

Promoting Legal Livelihoods in Ghana



Providing alternatives to illegal chainsaw milling practices through the EU Chainsaw Milling Project

James Parker Mckeown, John Kwesi Gyakyee Amonoo, Evans Sampene Mensah, Nico Rozemeijer and Marieke Wit

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Foreword

Over the years Ghana has struggled to deal with illegal chainsaw milling (CSM). Since its ban in 1998 there have been increasing efforts by government to discuss and implement strategies to address the problem, but the practice still flourishes. Today, illegal chainsaw milling employs 97,000 people, covering the entire domestic lumber supply chain, and supports the livelihoods of more than 650,000 people. It is estimated that the practice fells more than 800,000 trees in a year (2.4 million m³ RWE), which alone exceeds the AAC of 2 million m³. It is evident that any policy decision to contain this illegal practice that does not address the social aspects — especially livelihood issues — is likely to fail.

As part of the VPA with the EU on legal timber exports, Ghana included the production of timber for the domestic market, with the hope of finding a lasting solution to the illegal CSM problem. In 2008, a Multi Stakeholder Dialogue (initiated and facilitated by the EU CSM project, 2007–16) has been instrumental in finding viable alternatives to illegal CSM through the development of a policy proposal for the supply of legal lumber to the domestic market and other initiatives. Two of the key strategies in this policy proposal are the artisanal milling concept and livelihood opportunities that could provide viable alternatives to illegal CSM.

This publication documents the development process, the experiences and the lessons learned so far in piloting the artisanal milling concept and the livelihood opportunities: commercial charcoal production and tree plantation establishment. The Forestry Commission stands to benefit tremendously from this publication: it provides the basis for up-scaling artisanal milling and other livelihood opportunities. Organizations and countries that implement similar interventions in a challenging forest sector can also learn from these experiences and lessons. Pilot activities are still in progress. With the artisanal milling concept, the model developed needs to be tested and the scope widened to cover more geographical areas. The challenges identified with piloting these activities need to be addressed so that up-scaling will result in a sustainable future for Ghana's forests.

Raphael Yeboah

Executive Director of the Forestry Services Division of the Forestry Commission in Ghana

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We acknowledge the work of the project management team, community forestry workers and project staff — especially Samuel Kwabena Nketiah, Emmanuel Marfo, Mercy Owusu Ansah, Emmanuel Fosu, Jonathan Abagre, Mark Aidoo Gyamfi, Chrisantus Nifaasoyir, Isaac Owusu Boakye, Michael Boakye Amponsah, Alfred Hayford Biney, Rita Minta and Charles Davidson — in successfully piloting the livelihood alternatives. Finally, we recognize the participation of community members (former illegal chainsaw millers) in all the stages of piloting the livelihood strategies.

Executive summary

Illegal logging in Ghana is partly a problem of poverty. Poor people, unemployed youth and opportunistic individuals seeking quick cash earn money from the illegal chainsaw milling value chain. Changing the policy environment — especially enforcement to combat illegal logging — has proved to be important over the years but this needs to be complemented by providing the rural poor in forest communities with alternative income opportunities to deter them from illegal activities.

The Chainsaw Milling Project (CSM project) was initiated by the Ghana Forestry Commission, the Forest Research Institute of Ghana (FORIG) and Tropenbos International (TBI), with funding from the European Commission. It aims to find solutions to the issue of illegal chainsaw milling in Ghana. The project facilitates a Multi-Stakeholder Dialogue (see Parker Mckeown, Rozemeijer and Wit 2013) and develops alternatives to unsustainable chainsaw milling practices.

The CSM project has piloted three alternative forest-related income opportunities in its pilot districts: artisanal milling (ATM), plantation development and charcoal production. This publication describes, discusses and assesses these economic activities using four case studies: Obogu, Breman Anwhiam, Akrodie and Sankore. It reviews the extent to which these activities are viable alternatives to chainsaw milling, and how they contribute to the sustainable livelihoods of communities in and near forests in Ghana.

The reason to support artisanal milling, plantation development and charcoal production is strategic. These activities are very close to chainsaw milling in terms of the expertise required, and are appropriate to the organisations implementing the CSM project. Artisanal milling is a legal production model that can meet the market demand for lumber, provide rural employment, and is not very capital intensive; it is therefore an alternative to illegal chainsaw milling. Knowing the state of deforestation in Ghana, and aiming to ensure a future for the emerging artisanal milling sector, it is only logical to invest in plantation development with revenues from timber in the long term and agroforestry in the short term. Charcoal production has also proven to be a worthwhile investment. It brings cash income, and its production cycle is linked to plantation development (clearing, pruning and harvesting) and artisanal milling (processing of waste). The interconnections among the three economic activities optimises their viability and increases the likelihood of developing genuine alternatives to chainsaw milling activities, which are very profitable but illegal.

The livelihoods of people living in and around forests in Ghana comprise more than material resources such as monetary income. To assess change in the four case study communities, the project used the Sustainable Livelihoods Framework (Figure 1), which includes five livelihood assets, or types of capital. Poor people have, or lack, in

varying amounts, human, physical, social, natural, and financial capital. In the case studies it was possible to determine to a certain extent how these types of capital — at a community level — changed as a result of project interventions. In all cases there were positive changes, such as capacity building of artisanal millers associations (increased human capital); access to milling equipment provided by the Forestry Commission (physical capital); forming of associations and brokering of joint ventures with the private sector (social capital); access to legal lumber from logging companies and access to forest concessions for plantations (increased natural capital); and cash earnings from the sale of charcoal and agro-forestry products (financial capital).

This publication shows that the CSM project interventions to improve livelihoods in the four case study communities have the potential to reduce vulnerability. However, it also points to a number of conditions that are necessary for success when replicating these interventions elsewhere in Ghana:

1. There must be an adequate regulatory framework that allows artisanal milling to develop as a viable timber business sector in Ghana.
2. There must be secure access to legal logs for the artisanal milling sector to supply sufficient timber to the domestic market.
3. Working in community groups or associations should not conflict with the entrepreneurial ambitions of individuals. In other words, for community groups to succeed in viable and sustainable business operations “the community” must see sufficient benefits to be willing to control illegal activities amongst its members, or those of neighbouring communities.
4. There must be a secure access to land and resources to pursue other livelihood options beyond ATM; for example, for plantation development and charcoal production.
5. Community members need to be able to organise into groups/associations and acquire the knowledge and skills necessary to implement livelihood options.
6. Law enforcement by the Forestry Commission and other relevant agencies must be effective and must not be jeopardized by corruption and political interference, because these factors will undermine the business viability of legal artisanal millers.

These conditions of success call for urgent attention to three aspects of forest governance in Ghana: land and tree tenure, and the sharing of benefits (which are not equitable); access to forest land, which currently favours big companies; and the persistent corruption that jeopardizes any attempt to achieve sustainable forestry. The existing forest governance regime negatively affects the potential for small- and medium-scale processing of timber and related industries that could offer economically viable alternatives to illegal chainsaw milling.

Despite the adverse forest governance regime the case studies show that there is potential:

- Various forest-based livelihood options — such as artisanal milling, plantation development with an agricultural component and charcoal production — are all potentially viable as businesses and are applicable in all forest-dependent communities, but they require access to legal timber and land.
- Small- and medium-scale artisanal millers' enterprises are emerging in a better regulated domestic timber market sector, with more equitable income opportunities.
- There is increased capacity on the part of market-oriented associations to produce timber in a way that strengthens the livelihoods of local people.
- Interesting experiments in land and tree tenure reform — such as resource contracts with the private sector and land leases with government — offer increased rights and responsibilities in forest management to community groups; however, these need to be scaled up to have a noticeable effect on the sector.
- An increase in livelihood assets in the target communities has reduced vulnerability and created the possibility of structural changes in the forest sector that have the potential to benefit forest communities.
- A combination of short-, medium- and long-term measures are providing more access to legal timber: contractual arrangements with concession holders to remove residual yields; agreements with government to obtain harvesting permits and get access to confiscated logs (short-term measures); access to off-reserve resources (medium-term); and investment in community timber plantation development (long-term).

In addressing illegality there is a need to balance the short-term gain from supporting the wealthier community segments to invest in artisanal milling, with alleviating poverty in the long term among those who are worst off in forest-dependent communities. The balance is crucial: if members of the economic elite in the domestic lumber market chain are the only ones who are supported to become legal, other people will be driven into illegal chainsaw milling, both by rural unemployment and the demand for cheap timber.

There is an urgent need for action where sustainable forest management is concerned. The deforestation situation calls for urgent action in terms of reliable data on allowable harvest, enforcement, and changes in land and tree tenure that promote better ownership and better management.

Based on this context, the authors have learned four lessons about supporting the sustainable livelihoods of people who depend on illegal chainsaw milling activities:

1. For forestry related organisations such as TBI, FC and FORIG who aim to improve the livelihoods of forest-dependent communities, it proved effective to focus on those potentially viable activities that are forest-based, that reinforce each other, and that promise short-term, medium-term and long-term benefits for people and forests.
2. The livelihood strategies of forest dependent communities in Ghana are still linked to illegal chainsaw milling practices. This is partly due to structural flaws in the system (e.g., inequitable land and tree tenure and corruption), suggesting that it is more effective to address the systemic flaws rather than targeting isolated livelihood improvements.
3. Improving the livelihoods of forest-dependent communities requires secure access to forest resources and land for agricultural purposes.
4. Support from the wider community (both the local community and the entire Ghana society) is essential to stop illegal chainsaw milling practices in order to give legal artisanal milling a chance to succeed in the domestic market.

Abbreviations

| | |
|-------|--|
| ATM | Artisanal milling |
| CSM | Chainsaw milling |
| EU | European Union |
| FC | Ghana Forestry Commission |
| FLEGT | Forest Law Enforcement, Governance and Trade (EU initiative) |
| FORIG | Forest Research Institute of Ghana |
| FSD | Forest Services Division |
| GH¢ | Ghana cedi (at the time of writing, 3 GH¢ = 1 US\$) |
| LLL | Logs and Lumber Limited |
| MSD | Multi-stakeholder Dialogue |
| RWE | Roundwood equivalent (volume) |
| SLF | Sustainable Livelihoods Framework |
| TBI | Tropenbos International |
| TIDD | Timber Industry Development Division |
| TLAS | Timber Legality Assurance System |
| VPA | Voluntary Partnership Agreement (under the FLEGT initiative) |

1. Introduction



What is the problem?

Timber production in Ghana takes place in two parallel sectors: the formal timber industry and informal chainsaw milling. The formal industry consists of small-, medium- and large-scale logging companies that supply timber to mills for both export and the domestic market.

Until recently the industry was, by regulation, required to channel at least 20% of its production to the domestic market.¹ Companies are expected to operate legally and to harvest trees in a sustainable manner as defined by regulations set by the Ghana Forestry Commission (FC). Despite these requirements, Ghana has experienced severe

deforestation over the past few decades. In an attempt to halt the degradation of forests, the European Union (EU), one of Ghana's timber trading partners, offered the country a Voluntary Partnership Agreement (VPA).

The VPA helps the country achieve three main goals: reinforce timber legislation; streamline the necessary policies and regulations to better monitor and better enforce legislation; and put in place control mechanisms to ensure that only legal timber leaves Ghana for export to the EU. The VPA is expected to improve forest governance in Ghana (Proforest 2014).

The informal sector, commonly referred to as the chainsaw milling (CSM) sector, filled a niche market that the formal sector had largely ignored: the domestic market. The 20% of production provided by the formal industry did not meet the domestic demand for timber. Furthermore, the booming local market was not commercially attractive for the big companies that target the export market, which pays higher prices.

In 1998 Ghana banned the use of chainsaws to convert timber into lumber for commercial purposes, making CSM illegal. The reasons for the ban included the low efficiency rates of chainsaws, poor labour safety conditions, and the difficulty of monitoring compliance with regulations because of the high mobility of the operations.

The ban failed utterly. It is estimated that illegal CSM supplies 84% of the lumber to the domestic market (Marfo 2010), including government contracts. The CSM sector employs 97,000 people in the entire domestic lumber supply chain: chainsaw operators, apprentices, carriers, motorized transporters, small-scale millers, lumber traders and financiers. The sector supports the livelihoods of over 650,000 people. Research estimates that CSM fells more than 800,000 trees in a year (2.4 million m³ roundwood equivalent, or RWE). This illegal domestic trade alone exceeds the Annual Allowable Cut of 2 million m³ (Marfo 2010: xi).

Illegal CSM in Ghana is part of a complex and volatile context:

- rapid degradation of forests;
- non-payment of fees and levies, leading to a yearly revenue loss of US\$18 million for the government;
- conflicts, sometimes violent, between land and resource owners and chainsaw millers; and
- illegal practices that stimulate the development of exploitative business relations, with few benefits for those early in the production chain, and large benefits for others, usually the financiers, who come from outside the forest communities (Wit et al. 2011: 31; Bosu, Appiah and Marfo 2014: 4).

What caused the informal sector to flourish? Marfo (2010) noted seven compelling drivers, which are still valid today:

1. Lack of adequate policy response to domestic timber demand — the formal industry does not sufficiently supply the domestic market and the policy environment has not changed to make that happen in a legal manner;
2. Access to and affordability of chainsawn lumber — over the years illegal chainsaw milling has been able to provide cheap lumber;
3. Tenure and inequitable benefit sharing — the law vests ownership of natural growing trees, including trees on private farms, in the state. This tenure arrangement does not encourage good tree management; rather, it is a perverse incentive for people to cut down trees, as they are perceived as not belonging to anyone. Formal tree harvesting includes mechanisms for sharing benefits between the contractor and the community, but arrangements are such that individual farmers and community members receive few benefits, and do not feel compelled to protect their potential income-earning resources.
4. Rural unemployment — this is a very important driver of chainsaw operations;
5. Corruption among forestry officials and law enforcement agencies, and weak institutional governance;
6. Political interference by senior politically appointed people in government to protect the interests of those they are affiliated with; and
7. Lack of political will to enforce the ban — strict enforcement in the current context would bring the domestic construction sector to a near standstill.

The EU Chainsaw Milling Project

In Ghana, a chainsaw milling project (Box 1) has been developed in partnership with Tropenbos International (TBI), the Forest Research Institute of Ghana (FORIG), and the Ghana Forestry Commission (FC). It is funded by the European Union (EU). The first stage of the project to address Ghana's complex CSM situation has been the design and facilitation of a Multi-Stakeholder Dialogue (MSD). This allows participants to better understand the causes of CSM-related problems and develop options to address them.

The MSD has brought stakeholders together to change the policy environment of the domestic timber market. This should help address the seven drivers of CSM listed above and reduce the level of conflict and illegality. The MSD is the main mechanism for achieving the project's objectives. (The lessons learned in the design and facilitation of the MSD between 2008 and 2013 are described in Parker Mckeown, Rozemeijer and Wit 2013.)

BOX 1. THE EU CHAINSAW MILLING PROJECT

The EU Chainsaw Milling Project aims to find solutions to the problems associated with the production of lumber for local timber markets. The project involves stakeholders in dialogue, information gathering and the development of alternatives to unsustainable chainsaw milling practices. The goal is to reduce the level of conflict and illegality related to chainsaw milling and to reduce poverty and promote viable livelihoods in forest-dependent communities.

The project has two phases: 1) developing alternatives for illegal chainsaw milling through a Multi-Stakeholder Dialogue in Ghana and Guyana (March 2007–April 2013); and 2) supporting the integration of legal and legitimate domestic markets into Voluntary Partnership Agreements, or VPAs (April 2011–April 2016; see Box 2).

See www.chainsawmilling.org for more information.

The MSD has been informed by numerous studies into the causes of chainsaw milling at the national and international level, as well as research into good milling practices and technical, socio-economic and environmental perspectives.² The platform, especially its technical committee, acts as a think tank, and is increasingly recognized as such.

The connection between reducing CSM and implementing VPAs (Box 2) that was developed between the EU and Ghana in 2009 has supported this work, since the VPA and the Timber Legality Assurance System (TLAS) also cover the domestic market. With a pledge to allow only legal lumber on the domestic market the stakeholders must carry out a mammoth task to repair decades of damage to forestry policy and practice in Ghana. The MSD is a catalyst in that task.

The second part of the CSM project is directed to reducing poverty and promoting viable livelihoods in forest-dependent communities. Since 2007 the project has worked in a number of pilot forest districts (currently ten) in CSM-prone areas in Ghana. In those districts³ a number of communities were selected to pilot viable livelihood opportunities that could replace illegal operations. Studies were done to jointly identify these opportunities with community members. Long lists of forest-based or alternative livelihood options were considered, such as poultry raising, snail rearing, soap making and general trading.

Project management by forest-related organizations (FORIG, FC and TBI) strategically focused on sustainable forest-based livelihood opportunities: artisanal milling, plantation development/agroforestry, and charcoal production (see Chapter 2). These options were presented to and confirmed by the MSD. The rationale for these choices was clear:

- artisanal milling is a viable alternative to illegal chainsaw milling (although not all chainsaw millers can be converted to artisanal millers);
- plantation development with agroforestry offers alternative incomes (short-term from the sale of crops, and long-term from the sale of timber) while increasing forest cover; and
- both activities yield the resources for legal charcoal production, creating legal incomes for rural people.

BOX 2. THE FLEGT VPA PROCESS IN GHANA

The European Union (EU) Action Plan for Forest Law Enforcement Governance and Trade (FLEGT) is the EU's response to illegal logging. Voluntary Partnership Agreements (VPAs) between the EU and timber exporting countries are being developed to implement FLEGT. The VPA is a mutual commitment by the EU and the producing country to combat illegal logging by facilitating trade in legal timber and improving forest governance. In November 2009, Ghana became the first country to sign and ratify a VPA, which included the domestic timber trade.

Each VPA is underpinned by a strong timber legality assurance system (TLAS). This system allows the timber-exporting country to verify that timber and timber products are sourced and produced legally, and to award a FLEGT licence to each verified consignment. The EU provides support to help the partner country implement its TLAS. Once the system is in place and has successfully passed an independent evaluation, the EU will accept only FLEGT-licensed timber from the partner country.

The VPA process takes time. Since ratification more than five years has passed and no FLEGT-licensed timber has yet left the Ghana shore.

Alternative livelihoods

The term “alternative livelihood” as used in the forestry sector in Ghana has taken on a specific meaning over time: to replace illegal or unsustainable forest uses that support people’s livelihood by an alternative (legal and more sustainable) livelihood activity. The assumption is that people who live in forest-fringe communities, who are often poor, with little opportunity to get legal access to forest resources, have the ability to replace an often lucrative, familiar and in principle community-accepted income opportunity such as poaching animals or harvesting trees, with another one.

This assumption is increasingly being challenged. First, poor people tend to be risk averse in the sense that they make rational decisions to diversify their income opportunities as much as possible. If one source of income fails, there are others to keep the household going. Poor people are therefore likely to accept “alternative” income as an additional source, rather than a replacement to existing sources of income. Second, it has proven to be difficult to find alternative income opportunities that can compete with illegal or unsustainable opportunities such as illegal logging, poaching, illegal mining, drug production and trade. Third, reviews of alternative livelihood projects generally show very low success rates in finding alternative livelihood opportunities that can survive the closure of a donor project (e.g., Nutakor et al. 2014: 1 and 2). Despite the promises of the potential of grasscutter, chicken, goat and snail production, very few of these economic opportunities brought enough alternative income to forest users to make them stop illegal practices. That is why it is better to talk in terms of “sustainable” livelihoods.

When are livelihoods sustainable?

Sustainability is important if progress in poverty reduction is to last. The sustainability of livelihoods has several dimensions, including environmental, economic, social and institutional factors. Livelihoods are sustainable when they achieve four goals (based on Ashley and Carney 1999: 46):

- they are resilient in the face of external shocks and stresses;
- they do not depend on external support (or if they do, this support is itself economically and institutionally sustainable);
- they maintain the long-term productivity of natural resources; and
- they do not undermine the livelihoods of, or compromise the livelihood options open to, others.

Thinking in terms of sustainable livelihoods this way makes it more likely that project interventions will succeed. If the policy, the economic and institutional context is supportive, new livelihood options may even encourage people to stop illegal forest use.

Currently three communities are piloting artisanal milling: Obogu, Sankore and Akrodie. Three communities started tree nurseries and plantation development: Obogu, Feyiase and Breman Anwhiam. All these communities also take part in piloting charcoal production.

The impact that the project wants to achieve is clear: it wants to change the forest policy environment — especially those measures that regulate the domestic timber market — in such a way that those people who formerly supplied the market illegally will engage in legal timber production or find other income sources. The goal is to assist them in forming legal and economically viable organizations to have easier access to legal forest resources and greater access to financial capital and donor support. The project intends to build their capacity to manage forest resources in a sustainable manner, and as a result to earn a viable and sustainable livelihood. These outcomes are assumed to represent the interests of the wider forest-dependent community.

These are the specific project interventions (Bosu, Appiah and Marfo 2014; annual project reports):

- *create (community-based) artisanal millers associations in the pilot districts* — this includes leadership development, improving the governance of small organizations, dealing with group dynamics, business plan development, linking the associations with private-sector forest concessions, and improving communication with key stakeholders;
- *build the capacities of illegal chainsaw millers in artisanal milling* — this strengthens capacity in health and safety matters, better milling techniques, improvement of efficiency and value-adding (e.g., linking artisanal millers with *small and medium enterprises (SMEs)* such as carpenters and those charcoal burners who utilise milling residues), improved skills in business administration, accounting and marketing;
- *clarify the rights and responsibilities of timber producing communities* — this includes capacity development and making use of the MSD;
- *provide viable/sustainable livelihood alternatives to illegal chainsaw operations* — including identification of viable forest-based options (e.g., artisanal milling, plantation development, charcoal production), forest-related ventures (e.g., agroforestry, non-timber forest product harvesting, product development and marketing), and other livelihood options (e.g., agriculture, trade, small industries, etc.), as well as related networking and linking with relevant service providers, and capacity building for chainsaw community members; and

- *build the capacity of chainsaw milling communities in line with sustainable forest management* — this includes awareness raising, stakeholder analysis exercises, mapping of chainsaw activities and damage assessments, livelihood surveys, management planning and monitoring.

The purpose of this publication

The emphasis of the Chainsaw Milling Project to date has been the design and facilitation of the multi-stakeholder dialogue, including the commissioning of research and forest policy review and formulation. The project has also made substantial investments in supporting livelihoods. This publication addresses three aspects of this component:

1. What strategies were chosen and what activities were undertaken to reduce poverty and promote viable and sustainable livelihoods in forest-dependent communities?
2. What achievements have been made since the start of the project in 2007?
3. How can this information increase the impact of the project during the remainder of its term and the impact of other interventions?

2. Reducing poverty and promoting sustainable livelihoods



The Multi-Stakeholder Dialogue (MSD) has had several impacts on livelihoods in forest-dependent communities in Ghana:

- changing policy environments by giving small-scale operations more access to forest resources to supply the market with legal lumber;
- increased knowledge of forest management practices; and
- debate on land and tree tenure and on the design and implementation of benefit distribution mechanisms.

The MSD contributes to an enabling environment for making concrete improvements to the livelihoods of people in forest-dependent communities. These improvements involve three inter-related strategies: artisanal milling; plantation development/ agroforestry; and charcoal production.

From chainsaw milling to artisanal milling

In order to supply the domestic market with legal lumber a new production model has been introduced in the Ghana forestry sector: artisanal milling. It is the legal alternative to illegal CSM. The concept has been developed in consultation through the MSD. The participants agreed that as part of a new domestic timber policy the domestic market would be supplied with legal timber obtained from sustainable yields by both sawmills and artisanal millers.

Artisanal milling was introduced in 2011. Since then a lot of effort has gone into implementing and institutionalizing both the policy and the practice of artisanal milling.

Artisanal milling (ATM) is a new legal contributor to the country's timber market. ATM helps to reduce conflicts by converting illegal producers into producers with legal access to resources. It promotes better use of timber resources, since the prescribed milling equipment for artisanal millers is more efficient. It also helps to implement the policy of supplying legal timber to the domestic market and thereby promotes good forest governance and sustainable resource use. The concept fits within the context of existing legislation, provides opportunities for employment and helps to nurture and promote the growth of businesses in the wood sector (see Box 3).



BOX 3. ARTISANAL MILLING

Artisanal milling is defined as: “small-medium scale milling of timber from specified legal sources by a trained, certified, registered and licensed Ghanaian artisan, using licensed portable sawmilling equipment that excludes any form of chainsaw machines and is capable of recovering at least 50% of dimension lumber from logs for the domestic market only. This may be processed in-situ⁴ or ex-situ.”⁵

ATM has been piloted in three communities: Obogu, Akrodie and Sankore. They were selected based on criteria set by the 2013 MSD meeting:

- they have a legally registered ATM group/association with internal self-regulations;
- members of the association are trained in organizational development and management;
- groups/associations have access to a suitable production site that can be connected to three-phase electricity;
- there are potential linkages to concession holders and the domestic market;
- the wider community is fully committed to supporting the FC’s Forest Services Division (FSD) to sustainably manage surrounding forests;
- the association has representation on the MSD; and
- there is a business plan that shows that the association can pay for the ATM equipment within the stipulated period.

ATM capacity building and legal registration

Since ATM is a new concept in Ghana’s forestry sector, substantial efforts have been made in building the capacities of former chainsaw millers. Training has addressed several topics:

- how to organize an ATM association, and how to register legally;
- leadership and basic business management, including group dynamics, leadership skills and functions; basic records and book-keeping; costing and pricing; and funding small and medium enterprises — 60 people were trained in each pilot community;
- technical aspects, including sawmill operation and maintenance, wood treatment and storage;
- marketing, including pricing, financial management, business ethics, market intelligence, taxes, banking culture, income and expenditure accounts and building business linkages; and
- conflict management and building negotiation skills.

The last two training programmes were targeted to ATM associations that had registered and acquired milling equipment (37 people trained in Obogu, Akrodie and Sankore).

After initial capacity building in all project pilot communities, chainsaw operators were assisted to organize into associations, with elected executives to manage their activities. The reasoning behind this include improved accessibility to the authorities for large numbers of individuals through legal representatives as well as improved access for associations to markets, joint purchases and sales, strengthened power position in negotiations, increased leverage in lobbying for support and the possibility of defining internal financial and administrative control mechanisms. Associations were legally registered with the Registrar-General's Department. In addition to this legal registration, the associations also registered with the FC's Timber Industry Development Division. In Akrodie, the association is made up of individual artisanal millers with their own equipment, and members register on individual basis. Those who have completed the registration process have been issued with certificates (see Annex 1).

Access to legal timber — linkages with the private sector

ATM associations in Akrodie and Sankore (Goaso Forest District) have been linked to the sawmilling company Logs and Lumber Limited (LLL) to supply legal logs to process into lumber. A business agreement has been signed to formalize the linkage (Box 4). LLL will supply the artisanal millers with legal timber resources; the millers will protect the concession. The agreement involved negotiations on timber species to be supplied, prices, how the concessions should be protected and how to report illegalities.

BOX 4. LOGS FOR PROTECTION

Logs and Lumber Limited (LLL) is a private logging company with concessions close to Akrodie and Sankore. The company has suffered losses from chainsaw gangs stealing trees from their concessions, and from staff members selling logs illegally to local millers. The company also has hundreds of less commercially attractive trees in its concessions for which it could not find an international buyer. These trees are left uncut or are cut down illegally. In both cases this means a loss to the company and to the Forestry Commission, which doesn't receive its fees. The brokered venture between LLL and the community benefits both sides (see Annex 2). Members of the artisanal millers association, with community support, stop the stealing and the illegal sale of logs and in return receive unremoved yield,⁶ logging residue, and confiscated logs at market price to supply the domestic market. The forest also benefits because less illegal logging occurs.

Initial challenges

Even though stakeholders in the Ghana forestry sector perceive that ATM has the potential to provide legal lumber, there are challenges:

- the initial investment costs (equipment, capacity building and the purchase of logs) are high;
- access to legal timber is limited, since forest resources in Ghana are dwindling rapidly;
- the number of operators who are willing to convert to ATM is larger than the industry can support;
- log pricing is an impediment due to delays and difficulty in negotiations with concession holders;
- after decades of illegal forest use there is great mistrust between ATMs and concession holders and between ATMs and lumber traders;
- illegal CSM activities (made possible because of corruption, political interference and weak law enforcement) are still the rule rather than the exception; and
- there are potential abuses (such as limited safeguards to avoid elite capture) which must be prevented to avoid mismanagement of machinery and the association.

Possible strategic responses

There are six ways for the sector to address these challenges:

1. further explore the potential of the ATM model as an alternative to the illegal supply of the domestic timber market;
2. if viable, implement the ATM model, and have it enforced by the Ghana FC;
3. continue to build the capacity of existing associations (in milling regulations and sustainable forest management) and provide training in new skills, such as technical and business tasks;
4. support the establishment of ATM sites linked to private concessions for the legal supply of logs;
5. make more forest land available for ATM associations; and
6. monitor the impact of the model on livelihood improvement, forest health and forest industry development.

Plantation development

Plantation development as a source of sustainable livelihoods was implemented in three pilot communities: Obogu, Feyiase, and Breman Anwhiam. The selection of plantation development as an activity was based on the interest expressed by communities in the pilot districts, and the availability of degraded forest lands. The project

focused on communities whose primary livelihood was farming. The objective is to establish mixed-species tree plantations to create job opportunities for former illegal chainsaw owners, operators and lumber carriers; improve the environment; and provide high-quality wood by the year 2035.

These are the specific objectives:

1. reforest the allocated degraded areas using indigenous and exotic tree species;
2. provide timber resources for members of the community associations, who are former illegal chainsaw owners, operators and lumber carriers;
3. provide non-timber forest products (including food crops) in the short to medium term; and
4. assist in solving the illegal CSM problem in the Juaso, Begoro, and Assin Fosu forest districts, where the communities are located.

Plantation development is traditionally government-driven. For that reason, plantation development often lacks community ownership, which can result in illegal encroachment by community members to take what they claim is rightfully theirs. The project has brokered the allocation of degraded forest compartments by Forestry Commission to community associations on the basis of written agreements that build on the Modified Taungya System (MTS) model. Based on this model all of the proceeds from the food crops go to the ATM association. Participants share the profits from the trees:

- Forestry Commission and Tropenbos International Ghana:⁷ 40%;
- the association: 40%;
- land-owner (the chief): 15%; and
- the community: 5%.

Capacity-building activities

An intensive three-day training programme was implemented for each of the project communities; a total of 100 participants were trained. The aim of the training programme was to transform illegal chainsaw operators into environmentally-conscious entrepreneurs interested in improving Ghana's forest cover and practising sustainable forest management.

The training covered three broad topics:

- introduction to forest plantation establishment;
- field establishment and management techniques; and
- forest tree nursery techniques.

These were the specific objectives of the training:

- to enhance and emphasize interest in tree growing rather than tree planting;
- to teach trainees the best skills in silviculture; and
- to equip trainees with basic skills in sustainable forest management.

The project provided tree seeds, tree nursery tools and equipment to each of the associations. The FC allocated areas of degraded forest reserves for the reforestation exercise. Each of the three communities (Obogu, Feyiase and Breman Anhwiam) that participated was allocated one compartment of degraded forest reserve. Table 1 gives an overview of the species that were planted. The percentage of indigenous species to exotic species is 11: 89 per hectare (ha).

Table 1. Planted tree species, reforestation exercise

| Indigenous species | Exotic species |
|-------------------------------------|------------------------------------|
| <i>Terminalia superba</i> (Ofram) | <i>Tectona grandis</i> (Teak) |
| <i>Khaya</i> spp. (Mahogany) | <i>Cedrella odorata</i> (Cedrella) |
| <i>Terminalia ivorensis</i> (Emire) | |
| <i>Senna siamea</i> (Cassia) | |
| <i>Nauclea diderrichii</i> (Kusia) | |
| <i>Pouteria aningeri</i> (Asanfena) | |

Plantation development in Obogu, Feyiase and Breman Anhwiam

Planting

The annual planting target is 20 ha per year. Planting is planned to coincide with the major rains each year, which fall between April and June. A spacing of 3 metres (m) x 3 m is maintained for *Tectona grandis* (Teak) and *Cedrella odorata* (Cedrella). Indigenous species are planted at a spacing of 12 m x 12 m. The spaces between the trees are planted with food crops such as cocoyam and plantain. Maize is planted and harvested before the tree seedlings are planted. Cassava is planted only at the outermost edges of the plot and at least one metre from a tree. This prevents potential interactions between the cassava tubers and the tree roots, which could hinder the development of the tree roots. Food crops are intercropped with tree crops until the tree canopy closes, which takes three to five years.

Tending

The association members weed around the saplings and the agricultural crops three times annually in the first and second years and twice in the third year. Line cleaning (weeding around and within the plantation along the lines in which the trees are planted) is carried out twice in year four and after that until the canopy closes.

Beating-up (replacing dead seedlings)

The percentage of trees that survive is determined by a survival survey in August each year. Dead seedlings are replaced in September in advance of the minor rains. This will ensure a fully stocked stand to allow for a closed canopy, which suppresses weed growth. Beating-up is undertaken using large and healthy nursery stock set aside for this purpose.

Pruning/singling

Pruning, which removes unwanted/excess branches on a young tree, is carried out in the first five years of planting to reduce knots in the developed wood. Those branches that produce two stems will have one of them removed (known as singling) unless both stems are strong enough to grow well. Pruning is carried out each time that tending takes place. It must be executed carefully to avoid inflicting heavy wounds on the stems of young plants.

Thinning

Thinning is an important activity in the plantation programme. It is carried out periodically to achieve several management objectives (Table 2).

Table 2. Planting and thinning schedule

| Year | Task | Spacing | No. of trees/ha | No. of trees harvested | Purpose of harvested trees |
|-------|----------|-------------|-----------------|------------------------|----------------------------|
| 0 | planting | 3 m X 3 m | 1,110 | — | — |
| 4 | thinning | 6 m X 6 m | 550 | 550 | telephone poles/fuelwood |
| 8 | thinning | 12 m X 12 m | 300 | 250 | telephone poles/fuelwood |
| 14 | thinning | 24 m X 24 m | 150 | 150 | saw logs |
| 20–25 | harvest | — | 150 | 150 | saw logs |

Fire plan

For the plantation to achieve meaningful results, fire protection is a key component. Serious precautions must be taken against bushfires. The Ghana National Fire Service will train community fire squads and equip them with firefighting tools. Daily patrols of fire breaks during the dry season (between December and February) will be maintained by the community.

Green belt

A ten-metre-wide green belt will be constructed around the external boundary of the entire plantation plot to protect it from fire. The green belt will consist of evergreen species, including *Milletia thonningii*, *Blighia sapida*, *Senna siamea* and *Khaya senegalensis*. To ensure early canopy closure a spacing of 1.5 m X 1.5 m will be used.

Ride construction

Protective measures are also required for the internal boundaries. In this case, 1.5-metre fire breaks will be constructed between the 10-ha sub-plots to ensure that a fire in one sub-plot does not enter any others. The rides will be constructed using labour provided by the members of the association and will be maintained annually.

Observation towers

An observation tower will be constructed at the most appropriate point in the reserve. This will be staffed both day and night during the dry season from November to March.

Charcoal production

The demand for charcoal in both the local and international markets is high in spite of the existence of other sources of energy, such as firewood, liquefied petroleum gas and kerosene. Domestic consumption of charcoal is estimated at 5,200 metric tonnes per year. For this reason the MSD included commercial charcoal production as one of the viable alternative livelihoods for people involved in illegal CSM.

Assessing the viability of commercial charcoal production

The MSD agreed that the first step to promote commercial charcoal production as a livelihood option was to study its costs and benefits. Results of the study (Darko-Obiri et al. 2014) indicate that commercial charcoal production, irrespective of wood source and technology, is profitable at Ghana's prevailing agricultural and forestry lending rate of 22%. However, there were considerable differences in returns among the three charcoal-burning methods. Production with a metal kiln returns the highest profit, with a value of GH¢14,000,⁸ compared with GH¢5,800 for the brick kiln method and GH¢2,400 for the earth mound.

Piloting commercial charcoal production

Based on the charcoal study (Darko-Obiri et al. 2014), the project — in collaboration with the FC's Timber Industry Development Division (TIDD), Resource Management Support Centre (RMSC) and Forest Services Division (FSD) — developed a plan to use harvested raw material from green fire belts around Bosomkese Forest Reserve in the Bechem Forest District (Brong Ahafo Region). This involved training former chainsaw operators who had decided to opt out of milling and go into commercial charcoal production. Participants from all ten pilot communities, except Nkawie and Sunyani Forest districts, were trained. The collaborators provided the following support:

- TIDD provided funds to construct six metal kilns, each with a maximum capacity of 875 kg of charcoal; covered the cost of harvesting the wood raw material for the training; and identified the charcoal trainer and covered half of his consultancy fees.

- RMSC provided wood raw material (about 400 m³); trained trainees in harvesting techniques (coppicing) of wood in fire breaks, and in stacking and calculating volumes of harvested wood material; and provided a truck to transport harvested materials from the forest to the training site.
- FSD identified the training site; negotiated with the community leaders for the use of the site; and supervised harvesting.
- EU CSM project staff identified and organized interested former chainsaw operators; provided safety equipment and other logistics for the training; covered the other half of the trainer's consultancy; and covered the other costs of training (food, accommodation and transportation).

Identification and capacity building of former chainsaw millers

The former chainsaw operators in the pilot communities were identified after being made aware of the ATM concept, Ghana's dwindling timber resources, and the reality that not all people involved in illegal CSM can be accommodated under ATM. About 250 people from the pilot communities expressed interest in commercial charcoal production. Due to the large numbers and to reduce costs, the project decided to design a training-of-trainer programme for 27 selected people in three groups. Each group was made up of a maximum of ten people for ten days. These key areas were covered by the training:

- harvesting green fire belts, stacking and calculation of volumes of material;
- selecting suitable sites for charcoal production;
- setting up metal kilns and wood platforms;
- stacking wood materials into kilns, ignition and vent regulations;
- carbonization and recovery of charcoal;
- weighing and packaging; and
- safety and health measures.

As a follow-up to the training, some selected trainees were asked to train other interested former chainsaw operators by carbonizing the remaining wood materials on their own. This second training produced more charcoal than the first training programme did. The project is developing a manual and business plan for the former chainsaw millers for commercial charcoal production. It uses green fire belts and ATM wood waste and targets both local and international markets. Production is planned to start in 2015.

Conditions for success

Successfully implementing activities as part of these intervention strategies — and indeed, being able to measure tangible positive impact in reducing poverty and promoting sustainable livelihoods in forest-dependent communities — hinges on a number of conditions:

1. There is an adequate regulatory framework that allows ATM to develop as a viable timber business sector.
2. There is a secure access to legal logs for the ATM sector to supply sufficient timber to the domestic market.
3. Working in community groups or associations does not conflict with the entrepreneurial ambitions of individuals. In other words, for community groups to succeed in viable and sustainable business operations, members of the group must see sufficient benefits to be willing to control illegal activities amongst its membership, or those of neighbouring communities.
4. There is a secure access to land and resources to pursue other livelihood options beyond ATM; for example, plantation development and charcoal production.
5. Community members have the capacity to organize into groups/associations, and to obtain the required knowledge and skills to be able to implement livelihood options.
6. Law enforcement by the FC and other relevant agencies is effective and is not jeopardized by corruption or political interference. If these activities continue they will undermine the business viability of legal artisanal millers.

The livelihood strategies followed by the project varied in the pilot communities, depending on factors such as available resources and the organization of the communities. The four case studies described here have piloted a range of strategies:

- Obogu: plantation site, artisanal milling operation, charcoal production;
- Breman Anwhiam: plantation site, charcoal;
- Akrodie: milling by a cooperative of individual artisanal millers, charcoal; and
- Sankore: milling by an association of artisanal millers, charcoal.

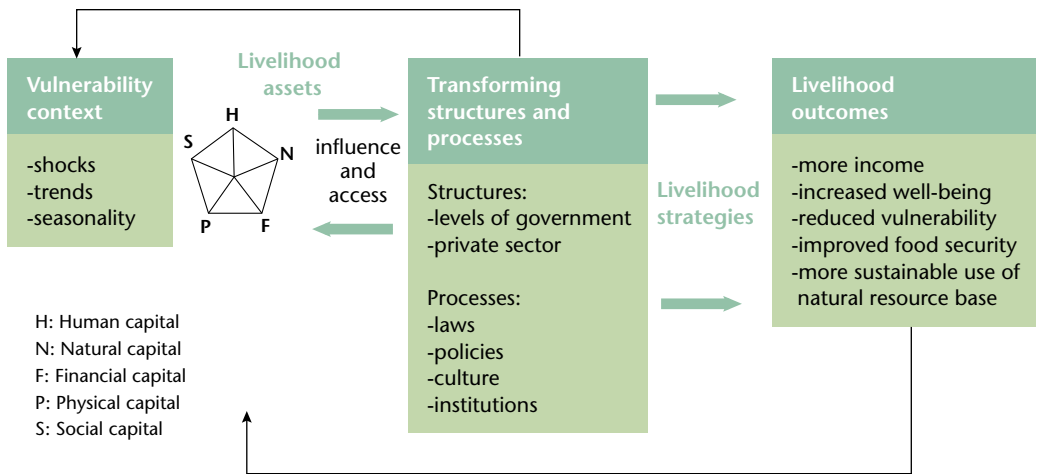
3. The Sustainable Livelihoods Framework



The project uses the Sustainable Livelihoods Framework (SLF) designed by the Department for International Development (DFID) to assess its livelihood support component (Figure 1).

The framework is a holistic, asset-based model to improve the understanding of the livelihoods of poor people (Box 5) and assess the contribution of interventions to sustaining livelihoods. The model provides a simple but well-developed way of thinking about the complexities related to poverty.

Figure 1. Sustainable livelihoods framework



Source: DFID 1999

The SLF places people, particularly rural poor people, at the centre of a web of inter-related influences that affect how these people create a livelihood for themselves and their households. Closest to the people at the centre of the framework are the resources and livelihood assets that they have access to and use.

BOX 5. SUSTAINABLE LIVELIHOODS

A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets, both now and in the future (DFID 1999).

Livelihood resources may be seen as the “capital” from which livelihoods are constructed. Five different types of capital are identified (Scoones 1998; DFID 1999):

1. **Human capital** represents the skills, knowledge, ability to work and good health and physical capability important to livelihood strategies.
2. **Physical capital** comprises the basic infrastructure and producer goods needed to support livelihoods (infrastructure consists of physical assets that help people meet their basic needs and be more productive; producer goods are the tools and equipment that people use to function productively).

3. **Social capital** refers to resources such as networks, social relations, affiliations, and associations on which people draw when pursuing livelihood strategies that require coordinated actions.
4. **Natural capital** is the term used for the natural resource stocks from which resources flow (e.g., forests, water bodies) and services (e.g., nutrient cycling, erosion protection) useful for livelihoods are derived.
5. **Financial capital** denotes the monetary resources that people use to achieve their livelihood objectives (cash, credit/debt, savings, and other economic assets).

The extent to which poor people can use or increase their mix of livelihood assets is strongly influenced by their **vulnerability context**. This takes account of trends (e.g., economic, political and technological), shocks (e.g., epidemics, natural disasters and civil strife) and seasonality (e.g., prices, production and employment opportunities). Access to opportunities to improve livelihoods is also influenced by the prevailing **social, institutional and political environment**, which affects the ways in which people combine and use their assets to achieve their goals.

The ways in which poor people combine and use their “capital” are called **livelihood strategies**. There are many possible strategies, and they cannot be easily generalised. They are often characterised by people building assets, and/or reducing their vulnerability by avoiding or spreading risks; in other words, diversifying their livelihood strategies (Ellis 1998). These activities can be mistaken as opportunistic behaviour, but are in fact rational strategies to avoid risk (see Figure 1).

The SLF is a coherent and integrated approach that pays attention to the various factors and processes that either constrain or enhance poor people’s ability to make a living in an economically, ecologically and socially sustainable manner. It is not a linear process and does not attempt to provide an exact representation of reality. Rather, it seeks to provide a way of thinking about the livelihoods of poor people that will stimulate debate and reflection about the many factors that affect livelihoods, the way they interact and their relative importance within a particular context. This should help in identifying more effective ways to support livelihoods and reduce poverty.

4. The four case studies



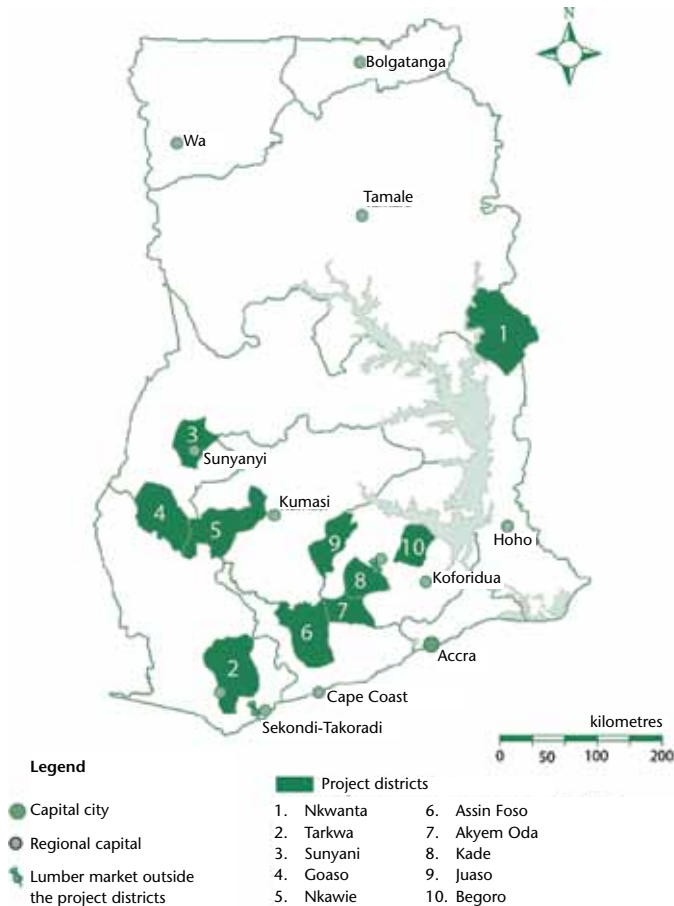
This publication assesses the impact of the CSM project on livelihoods, and analyzes which strategies have contributed to positive outcomes. In order to do this, four case studies were carried out: Obogu community in Juaso Forest District; Breman Anwhiam community in Assin Fosu Forest District; and Akrodie and Sankore millers association in Goaso Forest District (see Figure 2).

Obogu

The community of Obogu is located in the Asante Akyem South Administrative District (Juaso Forest District) on the main Juaso-Banso road (about 13 km from Juaso). It has a population of about 6,000 people. The main livelihood activities are farming (mainly cocoa and food crops) and petty trading. The community is the major food market

for the district. About 300 people are involved in illegal CSM activities in Obogu. Operators get their timber resources from the surrounding forest lands, fallow lands, farmlands and the nearby Dome River Forest Reserve. The main lumber markets for domestic trading are in Accra and Kumasi.

Figure 2. Map of pilot communities



The people involved in illegal CSM activities in Obogu are machine owners (financiers), operators and apprentices, farmers, lumber traders and carriers. Carriers form 13% of the total number of people working in CSM; operators and apprentices constitute about 33%. They have little education. They have dependents, ranging in number from one to eight per person.

All the people involved in illegal CSM activities also carry out other livelihood activities, such as farming (60%), trading (36%) and carpentry, teaching, etc. (4%). The farmers mainly cultivate cash crops such as oil palm and cocoa and food crops that include plantain, cocoyam and cassava. The traders sell food and general goods. Their income levels vary (Parker Mckeown and Sampene 2012). Table 3 provides an overview of the income levels of various groups.

Table 3. Annual income of people involved in CSM in Obogu (GH¢)

| Stakeholders | Income from CSM | Income from farming | Income from trading |
|--|-----------------|---------------------|---------------------|
| Carriers | 2,000–5,000 | 120–4,800 | 200–3,000 |
| Chainsaw machine operators and apprentices | 3,000–6,000 | 120–4,800 | — |
| Chainsaw machine owners | 3,000–8,000 | 120–4,800 | — |
| Lumber traders | 9,000–12,000 | — | 5,000–8,000 |

The income of the lumber traders depends on volume, types of species and informal payments to law enforcement officials. For the operators, income depends on the number of trees milled, type of species, dimensions of logs, distance from the milling site to loading points, informal payments required and whether the operator owns the chainsaw machine. For the carriers, it depends on the number of trips made and the distance from the milling site to loading points. Income from other activities such as farming varies, depending on the crops cultivated.

Since 2012 the people involved in CSM have expressed their willingness to stop illegal activities (Parker Mckeown and Sampene 2012: 9). They formed the Asante Akyem South Wood Workers Association, which currently has 60 members (Amonoo 2014). The association's economic business strategy, supported by the project, has four components:

1. It acquired new Norwood mobile milling equipment on a loan basis from Husqvarna Ghana.
2. It established linkages with two concession holders (Apostiga and Nana Minta Co. Ltd) for the supply of legal logs at market prices.
3. The FSD allocated Compartment 34 (which was degraded) of the Dome River Forest Reserve to the association. The area measures 94 ha and is meant for plantation development. The lease is for a 20-year period. The association acquired a plot of land for a tree nursery and so far 40,000 seedlings have been grown (see Table 1). The area will be planted in 20-hectare blocks per year. In between the rows of trees, various food crops such as plantain and cocoyam can be planted for three years, until the canopy closes.

4. Members also produce charcoal from wood that became available after clearing the forest for plantation development, residue from the milled logs, and from greenbelt planting and management (coppicing of fast growing species in six-year cycles).

Unfortunately, the mobile mill broke down in late 2013. Replacement parts were difficult to acquire and the Husqvarna service contract did not allow members to use parts from other manufacturers (such as WoodMizer) to repair the machine on their own. The machine was returned to the factory in November 2014.

Table 4 outlines the effects of these interventions on livelihood assets in Obogu.

Table 4. Effects on livelihoods in Obogu

| Livelihood asset | Effects | Explanation |
|-------------------|---------|--|
| Human capital | + | various training programmes targeting the members of the artisanal millers association |
| Physical capital | + | acquisition of a US\$ 10,000 portable sawmill; nursery and plantation equipment |
| Social capital | + | recognition of and increased influence on decision-making through membership in the district- and national-level MSD recognition of the association of individual chainsaw operators and associates by district and national authorities networking and business deals with private-sector logging companies |
| Natural capital | + | legal access to timber legal access to and control over 94 ha of forest on leasehold for plantation and agricultural production |
| Financial capital | + | inflows of cash from the sale of legal lumber to the market sale of agricultural produce from cleared plantation land immediate cash from the sale of firewood and charcoal |

Note: +: improvement

Breman Anwhiam

The Breman Anwhiam community is about 15 km northeast of Assin Ando on the main Assin Foso Breman-Asikuma road, near the Supong Forest Reserve. Its population is about 400. Most people (65%) are migrants from nearby regions. All the people have dependents, ranging from 1–15 per person. The main occupation of the people is farming. A majority (about 60%) of the people of working age have been involved in illegal CSM for lumber markets in Assin Foso, Breman Asikuma, Cape Coast and Mankesim in the Central Region.

4. THE FOUR CASE STUDIES

Those involved in CSM activities are mainly operators, apprentices and carriers: 16% of these workers are females. All carriers are women. Most people have little education. About 30% have no formal education; 65% have primary education, and 5% have secondary education.

All the people engaged in CSM are also involved in other livelihood activities. About 80% cultivate cash crops such as oil palm and cocoa and food crops such as plantain, cocoyam and cassava. The rest (20%) are involved in petty trading.

Income levels vary (Table 5). The operators' income depends on the number of trees milled, type of species, the dimensions, distance from the milling site to loading points, informal payments required and whether the operator owns the chainsaw machine. Carriers earn much less than the operators, and in most cases, carriers are not paid promptly. Their income depends on the number of trips made, the distance from the milling site to the loading point and the species of tree milled. The income from additional livelihood activities, especially farming, varies substantially (Parker Mckeown and Sampene 2012).

Table 5. Annual income levels of people involved in CSM in Breman Anwhiam (GH¢)

| Stakeholders | Income from CSM | Income from farming | Income from trading |
|--|-----------------|---------------------|---------------------|
| Carriers | 72–1,200 | 50–1,200 | 1,000–1,500 |
| Chainsaw machine operators and apprentices | 1,000–9,000 | 400–6,000 | 1,000–1,500 |

Many people have expressed their willingness to stop illegal CSM activities and to explore other livelihood options. Cash crop farming (cocoa and oil palm) as well as tree plantations were selected by the men as alternatives. Women selected petty trading.

Those people previously involved in CSM activities formed the Breman Anwhiam Artisanal Millers Association, which had 45 members as of February 2014. With project support they have initiated the following economic activities:

1. In mid-2013, the FSD allocated Compartment 32 of the Supon Forest Reserve to the association. This degraded forest compartment measures 128 ha.⁹ A tree nursery was established and more than 55,000 seedlings of various species were planted (see Table 1). By the end of 2014, the association had planted 50 ha after using the land for one maize crop cycle. In between the rows of trees various food crops such as plantain and cocoyam are planted for a three-year period until the canopy closes (Amonoo 2014). The planting of the first 30 ha followed a Modified Taungya System (MTS) arrangement: the Forestry Commission provided the seeds and paid for labour to clear,

peg and plant, at a cost of 140 GH¢ per ha. This corresponds to 20 GH¢ per person per day in labour costs. The agreed formula for distributing benefits in MTS is 60% community: 40% FC. For the remainder of the plantation, the community is fully responsible for providing seedlings, clearing, pegging and planting. No labour costs are paid. The benefit distribution formula is therefore different: 90% for the community and 10% for the FC.

2. Some of the association’s members have received training in efficient charcoal production in order to make use of the wood that will become available after the forest is cleared for plantation development.

The community benefitted from a range of capacity building programmes: training in charcoal production; and in plantation development (forest plantation establishment, nursery techniques, basic silviculture, and principles of sustainable forest management). Table 6 summarises the effects of these interventions on livelihood assets in Breman Anwhiam.

Table 6. Effects on livelihoods in Breman Anwhiam

| Livelihood asset | Effect | Explanation |
|-------------------|--------|---|
| Human capital | + | various training programmes targeting the members of the plantation group |
| Physical capital | + | planting material, nursery equipment |
| Social capital | + | recognition by and increased influence on decision-making through membership in district- and national-level MSD recognition of the association of individual chainsaw operators and associates by district and national authorities |
| Natural capital | + | legal access to and control over 108 ha of forest on leasehold for plantation and short-term agricultural production |
| Financial capital | + | sale of agricultural produce from productive land immediate cash from sale of firewood and charcoal and tree seedlings future benefit sharing from timber production |

Note: +: improvement

Akrodie

Akrodie is a farming community in the Asunafo North Administrative Municipality; Goaso is its district capital. It has a population of about 5,100. The community is close to the Abonyere and Bonsambepo forest reserves. The main livelihood activities are farming (75%), and soap making and petty trading (25%). Around 500 people are involved in illegal CSM activities (pers. comm., group of mill owners in May 2014). They include small-scale millers, machine owners, operators and apprentices, and

carriers. Most of the small-scale millers are also machine owners and they are the main financiers of CSM activities. The operators and apprentices constitute more than 46% of the people involved in illegal CSM. The educational background of the people is mixed. About 15% of them had no formal education, 55% had primary education, 27% had secondary education, and 3% had post-secondary education. Most of the people (65%) are migrants from nearby regions. People have dependents, ranging from 1–7 per person (Parker Mckeown and Sampene 2012).

As in the other pilot sites a majority of the people involved in CSM activities are also involved in other livelihood activities, such as farming and trading. Most farmers cultivate cocoa and food crops such as plantain and cocoyam. The exception is the small-scale millers, who mostly depend on CSM activities for their living. Income levels of the people involved in CSM vary greatly (Table 7). Small-scale millers/machine owners earn considerably higher incomes. In all CSM activities, income depends on the number of trees milled, type of species, dimensions, distance from the milling site to loading points and number of informal payments (Parker Mckeown and Sampene 2012).

Table 7. Annual income of people involved in CSM in Akrodie (GH¢)

| Stakeholders | Income from CSM | Income from farming | Income from trading |
|--|-----------------|---------------------|---------------------|
| Carriers | 640–1,000 | 120–800 | 250–650 |
| Chainsaw machine operators and apprentices | 4,500–8,500 | 800–3,500 | 750–2,500 |
| Small-scale millers/machine owners | 10,000–15,000 | 500–1,000 | — |

Akrodie people have expressed their willingness to stop illegal CSM activities and adopt viable alternative livelihoods. The project’s approach here is different from the other pilot communities. The primary target in this case is a group of seven small-scale millers with their own equipment who used to operate illegally in an industrial area on the outskirts of Akrodie. These seven entrepreneurs have now formed an association. With project support they have developed the following economic strategy:

1. The association has signed an agreement with a nearby private concession holder (Logs, Lumber Limited, or LLL) for a legal supply of logs. LLL supplies the artisanal millers with legal timber resources for processing; the millers in turn protect LLL’s concession in forest reserves close to Akrodie. The agreement outlines the timber species to be supplied, prices, protection arrangements of the concession and reporting requirements. The initial challenge was to raise the deposit (about 50,000 GH¢) requested by LLL for the supply of timber throughout the year. In December 2013 the group paid the amount. LLL supplied logs six months later.

2. One member of the group (Rabmill) has satisfied all the requirements for registration and has been issued with an ATM certificate by the FC (Annex 1). The others are close to completing the procedures for obtaining their certificates. As of December 2014, LLL had supplied 595 m³ of logs (with a value of GH¢47,600) to the associations in Akrodie and Sankore.
3. The association would like to construct a small market in the district's capital where they can sell their lumber directly to the customer, so that they can circumvent the lumber traders (prices paid by the traders are low).

A considerable number of illegal mills operate nearby, which poses a threat to the legal artisanal millers' business. The illegal mills do not pay taxes, but bribe their way through the system and can sell their products at cheaper prices, thus out-competing the artisanal millers. Maintaining relations with the wider Akrodie community is therefore key to the success of the ATM operations. Without effective social control by the community to stop illegal chainsaw activities, and without government law enforcement, the artisanal millers association cannot compete as a legal timber-producing entity, and cannot uphold its deal with LLL.

The community benefitted from a range of capacity-building events similar to those described in the Obogu case: how to organize the association and register legally; sawmill operation and maintenance; and leadership and basic business management. Table 8 summarises the effects of these interventions.

Table 8. Effect on livelihoods in Akrodie

| Livelihood asset | Effect | Explanation |
|-------------------|--------|--|
| Human capital | + | various training programmes targeting the members of the association |
| Physical capital | + | legal private milling equipment made available |
| Social capital | + | recognition by and increased influence on decision-making through membership in the district- and national-level MSD recognition of the association of individual millers and support from the local community and by district and national authorities |
| Natural capital | + | access to forest resources owned by private concessionaire by means of a contract |
| Financial capital | + | a more secure flow of income from the sale of legal lumber a more secure income for people employed by the millers (provided the supply of legal timber is consistent) an expected spin-off of economic activities related to milling operations: processing of off-cuts, charcoal production, provision of catering and security services at Akrodie's timber industrial area |

Note: +: improvement

Sankore

Sankore community is located on the Nobekaw-Sefwi feeder road. The community is near Abonyere Forest Reserve in the Goaso Forest District. It has a population of about 5,600 people, most of them Akans. The main occupation is farming (cocoa and plantain). Some people are involved in trading, mostly foodstuffs. Sankore is one of the well-known illegal CSM communities in Ghana and incomes are higher there than in the other case studies. About 1,000 people (17%), mostly youth, are involved in illegal CSM activities; these are often characterized by violent conflicts that result in destruction of property, injuries and even death. Illegal chainsaw millers source their timber resources from the surrounding forest, farmlands and the Abonyere Forest Reserve, including logging company concessions. The timber is sawn into beams and reprocessed into planks using small mills. The main markets for illegal lumber from Sankore are Takyiman and Kumasi; it is also transported overland to neighbouring countries.

The people involved in illegal CSM include “tree hunters” (tree spotters), machine owners, operators and apprentices, carriers and small-scale millers. A few women (about 2%) work as carriers. The small-scale millers (about 5%) from Sankore and lumber traders from Kumasi and Takyiman are the main financiers of CSM activities in the community. The operators and apprentices constitute more than 40% of the people involved. As with other CSM communities, the educational background of the people is mixed. About 5% of them had no formal education, 50% had primary education, 38% had secondary education and 7% had post-secondary education. Some migrants (25%) are involved in CSM. Most of the people have dependents, ranging from 1–9 per person.

Most of the people involved in illegal CSM activities in Sankore are also involved in other livelihood activities such as farming, trading and carpentry; however, illegal CSM is their primary livelihood activity. Their income from CSM varies depending on their work (see Table 9). In all cases income depends on the volume of lumber produced, the species, distance from the milling site to loading point, weather conditions and number of informal payments. The chainsaw operators who own their machines earn more income than those who do not.

Table 9. Annual income of people involved in CSM in Sankore (GH¢)

| Stakeholders | Income from CSM | Income from farming | Income from trading |
|--|-----------------|---------------------|---------------------|
| Carriers | 2,600–5,200 | 1,500–3,000 | 600–2,000 |
| Chainsaw machine operators and apprentices | 14,400–21,600 | 2,500–10,000 | — |
| Small-scale millers/ machine owners | 28,800–43,200 | 1,200–3,000 | — |

Sankore was a pilot community under the FAO-funded TBI project “Linking local communities and forest concession holders to produce legal lumber for the domestic market.” People involved in illegal CSM activities were sensitized and their capacity was built to enable them to organize into a legal group. About 32 people (out of 1,000) expressed their willingness to stop illegal CSM activities and adopt legal ATM. As a follow-up to this project, the CSM project has carried out four tasks:

1. It continued with capacity building in ATM business management, efficient milling techniques, milling site hygiene and health and safety measures, wood storage and treatment.
2. It provided the group with a portable bandsaw (LT 20 Woodmizer) with a value of US\$25,000. The equipment was provided by the government to support piloting the artisanal milling concept.
3. The project linked the group with a logging and milling company (LLL) for legal access to logs. The agreement ensures that LLL supplies the group with legal timber resources for processing and the millers protect the concession of LLL in forest reserves close to Sankore.
4. The project also trained people in charcoal production.

Table 10 summarises the effects of these interventions on the livelihood assets in Sankore.

Table 10. Effects on livelihoods in Sankore

| Livelihood asset | Effect | Explanation |
|-------------------|--------|---|
| Human capital | + | various training programmes targeting the members of the artisanal millers association |
| Physical capital | + | private milling equipment made available |
| Social capital | + | recognition of and increased influence on decision-making through membership in district- and national-level MSD recognition of the association of individual millers recognised and supported by the local community and by district and national authorities |
| Natural capital | + | access to forest resources owned by private concessionaire by means of contract |
| Financial capital | + | a more secure flow of income for the millers from the sale of legal lumber a more secure income for those employed by the millers, provided the supply of legal timber is consistent income from charcoal production |

Note: +: improvement

4. THE FOUR CASE STUDIES

A major threat to transforming the former illegal chainsaw millers to ATM in Sankore is the ineffective enforcement of the law banning the use of chainsaws for milling, which is due to political interference. Without effective enforcement, artisanal millers cannot sell their produce at a competitive price. Currently they compete with illegal products from illegal small mills. These products are cheaper and the quality is as good as that of artisanal milled lumber (Arnoldus 2014).

The rampant illegal milling going on obviously hinders the artisanal millers in fulfilling their part of the deal with LLL, which is protecting the company's concessions. This in turn threatens the supply of legal logs by the company.

5. Reducing vulnerability in forest-dependent communities



Forest-dependent communities are generally considered poor. People with marginal incomes have to provide for the needs of large households. The case studies, however, show significant differences based on gender, educational levels, age, and of course income. The data suggest that with the advent of illegal CSM those community members with higher incomes — for example, from market-oriented farming — managed to benefit more from this additional livelihood opportunity. Perhaps they were better educated, had better marketing links, better political relations, higher investment power, or could afford to take higher risks.

The illegality of CSM makes all those people who are part of the value chain vulnerable. This vulnerability of residents in forest-dependent communities such as Obogu, Breman Anwhiam, Sankore and Akrodie is further compounded by the following trends:

- *growing unemployment*, especially among youth;
- *employment in (and income from) agriculture is seasonal* — during the off-season farmers are looking for additional employment;
- *limited access to land for agriculture*, especially for migrants, due to population increase and inequitable land ownership;
- *limited access to forest resources* — these are state-owned, and most of the forest reserve resources are allocated to private concessionaires;
- *inequitable forest benefit sharing* — under current practice, the Forestry Commission as the custodian of forests in Ghana takes 50% of the revenues (from various fees and levies), with the other 50% divided by traditional authorities and the District Assemblies. Both these groups are assumed to use this income for the benefit of “their communities.” The reality is very different (Marfo 2010: 34). Very little if any benefit in terms of income opportunities trickles down to the community level;
- *rapidly declining forest resources* — the export and domestic demand for timber is large and the lack of enforcement of forest laws has resulted in harvesting continually exceeding the Annual Allowable Cut,¹⁰ sometimes by 100% (Marfo 2010);
- *conflicts related to forests and trees in both on- and off-reserve areas* — these include competing claims between legal operators and chainsaw operators, the negotiation and implementation of social responsibility agreements, between the state and off-reserve land-owners on the use of tree resources; and between traditional authorities, District Assemblies and farmers over the use of forest benefits (Wiersum and van Oijen 2010: 7); and
- *persistent corruption among forestry officials, police and the military and disrespect for the rule of law* (Marfo 2010: 35).

These factors particularly increase the vulnerability of poorer people. Income levels from farming and petty trading are low (see Tables 3, 5, 7 and 9). Additional income from the use of forests is necessary to meet household demands. There are few legal means to benefit from forests, with the exception of firewood and non-timber forest products.

In this context — and with the growing demand for cheap timber by the domestic market — it is not surprising that some members of the community used illegal means to earn additional income. As explained in Chapter 1, illegal CSM became an important source of employment in forest-dependent communities.

The case studies show that CSM income exceeds earnings from conventional sources such as agriculture and trading. They also show that this income is different for the various participants in the chainsaw value chain. The lumber traders and machine owners (often the financiers of operations) have made the biggest gains from illegal operations, and they are likely to lose most of these gains if all illegal practices are stopped. For the carriers, chainsaw-related income is a limited and seasonal top-up of very low incomes. Money earned from occasionally carrying lumber out of the forest is just another small contribution to household income. Losing this extra income, however, can have major consequences for the people involved.

The project faces a dilemma: how to balance poverty reduction and reduction of illegal logging. Targeting the poorest members of the chainsaw value chain may reduce poverty, but will not likely reduce illegal logging, since this group is not the driving force behind CSM; it is just opportunistically piggy-backing on its profitability. Targeting the richer segment (traders, machine owners, operators) with strategies to convert from illegal into legal practices (as much as that is possible in the light of shrinking resources) may reduce illegal logging, but it also increases the income opportunities of the richer segments of the community.

A multi-pronged approach

In the pilot communities the project has attempted to balance poverty reduction and reducing illegal logging through a multi-pronged approach:

- the project has been instrumental in creating legal and administrative recognition of artisanal forest exploitation in order to offer illegal operators the opportunity to set up legal business ventures (Akrodie, Obogu and Sankore);
- in Obogu and Sankore, associations were established in order to include as many participants in the value chain as possible, and maximise job creation;
- the project has linked private sector concessionaires with artisanal millers associations to maximise access to legal lumber for maximum benefits by as many actors in the chain as possible (Akrodie, Obogu and Sankore);
- the project has provided secure access to (degraded forest) land to the pilot communities in order to increase forest resources through plantation development, and to provide additional livelihood opportunities in the form of agroforestry, charcoal production, and sharing in future timber revenue (Obogu, Breman Anwhiam and Feyiase).

5. REDUCING VULNERABILITY IN FOREST-DEPENDENT COMMUNITIES

These project strategies have increased the livelihood assets of the target groups in the pilot communities (for details, see Tables 4, 6, 8 and 10). Human capital has increased through capacity building (training programmes and awareness raising). Where there was a shortage of physical capital, as in Obogu and Sankore, mobile sawmills were provided on a loan basis. Social capital has increased by organising individuals in the chainsaw value chain into associations that are linked to other key stakeholders such as the private sector, stakeholder networks (the MSD) and key government entities. In other words, vulnerable people who had been pushed into illegal activities — partly because it was so easy, partly because of poverty — have been given a unified voice and turned into a force to be reckoned with. Natural capital has increased by allowing these key stakeholders to play a part in reforestation. Financial capital has increased by promoting income-generating activities that generate cash quickly (e.g., charcoal production).

The resulting increases in livelihoods seem to have reduced the vulnerability of former chainsaw operatives in the project pilot communities.

6. Forest governance and socio-economic environment



Improving the livelihoods of the residents of the target communities is influenced by the prevailing forest policies and regulations and the way that decisions are made and enforced in the forest sector. It is also affected by the socio-economic context.

In addition to rural unemployment, four other key factors need to be addressed, since they directly affect the success of the projects' livelihood improvement objective:

1. land and tree tenure and the sharing of benefits are not equitable;
2. access to forest land favours big companies;
3. there is substantial potential for small- and medium-scale processing of timber; and
4. sustainable forest management objectives are threatened by persistent corruption.

Land and tree tenure and the sharing of benefits are not equitable

Land and tree tenure arrangements in Ghana are complex. Three entities carry out key parts of decision-making: the state (Forestry Commission) as the management agency; traditional authorities; and the district authorities, on behalf of their communities. It is well documented (Marfo 2010: 34) that these authorities have not been accountable. Obtaining legal access to land for forest-based livelihood opportunities for individuals, especially poor people (including migrants), is very difficult. This difficulty is one of the key causes of illegal chainsaw practices, and consequent deforestation. Forests are treated as open-access resources, with the benefits to be shared by all and costs left to future generations. Revision of land and tree tenure to address this structural imbalance was part of the VPA negotiations.

In response to this context the project has been innovative in piloting a range of land tenure arrangements. In Obogu, Feyiase and Breman Anwhiam, compartments of forest land have been formally leased to community groups for 20-year periods. In Obogu, Sankore and Akrodie, a joint venture partnership was brokered between "tree-owners" (companies) and community groups; it included formal contracts that provide some secure access to trees. Even though this is not the land and tree reform that forest advocacy groups would like to see, there is more secure access to land and trees than before. It is hoped that this will result in more equitable and sustainable forest management.

Access to forest land favours big companies

The practice of forest management in Ghana is dominated by commercial harvesting permits (Timber Utilisation Contracts), which are awarded by the FC to the formal timber industry. Most timber from the concessions is exported. Formal sawmills are now required to direct 40% of their production to the domestic market, but this amount does not meet the domestic demand. The formal sector, organized in the Ghana Timber Millers Organization (GTMO) and the Ghana Timber Association (GTA), are powerful players, and are closely associated with the political elite (Marfo 2010: 32). The informal sector has jumped in to address the gap in domestic supply and has

illegally supplied the local market for the past few decades. Restructuring the formal sawmill sector in order to supply the domestic market legally and sustainably has become urgent.

In response, the project — through the multi-stakeholder dialogue (MSD) — has been instrumental in opening up the timber sector to small and medium enterprises. Policy development led to the emergence of artisanal millers, who are expected to work jointly with the established sawmill industry to provide the domestic market with local lumber. The artisanal milling concept has been defined and implemented in recent years, and Artisanal Millers Associations have been allocated legal timber for processing (either through joint venture contracts with private logging companies or through supplies of confiscated timber from the FC).

Because of the MSD, forest governance is improving. All stakeholders now contribute to a common forest policy development process, which in this case clearly benefits the less rich people of Ghana. In addition, community-led plantation development is intended to supply artisanal millers with plantation timber in the long term. Although all these initiatives take place at a very small scale at present, they can be scaled up to increase livelihood opportunities for forest-dependent communities. This will happen, however, only if the political will is there.

There is substantial potential for small- and medium-scale processing of timber

As mentioned previously, there is a huge demand for timber products in Ghana. This includes lumber for construction purposes and for building doors, furniture and other items. Virtually all the current domestic production is illegal, and most likely unsustainable. To turn this situation around and make production legal and sustainable is a mammoth task, but is very worthwhile. The impact on people's livelihoods in forest-dependent communities would be substantial in terms of legal employment, investment opportunities and economic spin-offs. Akrodie is a good example: an association of small-scale sawmillers who process lumber attracts entrepreneurs with table saws to process off-cuts for carpentry work as well as people working in other jobs, such as charcoal production, catering, transport and security services.

The project has been an important part of realizing this potential by bringing the interests of the (potential) SME businesses to the fore. The cases in Akrodie, Sankore and Obogu show that legal, small-scale timber processors can find ready markets for their legal timber, although the price they charge cannot always compete with cheaper illegal lumber. In the charcoal sector, research shows the potential of SME investment opportunities, local employment and income generation (Darko-Obiri et al. 2014).

Sustainable forest management is threatened by persistent corruption

Corruption is rife in the Ghana forestry sector. This largely explains the total lack of enforcement of the ban on CSM. CSM persists, as evidenced by the availability of chainsawn lumber being transported and sold in the markets (Box 6). Corrupt practices, whether as a result of political interference or monetary pressures, mean that forest regulations are flouted; these practices are therefore largely responsible for the current deforestation in Ghana.

Not only has this behaviour allowed the illegal/informal sector to grow, it threatens the emergence of legal small-scale industries. Where artisanal millers adopt legal methods, and therefore pay for logs, including all fees and levies, their production costs are higher than those who pay only “informal” transaction costs. This leads to unfair competition between operators, who sometimes are literally neighbours (in Sankore, for example). This creates a perverse incentive to produce more cheaply and therefore illegally, even though some sources claim that corruption has spiralled out of control in such a way that in some instances informal payments outweigh formal taxes and levies. On the other hand, there is evidence that enforcement agencies along the road are so accustomed to bribery that they hinder the transport of legal lumber.

BOX 6. DISRESPECT FOR THE LAW AND CORRUPTION

In May 2014, on the way to Goaso District, the authors made a visit to a village to speak to an officer from the District Assembly on the proposal to support an artisanal millers association in the area. The local government officer knew exactly who in the village illegally operated chainsaws, and who sold illegal lumber, and where. On the road was a carpentry factory processing 80 wooden doors per day for urban markets, all produced from illegal lumber. Towards Sankore two trucks passed by in broad daylight fully loaded with chainsawn lumber. They were likely on their way to Kumasi, meaning they would have to pass eight road checks of TIDD, police, customs and the military.

Major cities in Ghana accommodate large, well-organized domestic lumber markets where illegal chainsawn lumber is openly traded and where VAT is charged on illegal lumber; 100 metres from the Sankore artisanal millers association milling site — where logs confiscated by the FC are legally processed — various mills process illegal lumber. The chairperson of the Akrodie artisanal milling association, which committed to becoming legal, was arrested in May with a truckload of illegal lumber.

Although over time illegal forest practices in Ghana have become an accepted way of doing things, it also seems to be accepted more and more that this behaviour has to change. If everybody benefits from illegal practices, however, it is hard to make the case why they should change their behaviour.

To decrease corrupt practices three important triggers are often mentioned:

1. *more rules and regulations with enforcement mechanisms that are difficult to tamper with* — the VPA-related legality assurance system is an attempt in that direction. The impact on the domestic market is still limited (May 2014), as the system is not yet operational.
2. *naming and shaming* — where community members expose the corrupt practices of officials or other community members. In some cases the press is called in to report on corrupt behaviour of individuals or institutions.
3. *examples set by leadership*.

Another observation was made in all four case studies that relates to illegal forest use. The community groups who were allocated forest compartments for plantation development, or who signed joint venture agreements with a private-sector concession, were adamant that they as “co-owners” of the resources would never allow any illegal activity in “their” forest. In other words, where the state fails to enforce the law, either because of inability to do so or because of corrupt behaviour, a community group may be more effective. It is not that community members are not potentially corrupt, but their social control is much stronger; this has the potential to limit illegal behaviour. This is another argument for land and tree reforms that support more community ownership and privatization.

7. Effects on livelihood strategies in the pilot communities



Prior to the project's interventions the livelihood strategies of the target community members in Breman Anwhiam, Obogu, Akrodie and Sankore were a combination of social and economic activities, with illegal CSM as an important additional source of income. It is necessary to learn if other income sources are replacing this lost income. Details from the case studies show quite different scenarios for scaling up project lessons.

Breman Anwhiam

In Breman Anwhiam the livelihood assets of most of the community group members increased, which provided the basis for their current livelihood strategies. Access to land in the form of a degraded forest compartment has meant higher agricultural production. This was especially important; most people in the association are migrant farmers and they were eager to acquire land. In May 2014 they expected their income for that year per acre (available for every member in year 1) to be GH¢3,000 from the sale of crops such as plantain, cocoyam and pepper. In most instances, this was more than their income from CSM. Clearing the forest and planting intercropped seedlings over a number of years allows this income to flow steadily before the canopy of the compartment is fully closed. In the long term trees can be harvested and the cycle can start again.

This model replaces income from illegal sources; it also offers ownership and responsibility over land and forest to people, therefore creating livelihood outcomes that can be sustained over time. The extent to which the model stops people from engaging in illegal CSM activities is not known. The association members are adamant in protecting their resources against intruders but that is not to say that they themselves will not engage in illegal activities elsewhere outside the agricultural season. It is reported, however, that CSM activities have decreased around Breman Anwhiam. The reasons include increased awareness about the unsustainability of the practice, access to land for agroforestry, and also, increasingly, a lack of trees to log illegally. A cynic could say that the people who have contributed to illegal deforestation are now rewarded with a piece of degraded forest land. Less cynically, one could argue that in the current context of Ghana forest governance this is the only way to ensure that there will be forests in the future.

Obogu

In Obogu the situation is different; there are still harvestable trees in the area. The artisanal millers association received a mobile mill on a loan basis and legal logs from a nearby concession. With the necessary capacity building and access to markets the livelihood capital of the association grew, thanks to the project. The potential income generated for association members should equal the lost illegal income (which was much higher than in Breman Anwhiam). This was the case, at least, until the mobile mill broke down.

In May 2014 it was observed at an association meeting that working on their plantation was not considered lucrative enough. In the meantime, nearby communities had invaded the degraded forest compartment that was allocated to the Obogu group. Eviction of the squatters was imminent, and it was reported later that members of the Obogu association agreed to replant their forest with intercropping. However, their

commitment remains doubtful. Some members even reverted back to chainsaw activities for additional income over and above their other income sources.

The Obogu case confirms what happened in Breman Anwhiam. People make rational decisions in diversifying their livelihood strategies. In Breman Anwhiam, group members took on plantation development with intercropping as the most viable additional income opportunity, apart from working on their existing farms. In Obogu, with the breakdown of the mill, CSM activities are again the most lucrative option and some people have reverted back to this practice.

Akrodie

Akrodie has been the most successful of the four case studies in replacing an illegal livelihood strategy with a legal one. Incomes from CSM were high and incomes from ATM are potentially as high. There are sufficient trees available for processing through joint ventures with or legal sales from concessionaires. The association consists of capable entrepreneurs who have all shown individually how to run a viable, though illegal, business. This includes repairing broken-down machines. In May 2014 the association paid 26,000 GH¢ to LLL for a supply of logs to their mills. Income from agriculture is relatively minor; plantation development is not yet opportune. The association members would like access to a concession of their own.

However, the association comprises only seven small-scale millers, employing about 50 people in total. Another 450 people in Akrodie, who were previously involved in illegal CSM activities, will lose their CSM income if they abide by the community decision to adopt ATM. This is partly because various illegal mills are still in operation near Akrodie. The association claims that when they are in full production with a steady supply of legal logs the number of employees will double or triple. Members feel that spin-offs such as processing off-cuts on table saws, carpentry and charcoal production will also generate employment and therefore generate more support from the community. This in turn will provide more social control of illegal activities, which will allow the association to honour its agreement with LLL.

Evidence of community control took an ironic twist in May 2014. Non-association members who were put out of illegal business managed to arrest the chairperson of the artisanal millers association with a truckload of chainsawn lumber. The community demanded action from the police and the FC and threatened to burn down the Forestry Commission office in Goaso if the case was dropped.

Sankore

In Sankore, a community plagued by illegal logging practices, it has proved very hard for the legal artisanal millers association to compete with the illegal sector. In such a setting it is difficult to upscale the ATM model.

Comparison of the four case studies

Even though the four case studies are different in context and potential it is possible to make some comparative observations about the extent to which illegal forest use has been reduced and viable livelihood opportunities have been generated.

Generally speaking, the project interventions have had positive effects on livelihoods, as a result of the increased assets of association members:

- more income from forest-based and agricultural activities;
- reduced vulnerability by operating legally, having legal access to land and resources, being represented in national fora, and being embedded in legal and recognised organizations that advocate for members' interests;
- improved food security from greater agricultural production and/or cash earnings from legal and secure market access; and
- more sustainable use of the natural resource base and contributing to reforestation.

However, none of the cases addresses all of the critical success factors (see page 19), which puts the sustainability of results at risk (Table 11).

Even though the Akrodie model seems most appropriate to be scaled up there is a high risk that those people previously engaged in illegal CSM who do not substantially benefit from legal ATM will revert back to illegal practices in order to earn income. Other non-ATM income opportunities will help, but the strength of community control and effective law enforcement will be crucial for success.

Balancing the dual objectives of poverty reduction and reducing illegal logging is particularly important when comparing Breman Anwhiam and Akrodie. In Breman Anwhiam, mainly poor people are targeted, with minimal short- to medium-term impact on reducing illegality. In Akrodie, the opposite is true: there has been an immediate impact in reducing illegality, but it has enhanced the livelihood opportunities of the richer members of the community.

Table 11. Extent of favourable conditions for livelihood interventions

| Conditions for success | Breman Anwhiam | Obogu | Akrodie | Sankore | Comments |
|--|----------------|-------|---------|---------|--|
| Artisanal milling formally regulated | + | + | + | + | potential formalisation of ATM in national regulations |
| Secure access to legal logs | n/a | +/- | + | + | in Obogu legal logs are available but the association's mill needs to be repaired |
| Community awareness, benefits, commitment, social control present | +/- | +/- | +/- | +/- | social control in Breman Anwhiam mainly involves community commitment to protect their plantation in Obogu there has been a leadership crisis |
| Secure access to land and resources to pursue other livelihood activities as well as ATM | + | + | +/- | +/- | in Akrodie there have been economic spin-offs from ATM |
| Community capacity to organize and to implement livelihood options | + | + | + | + | |
| Effective law enforcement | - | - | +/- | - | in Akrodie, enforcement seems to have been instigated by community pressure |

Note: +: favourable; +/-: neutral; -: unfavourable; n/a: not applicable

8. Is the project succeeding?



An important goal of the project is that selected communities who depend on chainsaw milling now produce timber in a regulated and sustainable way. There are five related project interventions (for details, see Chapter 1):

1. create community-based artisanal millers associations;
2. build the capacities of illegal chainsaw millers in artisanal milling;
3. clarify the rights and responsibilities of timber producing communities;
4. provide viable/sustainable livelihood options for illegal chainsaw operators; and
5. build the capacity of chainsaw milling communities in line with sustainable forest management.

Creating artisanal millers associations

One of the biggest successes of the multi-stakeholder dialogue has been the recognition that if everybody involved in the Ghana domestic timber market supply violates the law, then perhaps the law is wrong. Giving the “law-breakers” a seat at the table was a logical next step in the effort to jointly design policies that served everybody’s interest: how to meet the domestic market demand in an equitable and sustainable manner. The project was also key in piloting the organization of former chainsaw millers into artisanal millers associations consisting of a selection of community members. This form of organization, legitimized by wider community consent, is a necessary condition for achieving regulated and sustainable timber production. This will allow operations to be better controlled, both legally and socially. The proposed establishment of a national artisanal millers association should maximise further input in policy development, trade negotiations and market shares. It will also make communication easier and representation more effective, even at the national level.

Artisanal millers associations can be community groups based on cooperative principles with constitutions and annual general meetings (Obogu, Sankore), or associations of existing entrepreneurs (Akrodie) with a stronghold in the community. These associations seem to provide the most viable legal alternative to chainsaw milling. Closely monitoring the pilot models and gradually scaling up the pilots to other districts is a logical next step.

Building capacities in artisanal milling

Most of the project’s livelihood support activities focused on building the capacity of stakeholders to make the transition to artisanal milling. So far this has been successful, especially in regard to more technical subjects (plantation development, efficient milling and maintenance of mills, charcoal processing). Capacity still needs to be increased at a more organizational and social level: how to make sure that leadership represents the interests of all members; how to ensure accountability upward and downward; how to embed the association in the wider community; and how to prevent the association from becoming a project-dependent social entity. It is noteworthy that business associations such as Akrodie who are composed of proven entrepreneurs can sustain themselves better than the project-driven Obogu case can. As mentioned previously, the Akrodie entrepreneurs will have to become more socially responsible if they want the wider community to refrain from illegal operations (which could destroy their legal business). Stepping up the necessary organizational and institutional development efforts is of paramount importance.

Clarifying rights and responsibilities

The project has made great progress in this area. Inequitable land and tree tenure in Ghana has been an important driver of chainsaw milling. Legitimization of that practice over the past decades has addressed the imbalance, but in an unsustainable manner. The pilot communities have taken a more effective approach to redressing inequitable access to land and trees:

- allocation of forest compartments on a leasehold basis that clearly describes rights and responsibilities, including benefit distribution mechanisms for the value of future mature trees in favour of the community owners (on a 90:10 basis);
- legally recognised joint venture agreements between private-sector concessionaires and artisanal millers associations; and
- community recognition of associations and of their responsibility in imposing social controls in the area to stop illegal activities.

If anything justifies scaling up these pilots it is the vast gap in access to land and trees between the formal industry, which largely serves the export market, and the emerging small- and medium-scale enterprises that are expected to legally supply the domestic market. An important first step has been made, but much more needs to be done in terms of awareness raising and advocacy, brokering agreements between associations and the private-sector and the Forestry Commission, legal advice and business plan development. If the Ghana forestry sector wants timber producing communities to produce sustainable timber, it will have to provide the means to do so. This includes access to concessions and off-reserve resources (not just degraded areas); access to more legal logs from existing concessions; and more legislative, operational and financial support. It just requires political will.

Providing viable and sustainable livelihood options

The cases show clearly that most of the people involved in chainsaw operations already had regular income from sources such as agriculture and petty trading. Most people have agricultural land that produces food to feed their households. Chainsaw milling offered additional and easily accessible income during the agricultural off-season. This explains why not only farmers were involved, but also teachers, members of the clergy, chiefs and government officials.

This is not opportunistic behaviour, but instead is seen as rational decision-making to diversify livelihood strategies and switch from one to the other if any of them falls short. The predominance of this strategic behaviour of poor people explains why alternative livelihood approaches often fail. These approaches are usually designed with the assumption that people will be willing to replace an illegal or unsustainable income with a legal/sustainable one. Apart from the fact that the alternatives often

8. IS THE PROJECT SUCCEEDING?

prove to be non-viable or unsuitable to people's capacity, people tend to not risk losing lucrative income opportunities and replacing them with a new one. They may add it, but are not likely to replace existing activities with it.

The case studies show how difficult it is for people to give up lucrative chainsaw milling activities. Although CSM activities are illegal, they are considered legitimate economic options. Focusing on forest-based activities such as legal milling, plantation development and charcoal production, and not on poultry farming and soap making, is a very wise move. It is primarily the management of the forest sector in Ghana that has to change in order for the forests and forest-dependent communities to sustain themselves. Training people to rear chickens will not help at all in that regard. The interpretation of "livelihoods" as including more than just income also enriches the project strategy. Project activities focused on diversifying the livelihood assets of the target groups. This has reduced the vulnerability of former chainsaw operatives in the project pilot communities, and opened the way for structural changes in the sector that have the potential to benefit forest communities.

This is not to say that illegal chainsaw operations have stopped. This has not happened, but at least the cases show that under the right conditions, there is now an alternative way of supplying the domestic market that is recognized as legal, potentially more sustainable, and supportive of community livelihood improvement.

Transforming communities through sustainable forest management

The current scale of illegality and deforestation in the sector is such that talking in terms of sustainable management of Ghana's remaining forests may be a case of too little, too late, especially for off-reserve forest resources. This is despite the laudable attempts of the project to broker access to legal logs and encourage plantation development. A more likely scenario is the complete disappearance of natural forests in the coming decades. This may possibly be followed by structural land and tree tenure reforms, with far-reaching decentralization (or privatization) of management authority. Small- and medium-scale forest enterprises may get more control of replanting, and may bear the costs and reap the benefits of their investments in supplying the domestic market, or any market for that matter. Chainsaw milling communities would make a wise move by changing into artisanal millers associations, in order to be first to benefit from this scenario. Of course, all this depends on the political leaders offering them that chance.

Conclusions

The case studies show several results in terms of improving livelihoods:

- Various forest-based livelihood options, such as artisanal milling, plantation development with an agricultural component and charcoal production, are all potentially viable as business cases and applicable in all forest-dependent communities, but require access to legal timber and land.
- Small- and medium-scale artisanal millers' enterprises have emerged in a better regulated domestic timber market sector with more equitable income opportunities.
- The increased but not yet full capacity of market-oriented associations to produce timber in a legal way has strengthened the livelihoods of local people.
- Innovative experiments (resource contracts with the private sector, land leases with government) in land and tree tenure reform offer increased rights and responsibilities in forest management to community groups, although these need full upscaling to have a noticeable effect on the sector.
- An increase in livelihood assets in the target communities has reduced vulnerability and led to structural changes in the forest sector that have the potential to benefit forest communities.
- A mix of short-, medium- and long-term measures have provided access to legal timber: contractual arrangements with concession holders to remove unusable and residual yields; agreements with government to obtain harvesting permits and get access to confiscated logs (short-term measures); access to off-reserve resources (medium-term); and investment in community timber plantation development (long-term).
- There is a need to balance short-term gain in addressing illegality (by supporting the richer community segments to invest in artisanal milling) with long-term poverty alleviation among those who are worst off in forest-dependent communities. The balance is crucial: if members of the economic elite in the domestic lumber market chain are the only ones who are supported to become legal, there is the risk of new (more desperate) participants adopting illegal chainsaw milling, driven by rural unemployment and the demand for cheap timber.
- There is an urgent need for sustainable forest management. The current state of deforestation requires immediate action in terms of reliable data on allowable harvest, greater enforcement, and changes in land and tree tenure that promote better ownership and better management.

9. Key lessons learned



There are four key lessons when it comes to supporting the livelihoods of people who have previously depended on chainsaw milling.

Lesson 1

For forestry-related organizations such as TBI, FC and FORIG that aim to improve the livelihoods of forest-dependent communities, it proved effective to focus on potentially viable activities that are forest-based, reinforce each other, and promise short-, medium- and long-term benefits for people and forests.

Implications

1. Continue to support those who are most actively involved in chainsaw milling (where access to legal timber is available), and transform CSM into artisanal milling by brokering deals with private concessionaires for the removal of allocated yield, providing access to concessions, gaining community support, and providing access to working capital, business management training, and capacity building in sustainable forest management.
2. Scale up pilot projects in artisanal milling, draw lessons from them and use this to inform the multi-stakeholder dialogue (MSD) to push for further policy reforms that give more security over land and tree tenure and therefore more investment opportunities in the SME sector.
3. Further develop a viable and legal charcoal production sector, which can produce alternative income for people engaged in chainsaw milling.
4. Continue in plantation development to secure timber resources in the long term while optimizing legal long-term access to and control over forest land for community groups/ex-chainsaw millers to improve their commitment to combatting illegal forest use.
5. Create or increase synergy among the various forest-based livelihood strategies (ATM, agroforestry, charcoal production and plantation development) in the project's intervention areas.

Lesson 2

The livelihoods of forest-dependent communities in Ghana are still linked to illegal chainsaw milling practices. This is partly caused by structural flaws, suggesting that it is better to address these flaws than to target isolated livelihood improvements.

Implications

1. Pay attention to the entire domestic timber value chain and analyze where participation in the chain can be increased, so as to maximise ATM market access and the profitability of legal lumber.
2. Support the development of a national artisanal millers association to better represent the interests of the sub-sector, especially in lobbying for policy reforms on land and tree tenure.
3. Address the over-emphasis on the export market in the allocation of concessions and timber quotas.
4. Confront corruption and political interference head-on. Corruption is rife in Ghana and is a prime driver of illegal forest use. For artisanal millers to operate in the domestic timber market this illegality — in the form of unfair competition from those not paying levies, taxes, licences — has to be controlled. Enforcement of forest laws and regulations has to be stepped up.

5. To confront corruption in the sector local and national champions and people of high calibre and high status must be willing to set examples and speak out against corrupt behaviour. Confronting corruption also means documenting corrupt practices, making them public and using cases constructively (for example, through the media) to measure the damage done, and expose corrupt people and organizations.
6. Engage with anti-corruption agencies, possibly outside the forest sector, to develop more effective methods to measure and communicate strategies to expose corruption.

Lesson 3

Improving the livelihoods of forest-dependent communities requires secure access to forest resources and land for agricultural purposes.

Implications

1. Where access to legal timber is not available, it is better to focus on plantation development, charcoal production, agriculture and/or agroforestry.
2. Nearly all the residents of the pilot communities have land for agriculture and need more land to increase production for their growing populations. Also, with declining forest resources not all chainsaw operators will be able to become artisanal millers (or their employees), and this will likely lead to more demand for agricultural land. Plantation development and intercropping, and greenbelt development for charcoal production are models that are suitable for massive up-scaling in the many degraded forest reserves. In this way the resource base will be expanded in the long term, with short-term livelihood benefits from agriculture.
3. Training in community plantation development and further research on and investment in charcoal production are effective approaches to achieve project objectives.

Lesson 4

Support from the wider community (whether a small forest-dependent community or the entire Ghana society) is essential to stop illegal chainsaw milling practices in order to give legal artisanal milling a chance to operate on the domestic market.

Implications

1. Continued awareness raising — through various media on the negative consequences of deforestation on water and air quality, biodiversity and climate, and on long-term forest-based economic development — is vital.

2. At a more local scale it is important to optimise the relationships among artisanal millers associations, plantation groups and charcoal producers and the wider community they are part of. These associations must develop social responsibility mechanisms to allow the wider community to share in the benefits of resources that are de facto communal. The capacity of the wider community must be built to understand and support the business ventures of groups of individuals who are willing to invest time and resources. Community support for local legal enterprises is a key condition for their survival. It is the community's social control that will have to constrain illegal businesses from unfairly competing with their legal counterparts.
3. At an even more local scale it is important to continue to build the capacity of groups of individuals who take part in new forest-based livelihood options. Running a cooperative business is more complicated than running a private enterprise. It requires transparent leadership, participatory decision-making, clear agreements on upward and downward accountability, and a range of checks and balances to ensure that the costs and benefits of the venture are equitably agreed upon and divided.
4. Since cooperative business models have not always been successful in Ghana it makes sense to experiment with, analyze and document alternative models. The Akrodie model (where seven entrepreneurs consolidated seven businesses in a form of association), for example, is very different from the Obogu model (an association of 60 members with minimal assets and minimal entrepreneurial experience). So far the Akrodie model has been more successful in generating income and legally supplying the domestic market. Can this model be replicated?

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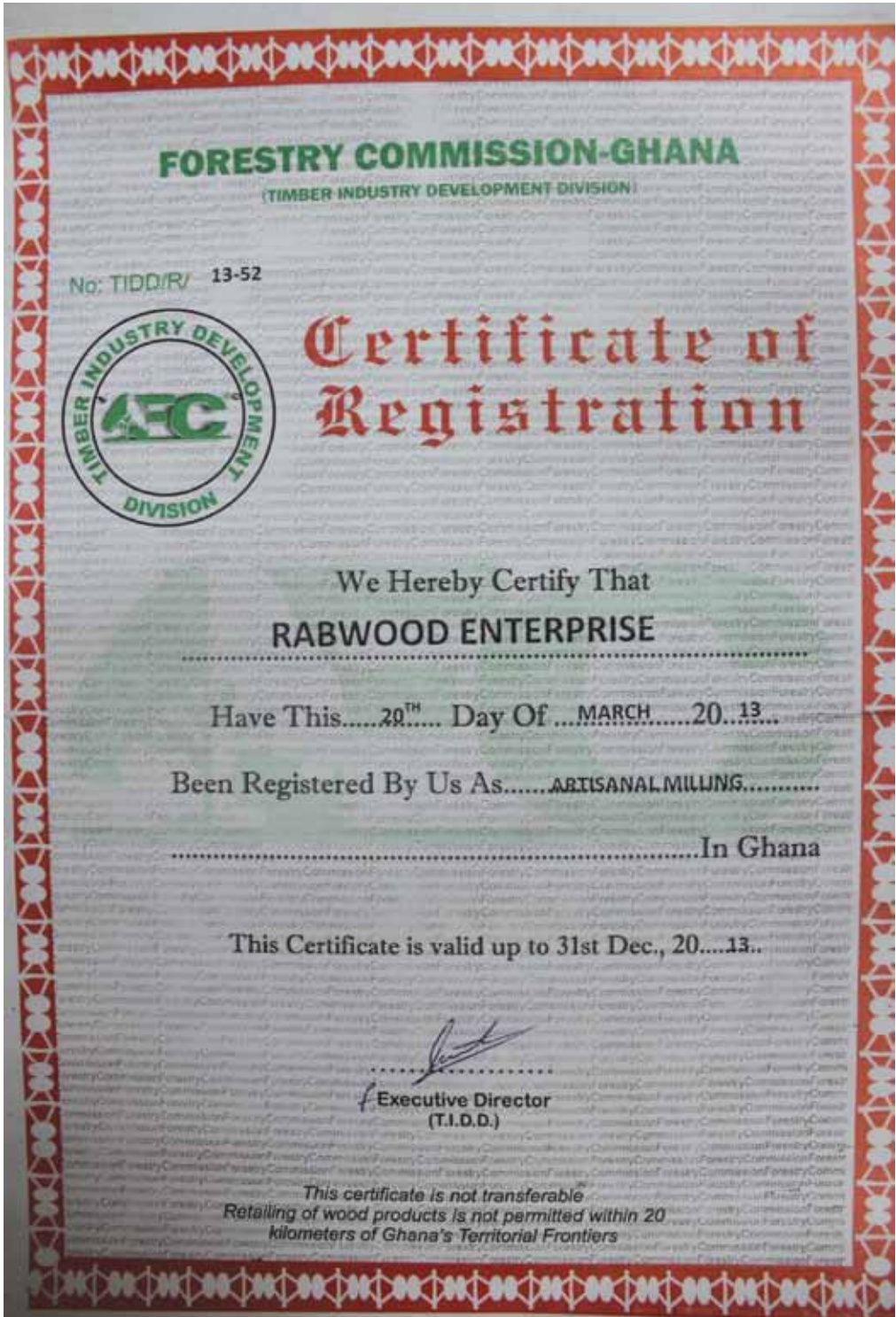
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Endnotes

1. The new domestic timber market policy requires formal sawmills to sell 40% of their production to the domestic market.
2. A recent compilation of 52 references related to chainsaw milling in Ghana can be found in Bosu, Appiah and Marfo 2014.
3. The ten pilot districts are Juaso and Nkawie (Ashanti Region); Goaso and Sunyani (Brong-Ahafo region); Begoro, Kade and Oda (Eastern Region); Assin Foso (Central Region); Tarkwa (Western Region); and Nkwanta (Volta Region).
4. In-situ is applicable to off-reserve only.
5. See Multi-stakeholder Dialogue n.d.
6. Unremoved yield means those trees that a concessionaire was allowed to harvest, but left standing.
7. The FC decided to make TBI a beneficiary because the EU chainsaw milling project had been providing the inputs. However, whatever goes to TBI Ghana will be given to the association, resulting in a division of: FC (20%), association (60%), land-owners (15%) and community (5%). This plantation model is a kind of modified MTS. The FC has indicated that it will be scaled up if it is successful.
8. At the time of writing, 1 US\$ = 3 GH¢ (Ghana cedi).
9. Due to its long distance from the community, compartment 32 (128 ha) was exchanged for compartment 34 (108 ha) in 2014.
10. The Annual Allowable Cut (AAC) was set in 1996 at 1 million m³ per year and increased to 2 million m³ in 2002, but it is not based on sustainable harvest levels.

Annex 1. Certificate of registration



Annex 2. Sample agreement (page 1), Akrodie



PARTNERSHIP AGREEMENT

This PARTNERSHIP AGREEMENT is made this 17th day of JULY, 2013, by and between:

| | |
|---|--|
| <p>Partner One: Timber Contractor Logs and Lumber Ltd Property mark (LLL) P.O. Box 3344 Lake Road, Asokwa Tel: +233 032025227/8</p> | <p>And</p> <p>Partner Two: Artisanal Miller Akrodie Artisanal Millers Association P.O. Box 1, Akrodie-Goaso Tel: + 233 23183673</p> |
|---|--|

The parties hereby agree to the following provisions as conditions of the Partnership:

SECTION 1 - EXPLANATORY STATEMENTS

- 1.1 The purpose of the partnership is to supply logs and other wood raw material to the artisanal miller to produce lumber for the domestic market.
- 1.2 All business shall be conducted within the Goaso Forest District in the Brong Ahafo Region.
- 1.3 The Partnership will commence on the date listed above, and will end when a mutual agreement of dissolution has been reached or upon the collapse of one or both partners.
- 1.4 The continuous existence of the Partnership is dependent on how long the Timber Contractor and the Artisanal Miller are able to hold on to their various permits and customers respectively.
- 1.5 The Partners have agreed to negotiate prices based on changing economic and fiscal regimes pertaining in the country, but will be done to ensure that it is mutually beneficial to all partners.
- 1.6 The artisanal miller will process the logs and other wood raw material into timber products for supply to the domestic market only.
- 1.7 The Timber Contractor will ensure that the necessary paperwork for transporting the logs and other wood raw material to the final destination is done.

"Supporting the integration of legal and legitimate domestic timber markets into voluntary partnership agreements"



Illegal logging in Ghana is partly a problem of poverty. Changing the policy environment — especially enforcement to combat illegal logging — has proved to be important over the years, but needs to be complemented by offering alternative income opportunities to illegal activities to the rural poor in forest communities. The Chainsaw Milling Project, initiated by the Ghana Forestry Commission, the Forest Research Institute of Ghana and Tropenbos International, with funding from the European Commission, involves stakeholders in dialogue, information gathering and the development of alternatives to illegal and unsustainable chainsaw milling practices.

The project has piloted three alternative forest-related income opportunities: artisanal milling, plantation development and charcoal production. This publication describes, discusses and assesses these economic activities using four case studies. Following the Sustainable Livelihoods Framework, the study shows that these economic activities can be viable alternatives to chainsaw milling and can contribute to the sustainable livelihoods of communities living in and around forests in Ghana. However, a number of conditions for success needs to be in place.

These conditions for success require urgent attention on three aspects of forest governance in Ghana: land and tree tenure and the inequitable sharing of benefits; access to forest land that favours big companies; and the persistent corruption that jeopardizes any attempt towards sustainable forestry.

By making knowledge work for forests and people, Tropenbos International contributes to well-informed decision making for the improved management and governance of tropical forests. Our longstanding local presence and ability to bring together local, national and international partners make us a trusted partner in sustainable development.

