4. Positive effects of government support and negative effects of government interference

Taylor (2000, p. 270), Mexico: 'The commoditising of forest technical services . . . undermine peasant producers' organisation ability to organise and deliver benefits to members'.

Sinha and Suar (2005, p. 140), India: 'Indigenous community forest management (ICFM) elicited more participation than crafted community forest management (CCFM) and joint forest management (JFM) because of the absence of external interference. In CCFM, partial acceptance of external rules and values of crafting agencies, and in JFM, too much interference of the forest department worked against people's choices and decreased participation'.

De Jong et al. (2006, p. 455–456), Bolivia: 'Where forests hold resources that have economic value, economic and political elites try to obtain control over forests, preferably through legal channels . . . Where formal legislation promotes communal control of forests, the local economic elite pursue alternative routes. As a result, the state has an important role in assuring that the promotion of CFM achieves its intended goals, goals that may be hindered by poor performance or collusion of state agencies at regional or local levels'.

Salam and Noguchi (2006, p. 785), Bangladesh: 'The forestry department (FD) usually has ownership and revenue collection rights over a protected forest management (PFM) project, while participating farmers have only usufruct rights over the forest resources and are responsible for protecting and managing the participatory managed forests, so that those stakeholders with many responsibilities

and rights benefit less. Relationships between the project implementers and the local stakeholders are poor'.

Thanh and Sikor (2006, p. 397), Vietnam: 'Legal acts may be a suitable first step to initiate devolution. The creation of actual powers requires much broader political, economic and cultural changes . . . '

Hébert and Rosen (2007, p. 36), Mexico: 'Even though communities have to enter a competitive process to receive CONAFOR money . . . the fact remains that that CONAFOR brings a very real hope for economic development in the region'.

Borges-Méndez (2008, p. 379), Costa Rica: 'It is quite important to recognise that the effectiveness of this approach in attracting the participation of the convenistas (and other forest stakeholders) depended on the political stability of the Costa Rican state and its adherence to the rule of law in spite of its legitimation and fiscal problems'.

Hayes and Persha (2010, p. 545), Mesoamerica, East Africa: 'Our synthesis suggests that successful sustained forest management depends on institutional arrangements that (1) establish local resident rulemaking autonomy, (2) facilitate the flow of external financial and institutional assistance for monitoring and enforcement of local rules, and (3) buffer residents and their respective local institutions from more powerful, and at times corrupt, actors and agencies involved in forest exploitation'.

Pandit and Bevilacqua (2011, p. 351), Nepal: 'The involvement of local community in forest management with well-defined rights and responsibilities created a sense of ownership and shared responsibility among users . . . '

Hajjar et al. (2011, p. 2168), Brazilian Amazon: 'These cases show that some communities have great difficulty in meeting the government's regulatory requirements to legally manage forest resources and market products derived from these resources'. 'Government land tenure policy or lack thereof has made it very difficult for community groups to obtain legal title to their lands or to obtain legally recognized use rights'.

Beauchamp and Ingram (2011, p. 389), Cameroon: 'The cases highlight the limitations of the current regulatory and policy framework as a determining influence on the exploitation of community forests and conclude there is a pressing need for institutional and organizational reforms within the governmental and support apparatus to increase the profitability and equity of community forestry . . . '

Kobbail (2012, p. 4), Sudan: 'They reported the importance of having a link with the forestry department and this is in fact a reflection of the positive attitude of local people towards the forest department'.

Humphries et al. (2012, p. 70–71), Brazilian Amazon: 'Community forestry is an expensive endeavour and it is unclear where required capital will come from to keep existing community forestry enterprises (CFEs) in operation post subsidies . . . ' CFEs would also benefit from reduced bureaucratic delays and expenses . . . '

Mukul et al. (2012, p. 12), Bangladesh: 'Unfortunately, in Bangladesh, there exists a historically long and widespread pattern of corruption and abuse at various levels of forest management, and this has been one of the main barriers in establishing co-management at all five pilot sites'.

Valdez et al. (2012, p. 359), Mexico: 'Forest Policy able to give more emphasis to the people instead of to the trees, could affect in a more sustainable way the conservation goals, reduce deforestation, forest fires and the market for illegal logging'.

Alemagi et al. (2012, p. 428–429), Cameroon: 'There is a need for government to design financial assistance schemes that are easily accessible to CFOs with insufficient finances'. 'Government and civil society have important roles to play to overcome the barriers to forest certification identified in this study'.

Chhetri et al. (2012, p. 121), Nepal: 'Differences based on party politics, ethnicity and caste inhibit agreement on investment on public services and infrastructure in CFGs'.

5. Material benefits to community members

Dongol et al. (2002, p. 77), Nepal: 'Data analysis showed that manageable mature forest area, external sales, high log prices, and a system of imposing charges for every kind of forest product are the key characters of a successful FUG'.

Nagendra (2002, p. 536), Nepal: 'In contrast, community forestry initiatives are often cited as being aimed at improving fuel, timber and fodder levels, to meet the requirements of the local communities'.

Smith et al. (2003, p. 24), Nepal: 'Community forestry holds great potential to improve the situation of poor people through provision of basic forest products'.

Niesenbaum et al. (2005, p. 26), Guatemala: 'The strength of the program described here are in its integration with other income-generating activities . . . '

Calderon and Nawir (2006, p. 48), Philippines: 'Providing early and continuous benefits is more critical for people's organisations than . . . ' 'Failure to do so can result in members leaving . . . '

Sunam and McCarthy (2010, p. 374), Nepal: 'It was found that poor people's primary needs were neither new house construction nor furniture rather they were desperate for daily subsistence'.

Pandit and Bevilacqua (2011, p. 351), Nepal: 'Community forestry practices have been successful in achieving its initial objectives of reversing the trend of deteriorating hill environments and improving forest products supply to local users in Nepal'.

Mukul et al. (2012, p. 12), Bangladesh: 'It seems clear that people who get more benefits from co-management interventions are likely to contribute more to conservation . . . '

Schusser (2013, p. 48), Namibia: Authors' note: In Table 5, the main interest of local level actors in community forestry is 'benefits'.

Méndez-López et al. (2014, p. 327), Mexico: 'Low participation is not for lack of interest. When it comes to reforestation, as it is paid, then everyone goes'. Ejidatarios live by the day . . . '

ANNEX 2: Organizational Types for Case Study CFEs[21]

Country	Case Study	Year of Formation	Legal/Governance Arrangement	Business Model
Mexico	Santa Catarina Ixtepeji	1985, independence from union in 1993 and communal statute from 1994	Indigenous *ejido* (communal forest land reform block) formerly part of Union of ejidos; traditional authorities	Enterprise governed by *ejido* authorities who appoint managers. Rotation of CFE managers leads to lag time, but also creates sensitivity to work challenges.
Mexico	Sociedad Sur (SPFEQR)	1986	Union of *ejidos* (indigenous Maya) but individual *ejidos* divided into smaller producer sets	*Ejido* authorities, with independent workgroups by parcels; strong role of community assembly in decisions.
Mexico	El Balcón	1985	Community forest (land reform block) under non-indigenous *ejido* structure	Had partnership with international timber processor, but no longer; had hired international manager but replaced with community member.
Guatemala	Carmelita	1998 (formal est., 1996 origins)	Cooperative with government-recognized forest concession; member of a social and political rights organization (ACOFOP)	First-tier CFE with a local manager and processing facilities for primary wood transformation; member of FORESCOM producer group with processing facilities for secondary wood transformation.
Guatemala	Arbol Verde	1998 (formal est., 1992 origins)	Civil Society Association with government-recognized forest concession; member of a social and political rights organization (ACOFOP)	First-tier CFE with a local manager and processing facilities for primary wood transformation; member of FORESCOM with processing facilities for secondary wood transformation.
Honduras	COATLAHL	1977	Cooperative with sub-producer groups given usufruct by government	Cooperative structure of groups legitimated by each involved municipality
Colombia	San Nicolás	1998: corporation created; 2001: program identified around MES/PES	Corporation MASBOSQUES, a public-private partnership (PPP) involving municipalities and 17,000 small farmers in 23 groups in a watershed catchment	Corporation of government, local farmers and associations and private sector—co-investors with managers and shareholders in hydroelectric valley.
Brazil	Manicoré	2001	Community/village association under umbrella of regional community council of associations (CAAM). Harvesting in extractive reserves; timber company owns land and grants community access. Leased and community recognized land in process of legalization.	Community regional council of extractive associations buys from individual brazil nut producers, limited partnership with Gethal Amazonas timber company in the past – key for enterprise startup.
Brazil	Mamirauá	2000	Community associations under umbrella of biosphere	Individual community workgroups as subset of

			reserve coordination with parceled forest areas	community advised by technical NGO in reserve.
Country	**Case Study**	**Year of Formation**	**Legal/ Governance Arrangement**	**Business Model**
Bolivia	AGROFORT	2000	Group of producers within the area of an Indigenous Territory; initial association with appropriate permissions from indigenous authority, later transition to an indigenous forest management group with appropriate management rights.	Cooperative structure under Bolivian law of Local Social Associations, later cooperative organized as an indigenous forest management organization.
Cameroon	Ngola-Achip	1992/1998	4 villages, families of Balogbo, Pa'a and Bamouh of Ngola-Achip with rights to <5000 ha. forest	Committee of four villages make decisions on forest management, allocation of funds and contracts with commercial harvesters; cooperative structure
Cameroon	CAFT	2001 CAFT created, 2004 9 CAFT communities receive 9 community forests	Cooperative development association composed of representatives from each of 9 village communities who constitute CAFT.	Incipient. Each community with a community forest linked to CAFT by contract – communities produce raw materials, CAFT handles collection, processing and marketing.
Gambia	Bulanjor Village	1992	This is one of many villages managing community forest. In this case, smallholders within a village have organized for forest harvesting and processing	Cooperative groups assigned village forests through government community forestry model
Tanzania	Amani Butterly Group, Tanga Region	2003	Smallholders in villages around reserve area	Cooperative management structure with NGO support
Nepal	Chaubas-Bhumlu Sawmill	1996	Consortium of 4 Forest User Groups (a total of 293 households) with start up financing and technical assistance from donor project.	Sawmill management committee (4 each from 4 FUGs, 1 manager and 4 FUG chairpersons-elected officers). Project continued to provide technical assistance until the end of 2005.
Nepal	Bel Juice Enterprise	2003	10 forest user groups, 60 identified poor households from 10 groups separately and 6 private entrepreneurs registered as a company to the government. Technical backstopping from a development NGO for two years.	Pro-poor company with community shareholders and private investors. FUG buy shares, with NGOs supporting poorer households in their purchases. Private sector shareholders as well, who also provide specialized marketing services.
China	Pingshang Bamboo Group, Guizhou Province	2004	Collective enterprise in village forests	Management Committee; 1 government representative
India	Andhra Pradesh	2001	Village forest protection committees (VSS) and	Women's groups federated at village, district and state

			women's self-help groups are the main instruments of CFEs.	levels; district-level federations often arrange investment funds for enterprises. Groups maintain mandatory savings accounts, leverage savings to obtain more credit.
Country	**Case Study**	**Year of Formation**	**Legal/ Governance Arrangement**	**Business Model**
Philippines	Ngan Panansalan Pagsabangan Forest, Compostela, Compostela Valley	1996	Former commercial timber concession area given as community forest management unit to Mansaka-Mandaya tribe of 1051 households; Cooperative (NPPFRDC) created to comply with government laws	Harvesting and mill run by professionals (mostly former employees of the logging company that operated concession before), policies by the Cooperative's General Assembly and Board of Directors with Mandaya-Mansaka tribal group representation.
Papua New Guinea	Madang	1996	Indigenous/clan groups and village based landowner's association with NGO support; households work individually but market through enterprise	Association and business advisors from NGO run enterprise with members of community and business advisors as shareholders

ANNEX 3: Market characteristics that enable small-scale producers to compete[10]

Enabling conditions	How conditions benefit small-scale agroforest producers	Comments
Supply factors		
Low-cost processing technology exists	Can benefit from higher-value segment of market value chain	Economics of 'value-added' location-specific
Production technologies locally known	Reduces adoption risks, maintenance costs	Training and extension programs can provide
Neutral or declining returns to scale for production	No economic advantage for large-scale producers	Especially where labor-intensive management
Limited direct competition from very low-cost producers	Greater potentials distant from ports, distant for agricultural land-clearing	
Environmental services can be produced together with forest or agricultural production	Environmental service payments supplement, rather than replace, production income	May require change in landscape design, location of production, management
Demand factors Large number of buyers (transporters, wholesalers, processors, service users)	More competitive prices and terms of sale for sellers; more interest by buyers in negotiating long-term relationships	Monopsony currently characterizes a majority of forest product and environmental service markets
Products with growing demand	Greater opportunity for new entrants	
Niche market buyers interested in supporting rural development	Potential to 'brand' product or access higher-paying consumers or investors	Limited scale of market
Demand for natural species that are difficult to domesticate, replace	Creates asset value for natural forests, 'volunteer' farm trees	Most species have domesticated or synthetic substitutes
Flexible quality standards	Can use greater variety and quality of wood species	Difficult to reliably supply raw materials for international markets
Long-term supply contracts offered	Provides more stable income source, reducing livelihood risks	Usually offered by high capital-cost processing firms (e.g., pulpwood) for steady supply
Low capital costs of market entry	Existing or low-cost capital equipment for production or processing; low costs to find buyers (e.g., advertising)	Often low-value products; many low-cost technologies exist but not known locally
Small and variable volumes are purchased	Producers can move in and out of the market easily; Cases where no economic advantage for large-volume producers	For example, in direct retailing of medicinal plants, local fuelwood markets
Open, transparent and unrestricted bidding processes	Avoids discrimination against small-scale suppliers or raw material purchasers	
Marketing intermediary established for small-scale producers	Provides 'bundling', technical support, financing; achieves economies of scale in marketing, production	Established by producer cooperatives, NGO's, parastatals, buyer company
Market regulation Low regulatory costs of market entry	No registration fees; competitive bidding for small timber volumes; low-cost management plans; no bribes required	
No producer/consumer subsidies	Greater competitiveness for small-scale producers	Large producers or buyers most benefit from subsidies
Low-cost regulatory environment	Few harvest, transport, sales permits required; reduced risk and corruption	
Secure local rights for forest products, environmental services	Reduces risk of 'forest grab' by more powerful actors	Especially for long-term product, service contracts

Main opportunities will be found where:	Scale of market opportunity for poor	Business models	Potential to raise incomes	Examples
Commodity wood				
Forest-scarce inland regions with rapid income or population growth; humid/ sub-humid areas	***	Farm forestry, products sold to local traders	**	Eucalyptus farming in India (Dewees and Saxena 1995)
		Farm forestry or outgrower schemes that directly link producers with large-scale sawmills, commodity wholesalers or final users	***	Match Company farm forestry scheme with 30,000 farmers on 40,000 hectares in Uttar Pradesh, India; Kolombangara Forest Products, Ltd. Informal sawlog grower scheme with 100 growers (Desmond and Race 2000)
		Farm forestry, with cooperative wood marketing organization	***	Widespread in India, Philippines, Bangladesh, Nepal
High-quality timber				
Mainly in forest-scarce regions with growing incomes and demand for high-value products good market access; areas with secure tenure; mainly in humid/sub-humid areas	**	Small farms or communities participate in outgrower or crop-share schemes with private companies to establish plantations of improved high-value timber	**	Prima Woods project for teak production in Ghana (Mayers and Vermeulen 2002)
		Farmers grow timber at low densities in agroforestry systems and remnant forest to sell cooperatively	*(*)	Philippines Agroforestry Cooperatives (ICRAF 2001)
Certified wood				
Farmer groups, mainly in humid/sub-humid regions, with high capacity for natural forest management and marketing, that can achieve low certification costs	*	Farm producer groups with established contracts or agreements with certified wood users or market intermediaries	**	Klabin pulp and paper company of Brazil assists outgrowers to obtain certification and to supply local furniture company demand (Mayers and Vermeulen 2002)
Industrial pulpwood				
Densely settled, forest-scarce countries with large pulp and paper or engineered wood industry, and limited foreign exchange; farmers located near pulp mills; humid/sub-humid areas	**	Outgrower arrangements: industry assists farmers to establish and manage pulpwood plantations, in guaranteed supply contracts	***	Aracruz Cellulose 'timber partner program' in Brazil (Desmond and Race 2000; Saigal, Arora and Rizvi. 2002)

Table 2 continued.

Main opportunities will be found where:	Scale of market opportunity for poor	Business models	Potential to raise incomes	Examples
		Farm forestry: farmers establish plantations with technical support from industry; sell output without purchase contracts	**	ITC Bhadrachalam Paperboards, Ltd., integrated pulp and paper mill in Andhra Pradesh State, India (Lal 2000; Saigal et al. forthcoming)
		Land leasing by farmers to private companies for pulpwood production	**	Jant limited wood chipping operation in Madang, Papua New Guinea (Mayers and Vermeulen 2002)
Forest product processing				
Simple tools, furniture, other basic commodities for poor consumers in growing rural or urban areas	**	Community or group enterprise	**	Small-scale processing firms in Africa (Arnold et al. 1994)
Sawmilling, in markets where large-scale, high efficiency mills do not compete (humid/sub-humid forest regions)	*	Cooperative community, farmer or group sawmill enterprise with identified buyers	**	Small-scale logging in the Amazon (Padoch and Pinedo-Vasquez 1996)
Finished or semi-finished processing, where commercial links can be forged with businesses serving higher-income consumers	*	Forest community or farmer cooperative for sale direct to wholesalers/retailers	***	

ANNEX 4: Reduced Impact Logging (RIL)

"Current best ecological practices for timber production from Brazil's native Amazon forests are limited to reduced-impact logging (RIL) systems that minimize the environmental impacts of harvest operations and that obey legal restrictions regarding minimum diameters, rare species, retention of seed trees, maximum logging intensity, preservation of riparian buffers, fire protection, and wildlife conservation. Compared with conventional, predatory harvesting that constitutes >90% of the region's timber production, RIL dramatically reduces logging damage and helps maintain forest cover and the presence of rare tree species, but current RIL guidelines do not assure that the volume of timber removed can be sustained in future harvests. We believe it is counterproductive to expect smallholders to subscribe to additional harvest limitations beyond RIL...".[9]

Recent analyses show that under certain circumstances, in addition to reducing environmental damage, RIL may increase financial returns from timber harvesting (e.g., on relatively flat terrain in the eastern Amazon; Barreto et al. 1998; Boltz et al. 2001; Holmes et al. 2002), but under other circumstances, the financial impact of RIL is negative (e.g., on steep slopes in Southeast Asia; Enters et al. 2002)[9].

Recently a number of authors have pointed out that although RIL represents a major improvement over conventional, predatory practices, it is merely a harvest system that minimizes environmental and structural damage (e.g., Fredericksen & Putz 2003; Sist et al. 2003; Grogan et al. 2006). In the Brazilian Amazon, for example, RIL is composed of a set of preharvest and harvest best practices (e.g., 100% inventory of trees to be harvested, stand mapping, preharvest cutting of vines on trees to be harvested, road and skid-trail planning, directional felling, fire protection, wildlife conservation) imposed on a selective extraction regime that is legally determined on the basis of minimum diameters, a restriction on logging extremely rare species, minimum seed-tree requirements for harvested species (10% of commercial size individuals), preservation of riparian buffers, and a maximum logging intensity currently set at 30 m3/ha (e.g., Uhl et al. 1997; Schulze et al. 2005; Grogan et al. 2006; Instru¸c˜ao Normativa 05/2006). As such, there is no guarantee that harvest volumes will be sustained over time or that other forest values will be maintained (Putz & Viana 1996; Fredericksen et al. 2003; Phillips et al. 2004). At present there appears to be widespread agreement among tropical foresters and tropical forestry researchers that RIL is a critical first step in the development of management practices for naturally regenerated tropical forests (e.g., Barreto et al. 1998; Alder & Silva 2000; Putz & Fredericksen 2004)[9].

Fourth, recent revision of forest management regulations in Brazil differentiates between mechanized and non-mechanized/low intensity harvesting operations, requiring a 25- to 35-year cutting cycle with a maximum logging intensity of 30 m3/ha from the former, and a 10-year cutting cycle with a maximum logging intensity of 10 m3/ha from the latter[9]. Additionally, some commercially important timber species successfully regenerate in the aftermath of substantial disturbances of the sort that RIL practices deliberately prevent while exhibiting little to no regeneration following RIL (Jennings et al. 2001; Fredericksen & Putz 2003)[9].

ANNEX 5: Lessons and checklist from Nepal - community sawmilling operation[23]

Thorough feasibility studies should be undertaken prior to investment. Assessing the feasibility of proposed investments is always important, but particularly so where communities have not had direct experience in managing sawmills or similar commercial businesses. The feasibility assessment should directly involve local communities and not be conducted solely by an external party. The involvement of the community will help build understanding of the multifaceted nature of running community sawmills and form a solid base for business planning skills development. The feasibility study should include detailed analysis along the production chain from the forest to the end use market, as well as identifying labour and capital needs. Costs of production and marketing need to be directly linked to similar operations if available, and market price estimates need to account for cyclical movements in timber markets. The risk associated with individual cost and return estimates also needs to be quantified. Quantifying risk is particularly important for poor communities, for whom risky investments can have significant adverse impacts.

It is also important to understand the level of business skills amongst members of the community and, where required, to incorporate training from experienced business people in business management skills. Examine alternative investments and alternative structures. Possible alternatives to the sawmill investment should be clearly identified and the relative costs and returns compared. For example, comparing returns from the sale of logs to production and sale of sawn timber using value chain analysis should be done for all potential sawmill investments. Further processing does not always result in higher value returns. The risks associated with alternatives should also be clearly identified. It may be that the added value associated with a sawmill investment comes only with higher risk, and this needs to be part of the investment decision. Potential alternative management structures should also be considered. For example, should an external manager be involved? Is there potential for a joint venture with an experienced sawmill operator? Should management be contracted out?

Business planning and business management are vital. Business planning is an ongoing process, and local communities need to develop these skills throughout the investment appraisal and implementation. Involving communities in a thorough feasibility assessment will help develop business planning and management skills. There are many formulas for the development of business plans, but a risk associated with using such models is that business planning becomes too process-oriented, i.e. business planning focuses on producing a document rather than a real consideration of factors vital to business development and performance. One good way to promote business planning and management skills is to involve experienced sawmill operators in the project feasibility assessment, as well as in providing business skills training.

Development of marketing skills. Identifying target markets, understanding how prevailing prices are determined in those markets, and making links with buyers (including potential forward contracts) are all vital to successful sawmill operations. These factors must be considered as part of the feasibility assessment and business planning processes, and there needs to be a clear strategy developed to ensure that the sawmill managers develop and apply these skills. Again, involving experienced sawmill operators/managers can be very valuable in this process. A common motivation for community owned sawmills is the desire to capture margins earned by middlemen. However, it needs to be recognized that middlemen also provide valuable marketing services that have costs and require specific skills.

Analyze risks associated with project investments. The importance of considering risks has already been outlined as part of feasibility assessment and business planning. However, the potential impact of risk on small communities warrants specific mention.

The policy environment can have significant impacts on the viability of community sawmill investments. There are many aspects of government policies and their application that can directly affect the outcomes from community sawmill investments. These can range from market access issues, through approvals required for sawmill development and operations, to the prices paid for logs and taxation arrangements (formal and informal) for sawmills. The potential for governments to change policy that directly impacts on the viability of investments needs to be considered as part of the risk analysis.

Many of these lessons are well known and would not be new to those involved in assisting the development of community owned enterprises. However, there is a risk that the assessment of such investments is sometimes undertaken on a one dimensional basis, i.e. only a single option is considered based on an already formed view of what the investment should entail. In this case, there is a real danger that the feasibility analysis unconsciously sets out to confirm preconceived ideas and does not adequately examine alternatives or relevant risks. This tends to go hand in hand with unrealistically raising the expectations of communities, which then makes it difficult to make decisions not to proceed. These decisions become even harder once investments have been made.

The costs and difficulties associated with changing investments and the potential adverse impacts of failed projects on poor communities emphasize the importance of a thorough feasibility assessment. Such assessments should involve local communities as well as independent advice from experienced operators in local markets. While this may add to the time and costs of investment, it would appear worthwhile to fully understand the risks and alternatives. The following checklist has been prepared to assist those considering community sawmill investments.

Component	**Key issues**	**Approach**
Feasibility analysis	• Clarify goals of forest management and sawmill enterprises • Estimate costs for each component of the sawmill operation including log price, harvesting and transport costs, processing cost, and marketing costs • Estimate returns based on identified markets, product specifications, customers and prices	• Where possible base estimates on actual cost information from other operations • Involve people with direct experience in local markets and sawmill operations • Ensure communities understand the opportunities and constraints of forest based enterprises, and involve them in preparing and analyzing the estimates
Alternative investment options	• Conduct value chain analyses of alternatives to sawmilling – sale of logs (at roadside or stumpage) and other processing options (where applicable) • Use actual market prices in the analysis	• Ensure communities understand the relative risks and returns associated with alternative options
Risk analysis	• Quantify risk along the production chain • Detail specific actions to mitigate risks	• Ensure communities understand risk and develop approaches to its management • Quantify risk analysis in feasibility assessment
Business planning	• Prepare a business plan prior to • making any investment • Continually review the business plan • to deal with changing circumstances	• Use local commercial sawmill • operators in training and development • of community business skills
Management skills	• Ensure that management arrangements are clearly articulated and agreed by the community • Examine alternative management and ownership structures for the investment e.g. joint ventures, contract management of sawmill	• Use local commercial sawmill operators to provide management training
Marketing skills	• Clearly articulate arrangements and responsibilities for marketing of products including quantity, customers and prices Identify costs associated with marketing of sawn timber	• Where possible base estimates on prevailing market values • Understand the costs and services provided by middlemen

Policy environment	• Identify any government requirements for approvals associated with sawn timber production and marketing • Assess the impact of approval processes on the cost of operations • Identify potential policy changes that could impact on the sawmill business	• Include formal and informal costs
Management structures	• Ensure there are clear lines of responsibility and accountability for financial performance • Provide regular monitoring and evaluation of financial outcomes	• Ensure consideration of alternative management options such as contracting out management to private sector operators

ANNEX 6: Success case from Mexico[25]

The most successful ejido in the Mexican tropics, as regards both forest management and commercialisation, is the Ejido Noh Bec in Quintana Roo. Founded in 1936, it actively participated in the *Plan Piloto Forestal* (1983). Today it has 219 members. Of its total 24,100 ha, 18,000 are destined for permanent forest management (*Area Forestal Permanente*) and 700 for a communal conservation area of tropical forest and savanna. The quality of their forestry operations has won Noh Bec SmartWood's good forestry management certificate, accredited by FSC.

The ejido owns its own extraction equipment; two skidders, two bulldozers, a crane and five trucks. It also has two sawmills and a carpentry workshop. The annual harvest is 6,000 m^3 of which 1,500 m^3 is Mahogany. In 2001 a separate entity, Noh Bec SPR, was created to handle processing and marketing. Ejido members are associates in the business, which generates US$1.5 million annual turnover, one-third from Mahogany sales. Today, the business is worth US$3 million. Forestry operations in the ejido provide for 90 permanent and over 100 seasonal jobs.

The production chain involves three main timber products (Figure 4.3): (a) timber from Mahogany and other tropical woods, (b) palizada (small poles) harvested during the construction of the logging trail and used in the construction of rustic buildings for the local tourist industry, and (c) branches left from de-limbing, used for the construction of beehives and crafts.

In terms of timber, Noh Bec has an annual extraction permit for a total 18,595 m^3 of 14 different species of which 1,545 m^3 is Mahogany, 3,846 m^3 tropical soft woods and 13,204 m^3 tropical hardwoods. Most of the timber production is used to supply the ejido's sawmill (Noh Bec SPR). Some timber with special characteristics is sold to the local carpentry workshops for the frames of rustic structures. Noh Bec SPR extracts 94% of the total authorised annual volume of Mahogany, 18% of light woods and 11% of heavy woods. There is a lot of potential to increase the extraction of light and heavy woods.

Main case lessons about prospects for distinguishing community forest products in the market

- **Unrealistic expectations of higher prices.** International co-operation organisations, NGOs and communities embraced certified forest management with enthusiasm, hoping to penetrate the international timber market and to obtain better prices. Now, communities complain that certification did not help them with commercialisation. This has a great deal to do with the fact that the few communities that managed to sell their product did not comply with quality standards. According to Mercado Justo AC, products with competitive potential (in terms of quality, delivery capacity, presentation and marketing) have a better chance at commercialisation. The implicit value of a label cannot substitute for the intrinsic qualities of the product. Labels should be viewed as an added value not as the central value of the product. The lesson here is that only communities able to guarantee the quality of their products should participate in a fair trade scheme, otherwise unrealistic expectations are created.
- **Productive chain development.** Communities that benefited from forestry certification have advanced in the productive chain, at least to the point of selling international grade sawn timber. The starting point should be communities that can offer finished products. The greatest hurdles to accessing the national market are technical and design problems. There are already good quality products that could be marketed as in the case of kiln dried tropical hardwoods and dimensioned timber used for floors. Some communities own sawmills and drying ovens but need to train people in the process to be able to exploit the markets.
- **Commercial use of FSC labels.** Only a few of the 43 certified communities use the FSC label on their products and it is mainly used on official documents, which shows a lack of capacity to harness labels as a marketing strategy. The process should include product development and marketing that takes advantage of FSC and fair trade labels to find a niche in the market.
- **Finding business connections between communities and international enterprises.** The export market requires graded timber but most of the communities sell in bulk. In one instance a broker was interested in certified wood of a particular quality grade. He trained local people to grade timber and connected buyers with Selva Maya communities, which now have direct access to the international Mahogany

market. Elsewhere, Ejido el Balcón in Guerrero had capital and buyers but the language barrier caused them to lose the contract. This shows that to connect communities with the international market requires mediation and development of local capacities that generate trust on both sides and facilitate communication between different cultures and languages. Finding business connections is more than getting contracts, as both sides need to respect the classification systems and terminology.

- **Consolidation.** When groups of coffee growers formed organisations (e.g. UCIRI) and consolidated under Union de Cafetaleros they gained access to fair trade. Consolidation gave them access to capital and the capacity to offer large volumes with quality standards through regional collecting installations. A similar case exists where three communities with similar levels of organisation, management and manufacturing technology together could produce enough stock to open a shop, TIP Muebles. The lesson here is that to open commercialisation channels for forest products it is preferable to start with communities that share similar values and levels of development so that equitable agreements can be reached.
- **Respect market demand.** There is a lesson to be learned from the indigenous community of Nuevo San Juan Parangaricutiro that exhibited rustic furniture at a fair and sold a consignment. The community decided to "improve" the product and the client sent it back as it was not the product he had requested. To maintain quality and specifications as agreed is a must for successful ventures.
- **Advertising.** In general, the Mexican consumer does not show interest in good credentials – but there are signs of change. TIP Muebles displays its certification labels in the shop and the shop assistants mentioned that customers show interest in the labels as well as the communities' initiatives, indicating that consumers need a stimulus to get information. Attention needs to be drawn to the labels to start creating an awareness of social and environmental causes among consumers and the industry alike.

ANNEX 7: Costs and benefits associated with timber production in the Amazon

Table 2. Costs and benefits associated with objectives proposed for managing Amazonian forestland for timber production.

	Incremental costs		*Incremental benefits*	
Objective	*owner*	*public*	*owner*	*public*
Maintain forest cover and species presence	foregone opportunity of illegal conversion of forest reserve and illegal harvesting of rare species	enforcement foregone taxes on products of illegal activities	revenue from forestland uses elimination of risk of fines for illegal land use	ecosystem services (biodiversity, carbon accumulation, watershed protection, reduced albedo, stability of regional rainfall) timber harvest taxes
Sustain total volume production of currently commercial species	foregone opportunity of harvesting higher initial volume investment in silviculture	increased enforcement intensity foregone taxes on harvest of higher volume biodiversity loss associated with silvicultural practices	increased future harvest revenue increased long-term stability of volume production	increased future timber harvest taxes reduced risk of regional boom and bust economic cycles more, and more permanent, forest-sector jobs
Sustain volume production of each individual harvested species	foregone opportunity of harvesting higher initial volume of individual species investment in silviculture for those species	increased enforcement intensity foregone taxes on harvest of higher volume of individual species biodiversity loss associated with silvicultural practices favoring those species	increased future harvest revenue increased long-term stability of volume production for high-value species	increased future timber harvest taxes reduced risk of regional boom and bust economic cycles more, and more permanent, forest-sector jobs

ANNEX 8: Example from Philippines - 5-year work plan steps and requirements[2]

Table 2. Steps and requirements in preparing the five-year work plan.

	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7
Requirements	**Community Consultation**	**Delineation and Survey**	**Tree Marking**	**Submission of FWP**	**Validation of Development Accomplishment**	**FWP Deliberation**	**Submission of FWP for Approval**
Manpower needed:	Private forester, PO staff	Assigned PO members + DENR personnel	Assigned PO member	Assigned BOD member	Composite team from DENR (Region, PENRO, Region)	DENR, LGU, PO members, other stakeholders	Assigned BOD member
Days needed:	15 days	15 days	10 days	7 days	3 days	1 day	7 days
Cost incurred	US$118	US$708 (including "hardship" fee)	US$142	US$47.20 (fare and other incidental expenses)	US$354	US$354	+US$708 (hiring of licensed forester)

ANNEX 9: Social and environmental benefits from CBFM[21]

Country	Case Study	Social Benefits	Environmental Benefits	Important Trends
Mexico	Santa Catarina Ixtepeji	Pensions, social infrastructure, scholarships	HCVF preserved, areas set aside; agricultural frontier checked; fire control institutionalized	Access to markets that value certified wood; access to environmental services markets
Mexico	SociedadSur (SPFEQR)	Political clout, lend vehicles for personal use, capture dev. Grants, roads, social infrastructure, pensions	HCVF preserved, areas set aside; agricultural frontier checked; fire control institutionalized	Project model copied in countries such as Ecuador and Guatemala.
Mexico	El Balcon	Pensions, social infrastructure, scholarships, 2005: 82percent reinvested in forest and enterprise, 18percent social goods	HCVF preserved, areas set aside; agricultural frontier checked; fire control institutionalized	Have cancelled contractual relationships with Westwood for delays in payments; community member trained as professional manager of CFE
Guatemala	Carmelita	Social capital, employment, self-esteem, networking, tenure security, social infrastructure, political capital alone and with ACOFOP associated.	HCVF preserved relative to other protected areas, own set-asides; ag frontier checked; fire control institutionalized;HCVF preserved, areas set aside; ag frontier checked; fire control institutionalized	Diversification of activities to generate greater income; from xate, chicle, black pepper and spices; exploring eco-tourism options; Association with FORESCOM for marketing of certified LKS
Guatemala	Arbol Verde	Social capital, employment, self-esteem, tenure security, diversification of income streams, social infrastructure.	HCVF preserved relative to other protected areas, own set-asides; ag frontier checked; fire control institutionalized;	Hotel and restaurant initiative, community carpentry, association with FORESCOM for marketing of certified LKS
Honduras	COATLAHL	Organizational maturity of producer groups with spin-off effects on other activities and initiatives; political voice; greater tenure security;	HCVF preserved, areas set aside; ag frontier checked; fire control institutionalized	COATHLAHL produces finished products; buys only part of AMI production; export market in certified Europe niche
Colombia	San Nicolas	Empowerment of local communities, creation of public-private partnerships, improvement of local capacities, improvement of family income and improvement in food security	Recuperate productive potential of land and soil in region; protect water flow and quality in hydropower and water generation watershed; create tradable carbon credits ; improved land practice knowledge	Diversification of tradable credits is part of the program; emergence of associations and new structures for civil society, private and public interaction; creating new sources of employment and income generation

Country	Case Study	Social Benefits	Environmental Benefits	Important Trends
Brazil	Mamirauá	Creation of a social fund to cover costs of medical service, but most benefits are mainly in an individual level	Has eliminated illegal logging in the area.	Illegal timber extraction decreased nearly to 0 %. Communities block timber extraction by external actors.
Brazil	Manicoré	Inter/intra community organization where none existed. Increased self-esteem and valorization of brazil nut activity. Increased knowledge of business practices.	Organic processes removing aflatoxin from supply. Access to FSC through timber company partner. Decreased slash and burn through environmental education. Increased forest management knowledge.	Organic certification process with new market opportunities, both domestic and international. National producer group of community brazil nut producers emerging.
Bolivia	AGROFORT	Self esteem, family credit rating improved	Check agricultural frontier, institute integrated management,	With better organization and skills, plan to invest in their own sawing and transport operation to cut costs; plan to add cacao and palm fruit oil
Cameroon	Ngola-Achip	Built 72 new houses in community with zinc roofing purchases from outside	Fire controls in areas of slash and burn; check deforestation, wildlife management	Better internal organization and conflict resolution with youth and elders/elites, new investment strategies for profits, better marketing strategies, lobby for reforms
Cameroon	CAFT	Employment – estimated generation of 200 jobs in the Ngoyla region; employment and skill development in a range of skill areas: cutting, carpentry, artists, dyers, herbalists, management, marketing.	Professionalize and mainstream local natural resource management practices based on indigenous knowledge; formalize decision-making processes that incorporate conservation and biodiversity concerns	Financial incomes from timber sales will augment and finance traditional local agriculture; plans to reinvest revenues from CAFT timber sales in housing, water and sanitation, electricity, health and education.
Tanzania	Amani Butterfly Group, Tanga Region	Producer associations gain business and accounting skills; improved productivity of farms in the region, employment, improved organizational and advocacy strength	Pressure on reserve declines, increased biodiversity in agroforested areas, local community as nature advocates	Close to reaching goal of $ 50,000 in sales per annum with hopes to make group independent of donors and NGO support system
Gambia	Bulanjor Village	Employment, income, infrastructure	Less forest fires, community monitored sustainability	Produce already 20percent of total country honey supply in 5 years so will quickly reach scale within domestic market
China	Pingshang Bamboo Group	Employment, skills building, income	Conservation of bamboo forest at low cost to nation; long-term social organization for	Improvements in quality and quantity will yield much higher returns as market demand for product is strong

			management	
Nepal	Chaubas-Bhumlu Sawmill	Fuelwood and NWFP to community; social infrastructure, training, schooling,	Community vested interested in sustainable practices	Danger from Maoist conflict and political backtracking; lobby to reform VAT and sales taxes on products, accountability of DFO office, further develop business organization with equity
Country	**Case Study**	**Social Benefits**	**Environmental Benefits**	**Important Trends**
Nepal	Tamakoshi Bel Juice	Regenerated forests with fruit NWFP and natural pesticide effect on crops; social confidence, better governance of FUG, drink bel not coca-cola	Reforestation; regeneration of fruit species; decrease in pestilence epidemics	Continue to build entrepreneurial skills, balance social and business goals, cost cutting on sample testing
India	Adilabad District, Andhra Pradesh	Improved incomes and employment; reduction in carbon emissions from the use of biofuel in village machinery	Reduction of use in chemical fertilizers, reduction in carbon emissions from the use of biofuel in village machinery	Carbon credits for restoration of degraded forests; *pongamia* becomes the basis for a new oil economy for the rural poor
Philippines	Ngan Panansalan Pagsabangan Forest	employment, income, infrastructure	four sections set aside: largest 3,700hs	Weak institutional support; intermittent RUP suspensions
Papua New Guinea	Madang	Community infrastructure development	Sustainable forest management in enterprise area	Program is taking and integrated approach to community development through Forestry as the main tool

ANNEX 10: Example of profitability/numbers from the Amazon[8]

Limited financial attractiveness was also confirmed by the assessments carried out for timber management initiatives in other parts of the Amazon. For example, even for the case studies analysed in Southern Ecuador, characterized by their relative proximity to markets and forests with a high stock of commercial timber, Robles (forthcoming) calculated a maximum net annual return of 15 US$/ha, which corresponds to a yearly income of 150 US$ considering an average forest area per family of about 10 ha. Assuming an allowable cut of 2–3 m_3 commercial timber per ha (Silva et al., 1995) in less favourable conditions typical for the region, annual income from forest management schemes as currently promoted throughout the region may not exceed 5 US$/ha. While this indicates some potential for generating complementary income, it is far from being sufficiently attractive for local families to resist other more lucrative forms of land use. Only in situations where families have larger areas of forest with the possibility of marketing timber and NTFPs did income from forests contribute significantly to livelihoods (Vos et al., forthcoming). But also for traditional communities and indigenous groups with larger forest areas, the possibility for the generation of a higher individual financial return was limited by the fact that income had to be divided between many families. Nevertheless, if local families had the opportunity to manage larger forest areas while being supported by external agencies, as for example in the case of the local association Ambê in Brazil, which manages nearly 30,000 ha, the analysis indicates potential to generate attractive employment opportunities for some local families (Medina and Pokorny, 2008).

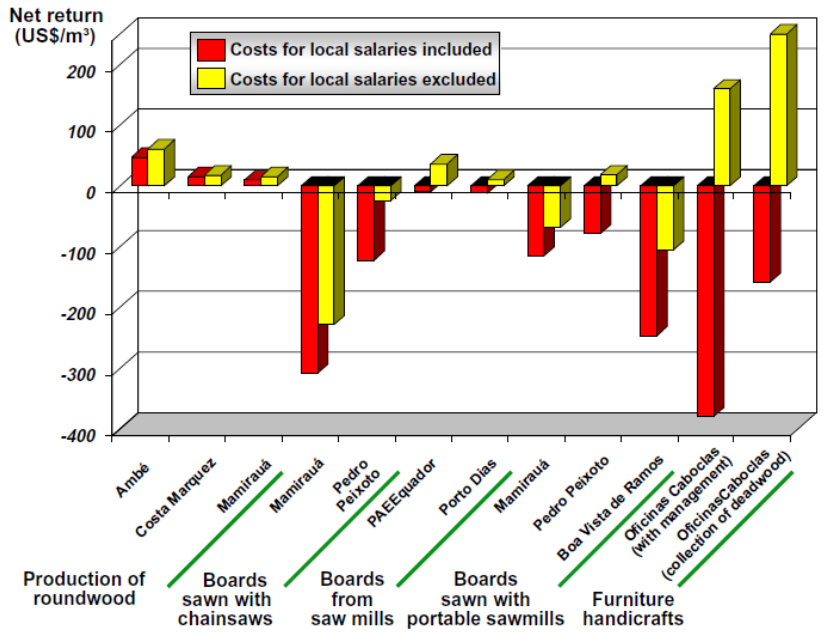
Similarly, the analysis of tree plantations provided to be of limited financial viability for the families, requiring significant investment with high risks associated (Hoch, 2009). Although focusing on case studies locally known as ‘‘promising”, only few farmers managed to successfully produce and market the plantations’ products, and those who did, achieved outputs of less than 30% of initial expectations. Around 60–90 working days were necessary to establish one hectare of plantations. This, together with the planting material, easily generated costs of more than 1000 US$/ha. In addition, during the first three years, a further 50–200 US$/ha were invested in weeding. Also, costs for harvesting and transport have to be considered, although these are rapidly re-paid. Nevertheless, the farmers, due to notorious lack of capital, tended to avoid even these costs and sold standing timber or logs at the farm gate, although for significantly lower prices. For example, farmers in Peru growing “Bolaina” (Guazuma crinita Martius) preferred to sell the standing trees for around 1.7 US$, while they would have been able to gain 3 US$ for the same tree if sold as round wood and even 6 US$ if processed as boards (Hoch, 2009). Analysis confirmed farmers’ observation that higher prices do not compensate for the higher input costs involved for transporting, processing and harvesting.

4.2.1. Significant implementation costs

For the case studies analysed in Brazil related to sustainable timber management, depending on the scale of the operations,

technology used and degree of vertical integration of the initiative, development organisations invested from 20,000 US$ up to

800,000 US$ on equipment, machinery and capacity building to establish the community forestry pilot projects (Fig. 3). While for larger initiatives the costs for heavy machinery and pre-financing harvesting operations were predominant, in smaller initiatives the costs for technical assistance needed to comply with the legal requirements represented the most important outlay. In all initiatives, costs for training were considerable, and varied between10,000 US$ in the smaller initiatives of less than 20 m_3 harvested timber per year up to 40,000 US$ for initiatives incorporating processing and manufacturing. These numbers were confirmed for similar initiatives in Bolivia, Peru and Ecuador, however, with slightly lower personnel costs due to lower salary levels (Medina et al., 2009c; Vos et al., forthcoming; Robles, forthcoming). The analysis revealed also significant investments made by the participating families – not considered in the above calculations – including significant time invested in meetings and training courses, as well as the dedication of large areas of land causing management restrictions and foregone income earning opportunities without compensation.



The observed competitive disadvantages of smallholder operations in markets were systematically aggravated by public sector

policies. For example, subsidies and incentives offered to the agricultural sector, due to allocation criteria and procedures, were

much more readily (sometimes even exclusively) accessible to large landowners and companies who were able to put up collateral for loans. As already highlighted by la Vina et al. (2006), also the strongly subsidized agricultural sector in industrialized countries distorted the prices on local markets. In addition, the markets in all study areas turned out to be controlled by cartels of large enterprises and influential family clans. They determined market mechanisms and prices, and left little room for independent commercialization by small-scale operators. This was especially the case for classic export markets such as timber and Brazil nuts (Bertholletia excelsa) (especially in Bolivia), but also for the lucrative emerging markets for oil palm (in Peru and Ecuador) and açaí (Brazil).

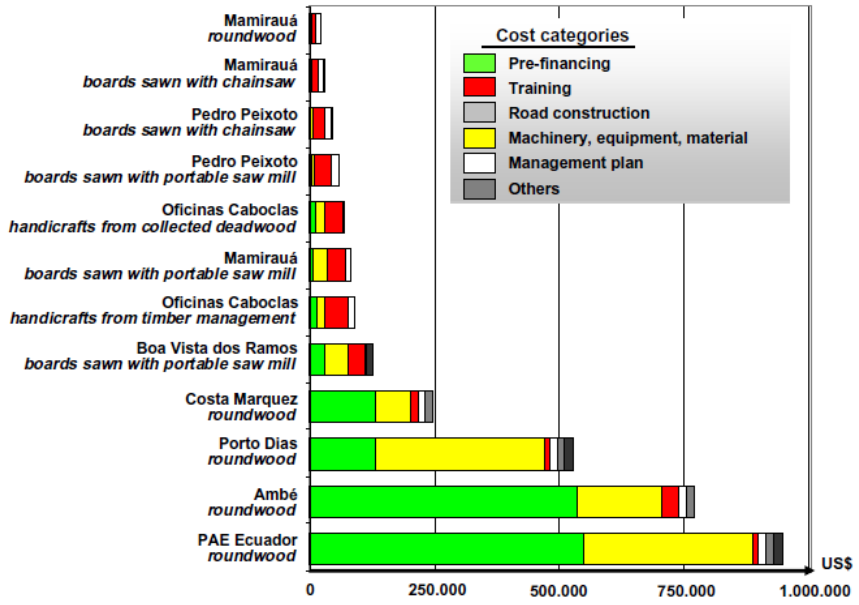


Fig. 3. Initial investments in community forestry initiatives. Estimates are based on interviews and secondary data considering investments of the supporting organisation and participating families in labour, consultancies, material, equipment and machinery, pre-financing reflect operational costs for 1 year (adapted from Medina and Pokorny, 2008).

ANNEX 11: Ministry of Environment, Forest and Climate - REDD+ fast track implementation

Table: REDD+ – Identified levers for GHG mitigation

Macro levers	Levers	Description
Reduce pressure from agriculture on forests	Agriculture intensification on existing land	Decrease requirements for new agricultural land by increasing yield and value of crops
	Prepare new land for agriculture through medium and large-scale irrigation	Shift of new agricultural land from forest to degraded land brought into production due to irrigation and use of natural fertilizer
	Prepare new land for agriculture through small-scale irrigation	Shift of new agricultural land from forest to degraded land brought into production due to irrigation and use of natural fertilizer
Reduce demand for fuelwood	Fuelwood efficient stoves	Reduce wood requirements thanks to efficient stoves (mostly in rural areas)
	Electric stoves	Switch to electric stoves (in urban areas mostly)
	LPG stoves	Switch to LPG stoves
	Biogas stoves	Switch to biogas stoves (in rural areas)
Increase sequestration	Afforestation and reforestation	Large-scale afforestation and reforestation of degraded areas
	Forest management	Large-scale forest management programmes

Forests of the World is an environmental NGO founded in Denmark in 1983 with the objective to conserve and manage the world's forests in a sustainable way. We create opportunities for communities and people, who aspire to save the forests of the world. We also aim to demonstrate and prove the value of the living forest through campaigns, consumer information, training, cooperation, and concrete work in and around the rainforest.

We work with international networks and partners in Latin America and Africa from offices in Aarhus and Copenhagen in Denmark and La Ceiba in Honduras.

The vision of Forests of the World is a world with rich forest nature.

In pursuit of our vision, we will:

- ensure ecologically, socially and economically sustainable use of the world's forests, in order to conserve or (re)generate valuable biologically diverse forest;
- support indigenous peoples and other local forest communities in their struggle for the right to live with dignity, thus empowering them to preserve their forest and way of life;
- engage citizens in the protection of nature, put the forest on the political agenda, and inform about the values lost when forests are destroyed and wild species-rich natural environments disappear;
- put the forest on the global agenda concerning climate, inequality, and development.

The development objective of our international work is:
To use individual and collective human rights and sustainable value chains as the foundation for conservation of the tropical forests benefitting the biological and cultural diversity, the global climate, as well as the living conditions of indigenous peoples and communities who depend on the forests.

We aim to contribute to the Sustainable Development Goals of the United Nations, and our strategic approaches are developed within the following areas:

- Forest, Climate & Biodiversity
- Sustainable Value Chains - Forest Management (FSC), Agroforestry, Tourism (GSTC) and Corporate Social Responsibility (CSR)
- Human Rights Based Approach
- Indigenous Peoples
- Partnership & Organization
- Gender & Equality
- Sustainable Development Goals

You can read more about our work, strategies and contact information on our website www.forestsoftheworld.org