



## 6.3 Addressing forest degradation and timber deficits in Ghana

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Reforestation is an essential component of forest policy where forests are severely degraded and development aims are to be achieved. This is the case in Ghana, which has only 5% (395,000 hectares, or ha) of its primary forests left and where 30% of the population lives on less than a dollar per day.

This article is based on insights obtained from several studies (Hoogebosch 2010; Grupstra 2012; Insaidoo, Ros-Tonen and Acheampong in press, a; Insaidoo, Ros-Tonen and Acheampong in press, b) jointly carried out by Tropenbos International Ghana, Kwame Nkrumah University of Science and Technology and the University of Amsterdam. It reviews the main characteristics and outcomes of various reforestation schemes in Ghana and identifies lessons from their successes and challenges.

Data was obtained through desk studies, open and semi-structured interviews with officials of the Forestry Commission (FC) and the Forest Plantation Development Centre and surveys among target groups. Separate male and female focus groups were held in the study villages, where elements of the Poverty-Forests Linkages Toolkit (Shepherd and Blockhus 2008) were employed to assess the relative importance of various livelihood sources.

### Policy context

In Ghana, deforestation has increased at an alarming rate since 1983, when a long period of drought triggered large fire outbreaks in the country. The FAO (2010) estimates the annual deforestation rate in Ghana at 2.1% per year, which corresponds with an average annual forest loss of 115,000 ha since the turn of the century. This results mainly from bush fires, indiscriminate logging and conversion of forest to farmland.



FOR PARTICIPANTS' COMMITMENT, IT IS IMPORTANT TO IMPROVE THE LONG-TERM PROSPECTS

OF THE VARIOUS REFORESTATION SCHEMES.

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In response to these challenges, the Ghanaian government embarked on a reforestation programme as part of the new Forest and Wildlife Policy of 1994. A Forest Development Master Plan was launched in 1996 (FDMP 1996–2020). Its aim was to promote private plantation development, with a target of 10,000 ha/year for 20 years. To this end, a Forest Plantations Development Centre was set up in Akyawkrom (near Kumasi), and a Forest Plantations Development Fund (with support from the Highly Indebted Poor Countries (HIPC) fund of the IMF and World Bank) was created to encourage private investors to invest in plantation forestry (FAO 2002).

Since 2001 the forest plantation policy has changed in favour of promoting community participation in plantation development. This was due to continued forest degradation over the years and the slow rate of forest plantation establishment under public-private partnerships. In that year, the FC launched the National Forest Plantation Development Programme, which came into effect in 2002. Its aim was to combine the creation of a future resource base for industrial timber with enhanced environmental quality, employment creation and increased food production (FC 2008).

In addition to the development of private and commercial plantations, two additional reforestation strategies emerged in degraded forest reserves: the modified taungya system and government-owned industrial plantations under the Government Plantation Development Programme (GPDP). Legal reforms (the *Timber Resource Management (Amendment) Act* 2002) provided for rights to ownership and profits. It also provided for guarantees against expropriation to individuals who planted timber trees in off-reserve areas. The *Forest Plantation Development Fund Act* 2000 establishes rights of ownership over timber produced to beneficiaries of the fund. This encouraged small-scale farmers in off-reserve areas to engage in on-farm tree planting, often with support from NGOs and/or the private sector (timber and/or mining companies).

### The modified taungya system

The modified taungya system (MTS) is a co-management arrangement between the FC and local communities. Under this scheme, farmers are co-owners of trees and are allowed to inter-plant food crops during the early years of plantation establishment. It differs from the old taungya system (suspended in 1984) in giving farmers a 40% share in the timber benefits. Under the MTS, interested farmers organize themselves in MTS groups, which collectively apply for a piece of degraded forest reserve land to establish a plantation.

There are two types of MTS: the National MTS – implemented and coordinated by the Forest Services Division – and the MTS under the Community Forest Management Project (CFMP). The difference is that under the CFMP (which ended in 2010) funds from the African Development Bank were available to pay MTS farmers for their work on peg cutting<sup>1</sup> and to initiate complementary income-generating projects to create revenue for the period between canopy closure (when planting food crops is no longer possible) and timber harvesting. The CFMP also stresses capacity building and social organization.

In 2010, plantation development policy changed again, due to the need to involve decentralized administrative structures in forest management and mobilize some of the District Assembly funds for reforestation. Attention shifted from partnerships with communities to institutional partnerships between the FC and the District Assemblies and traditional authorities, particularly the stool land-owners.<sup>2</sup> They are involved in reforestation schemes by making land available for reforestation in return for a share in the benefits or (in the case of private plantations, off-reserve) for a yearly rent. District Assemblies employ youth for reforestation in on- and off-reserve areas. With this newest policy, government-owned plantations under the Government Plantation Development Programme and the MTS schemes have been suspended. Table 1 lists various bodies involved in reforestation in Ghana.

**Table 1. Acronyms related to reforestation in Ghana**

Acronym	Full name
FC/FSD	Forestry Commission/Forest Services Division
FMDP	Forest Management Development Plan
FPDC	Forest Plantation Development Centre, under the MLNR
FPDF	Forest Plantations Development Fund
GPDP	Government Plantation Development Programme
MLNR	Ministry of Lands and Natural Resources
MTS	modified taungya system
NFPDP	National Forest Plantation Development Programme

### Ghana's reforestation schemes

Reforestation in Ghana includes the establishment of forest plantations in degraded forest reserves as well as afforestation in the form of economic tree planting on off-reserve farmlands where there was no forest in the recent past. In degraded forest reserves, trees are planted in pure stands with or without initial intercropping with food crops. In off-reserve areas tree are planted in pure stands or integrated in existing crop systems (Table 2).

### Achievements and challenges

#### *Private plantations*

Official records at the FC in Accra indicate that 280 private investors were operating in 12 forest districts and developed a total of 22,313 ha of forest plantations nationwide during the period 2002–10. Investors consider that the funds available from the Forest Plantation Development Fund (FPDF) are too small to provide any meaningful support to their reforestation activities and tend to use only their own funds to establish plantations. Only those who use land in off-reserve areas are able to secure an FPDF loan, since only this land (unlike forest reserve land that is not their property) can be used as collateral for loans.

The plantations provide employment mainly for migrant workers from regions in northern Ghana (Hoogenbosch 2010). Since a full-time wage for workers on private plantations is uncommon (Hoogenbosch 2010), most of their cash and non-cash income comes from growing food crops among the trees, on the farm plot allocated to them, or on farmland that they hold outside the plantation (see Figure 1). The plantation also provides firewood, non-timber forest products (NTFPs) and bushmeat.

**Table 2. Overview of major reforestation activities, Ghana**

Private, large-scale commercial plantations: established in degraded forest reserves or off-reserve areas with a loan or subsidy from the FPDF	
<p>Planting scheme: mostly exotic short-rotation trees in pure stands</p> <p>Key stakeholders: private investors, government, workers (including many migrants from other regions), stool landowners and adjacent communities</p>	<p>Responsibilities — The Forest Plantation Development Centre (FPDC): coordination; FC: providing technical services such as land demarcation and surveys and monitoring plantation development; private investors: preparing a reforestation plan for approval by the FC and the FPDC, mobilizing the financial means, tree seedlings and working inputs, training workers, and supervising planting and maintenance activities; stool land-owners: guaranteeing access to land for reforestation for a period of 50 years; community: help preventing fire outbreaks and illegal activities (in return for a 2% share in the benefits).</p> <p>Benefits — For off-reserve land, where investors can use the land as collateral for loans, the FPDF loan facility is available; for reforestation in forest reserves small subsidies from the FPDC can be obtained; benefits are shared (90% for the investor and 6%, 2% and 2% respectively for the land-owner, FC and adjacent community); workers receive a wage for casual labour and are often allowed to grow food crops between the trees or on a specific portion of plantation land.</p>
Large-scale plantations established as part of the GPDP in degraded forest reserves, using money from the HIPC Fund	
<p>Planting scheme: same as private plantations</p> <p>Key stakeholders: Government (FC and MLNR), plantation workers, stool land-owners and adjacent communities</p>	<p>Responsibilities — Government agencies: providing tree seedlings and sometimes working materials like cutlasses and boots, ensuring marketing and accounting of the plantation products; contract supervisors: supervising workers and providing extension services; workers: providing labour; stool land-owner and traditional authorities: providing land within the degraded forest reserve; community members: helping prevent and control fire outbreaks and illegal activities.</p> <p>Benefits — 92% of timber revenues for the FC, 6% for the stool land-owner, and 2% to the adjacent community; employment: workers are employed full-time for a wage.</p>

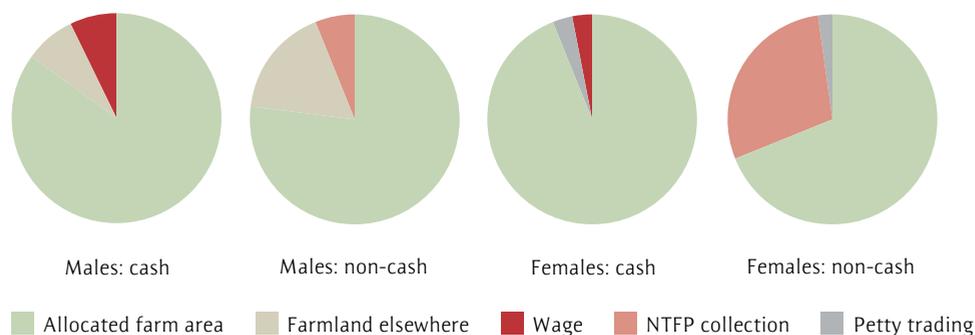
Modified taungya system: forest plantations in degraded forest reserves by government in partnership with farmers who inter-plant food crops	
<p>Planting scheme: Similar to the previous ones, but farmers grow food crops alongside the planted timber trees during the early years of plantation development.</p> <p>Key stakeholders: The FC/FSD for the national MTS and the Forest Plantation Development Centre of the Ministry of Lands and Natural Resources (MLNR) for the MTS under the Community Forest Management Project (CFMP) that was funded by the African Development Bank until 2010, male and female farmers organized in taungya groups, stool land-owners, adjacent communities</p>	<p>Responsibilities — Government agencies: coordination and project implementation; especially FC/FSD: allocation of degraded forest reserve areas, seedling provision, extension services, marketing of plantation products and financial management; farmers: manual work and wildfire protection; stool land-owners and traditional authorities: providing land within the degraded forest reserve and guaranteeing uninterrupted access to the allocated land; community members: assisting the FC in preventing fire outbreaks and illegal activities.</p> <p>Benefits — Taungya farmers are considered co-owners of trees and gain access to farmland by the right to plant food crops between the trees during the first 2–3 years of plantation establishment. They can keep 100% of the proceeds from food crops; timber revenues are shared 40% for the FC, 40% for the farmers (on a group basis), 15% for traditional land-owners, and 5% for the forest-adjacent community. In some cases, additional income-generating projects were implemented under the CFMP that ended in 2010.</p>
On-farm tree planting: smallholder tree planting in off-reserve areas	
<p>Planting scheme: trees are planted in pure stands with or without inter-planting of agricultural crops during the first years of plantation establishment or in established cropland. The latter combines timber tree species with perennials and food crops.</p> <p>Key stakeholders: small-scale farmers and public and private supporting organizations (FC, mining and/or timber companies, NGOs or tree-growers associations).</p>	<p>Responsibilities — Farmers: all phases from planting to marketing; supporting organizations sometimes provide seedlings, extension services and initiate alternative income-generating projects.</p> <p>Benefits — 100% of crop and tree benefits for farmers who use individual or family/clan lands for tree planting; 33% for the chief/landlord and 67% of timber proceeds and 100% of food crops for the farmer when farmers use chief's land; 50/50 for landlord and tenant if trees are planted in cocoa farms under a sharecropping arrangement; sometimes associated with income-generating projects.</p>

Sources: FC 2008; Hoogenbosch 2010; Grupstra 2012; interviews with FC and FPDC officials.

Most workers are satisfied with their living and working conditions, but improvements could be made as far as timely payment, working outfit and equipment are concerned. Stool owners tend to be dissatisfied with their share, which is lower than under the MTS (Grupstra 2012).

**Figure 1. Cash and non-cash income components of workers' livelihoods at a private plantation**

Source: Hoogenbosch 2010.



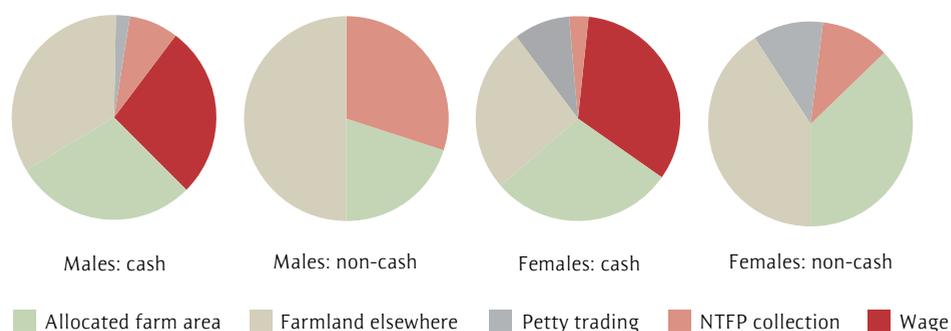
### *HIPC-funded reforestation initiatives*

Records at the FC in Accra indicate that from 2004 to 2009 a total of 17,169 ha of timber tree plantations were established under the GDP across 45 forest reserves throughout the country. This generated 12,595 full-time jobs (FC 2008). In addition, the HIPC fund finances other tree-planting activities, such as the Greening Ghana Programme that distributes seedlings for planting in public spaces.

Unlike private plantations, government plantations usually employ their workers full time, which is reflected in the higher share of cash income of plantation workers (Figure 2) compared to workers on private plantations (Figure 1). Although planting food crops between the trees was not the intention of this scheme, it is often allowed. The employees also combine their work on the government plantation with farming on their individual plots outside the plantations (Figure 2). As with the private plantations, workers appreciate the employment opportunity, but delayed payment, lack of housing on the plantation (which increases travelling time to and from the villages where they live) and lack of working equipment are indicated as concerns (Hoogenbosch 2010).

**Figure 2. Cash and non-cash income components of workers' livelihoods at an HIPC-funded plantation**

Source: Hoogenbosch 2010.



### *The modified taungya system*

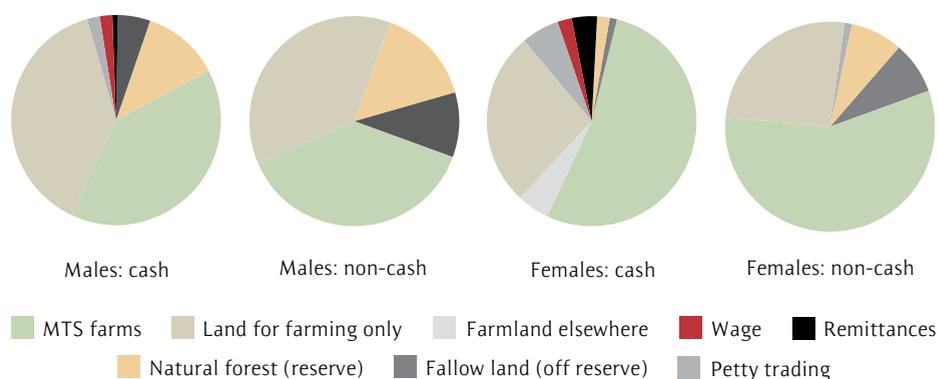
A total of 87,664 ha of degraded forest reserve land were reforested under both types of MTS between 2002 and 2008 (FC 2008), providing a source of farmland and future income to an estimated 109,000 rural families (Valerie Fumey Nassah, RMSC, pers. comm.). Mainly through its food crop component, the MTS contributes substantially to the incomes of both sexes, but more so to that of females, especially when they are involved in the production of seedlings (Insaideo, Ros-Tonen and Acheampong in press, a; see Figure 3 for averages). A total of 42% of MTS revenues is invested in asset accumulation and 24% of the respondents succeeded in saving MTS revenues (Insaideo, Ros-Tonen and Acheampong in press, a).

As long as food crops can be derived from the MTS, the scheme allows farmers to improve their livelihoods, but several factors limit the poverty-alleviating potential of the MTS, now and in the long term. These include a lack of timely supply of good-quality seedlings, the ban on planting cassava in MTS farms (which is driven by the fear that the crop will destroy young timber trees) and lack of income between plantation establishment and timber harvest (which also applies to other forms of plantation development). Derkyi (in press) adds to this the insecurity about the continuity of the scheme and future timber returns. MTS farmers are concerned about the lack of signed agreements and what the benefit-sharing arrangement on a group basis means for individual rights to timber benefits.

The MTS under the CFMP performs better, both in plantation condition and livelihood outcomes, since support to social organization and income-generating projects increase farmers' commitment to the scheme (Insaideo, Ros-Tonen and Acheampong in press, a).

**Figure 3. Cash and non-cash income components of MTS farmers' livelihoods**

Source: Adapted from Insaideo, Ros-Tonen and Acheampong in press (a).



### *On-farm tree planting*

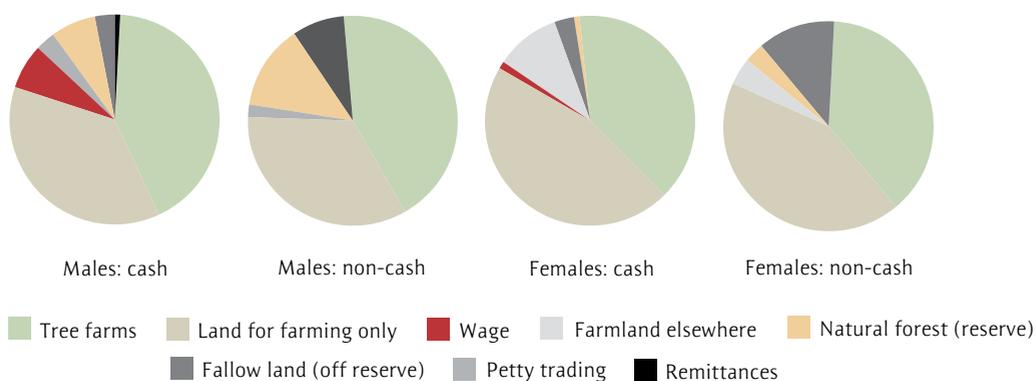
By the end of 2008, the FPDC had registered 3,317 individuals and groups involved in tree planting in off-reserve areas throughout the country. They established 13,740 ha of forest

plantations on farmland between 2002 and 2008 (FC 2008). Figure 4 shows average contributions to income derived from on-farm tree planting in off-reserve areas.

Several challenges influence the success of the on-farm tree-planting scheme. They include the extra work compared to conventional farming, the high costs to establish and maintain tree farms, the lack of income from pure timber stands between planting and harvesting, and the lack of funds for tree farm maintenance once food cropping between the trees is no longer possible. Other challenges included bureaucratic procedures to obtain loans for tree planting and land rights documentation, ambiguous legislation regarding tree ownership and insecure timber rights for tenant farmers (Boni 2006; Insaidoo, Ros-Tonen and Acheampong in press, b).

#### Figure 4. Cash and non-cash income components of on-farm tree planter's livelihoods

Source: Adapted from Insaidoo, Ros-Tonen and Acheampong in press (b).



#### Lessons learned and recommendations

Integrating food crops in plantation development is important, since it contributes substantially to the workers' and farmers' cash and non-cash incomes. Since cassava is the staple crop in Ghana's high forest zone, it is recommended that farmers be conditionally allowed to grow cassava on MTS farms. Experiments in the MTS and on-farm tree planting schemes have shown that this does not need to harm young trees if there is adequate spacing between trees and crops.

It is important to create income-generating opportunities between the time of canopy closure (when food crops can no longer be cultivated) and timber tree harvesting, e.g., through on-site seedling production, sale of thinned wood or advance timber payments. It is also recommended that, rather than promoting the planting of trees in pure stands, multi-purpose agroforestry schemes are developed that generate food, cash crops and NTFPs during the entire cycle.

Ongoing professional support for private investors and farmers — in the form of technical advice, supply of seedling or training in nursery establishment and tree planting skills — is a key factor in the performance of the reforestation scheme.



For plantation workers, timely payment and access to housing on HIPC plantations and working equipment are important improvement points.

The MTS appears to be particularly important for women, both in terms of cash income (particularly when they are involved in seedling production), non-cash income and participation in MTS management committees. The policy shift towards partnering with District Assemblies and traditional authorities at the cost of the MTS scheme undermines this important trend towards gender equity in forest management.

Secure land tenure and tree harvesting rights (including reducing the bureaucratic requirements of obtaining harvesting and conveyance permits) is a key condition for successful reforestation.

For participants' commitment it is important to improve the long-term prospects of the various reforestation schemes.

Linking reforestation schemes to the carbon credit market may help increase the economic feasibility of reforestation.

## Endnotes

1. Pegs are one-metre-long sticks made of branches or small trees that are used to indicate where seedlings are to be planted.
2. A stool land owner is any person or body of persons who based on customary traditions have control over community land, including family land, as a representative of a particular community.

## References

- Boni, S. 2006. Ghanaian farmers' lukewarm reforestation: Environmental degradation, the timber option and ambiguous legislation. *Colloque international "Les frontières de la question foncière – At the frontier of land issues."* Montpellier, 2006. 1-12.  
Available at: [www.mpl.ird.fr/colloque\\_foncier/Communications/PDF/Boni.pdf](http://www.mpl.ird.fr/colloque_foncier/Communications/PDF/Boni.pdf).
- Derkyi, M. In press. *Fighting over forest: Interactive governance of conflicts over forest and tree resources in Ghana's high forest zone*. Ph.D. thesis, University of Amsterdam.
- FAO (Food and Agriculture Organization of the United Nations). 2010. *Forest Resources Assessment*. Rome: FAO.
- FAO (Food and Agriculture Organization of the United Nations). 2002. *Hardwood plantations in Ghana* (Based on the work in 1998 of F. Odoom). Forest Plantations Working Papers 24. Rome: FAO.
- FC (Forestry Commission). 2008. *National Forest Plantation Development Programme (NFPDP): Annual Report 2008*. Available at [http://76.12.220.51/assets/file/Publications/Forestry\\_Issues/National%20Forest%20Plantation%20Development%20Programme/Annual%20Reports/nfpdp\\_annual%20report\\_2008\(1\).pdf](http://76.12.220.51/assets/file/Publications/Forestry_Issues/National%20Forest%20Plantation%20Development%20Programme/Annual%20Reports/nfpdp_annual%20report_2008(1).pdf).
- FC (Forestry Commission). 2006. The 1994 Forest and Wildlife Policy. Available at <http://benjigypoh.blogspot.com/2011/06/1994-forest-and-wildlife-policy-of.html>.
- Grupstra, J. 2012. *Conflicts around commercial forest plantation development in Ghana's high forest zone*. MSc thesis University of Amsterdam. Available at [http://home.medewerker.uva.nl/m.a.f.ros-tonen/bestanden/MSc\\_Thesis\\_Jurre\\_Grupstra\\_IDS\\_Final.pdf](http://home.medewerker.uva.nl/m.a.f.ros-tonen/bestanden/MSc_Thesis_Jurre_Grupstra_IDS_Final.pdf).
- Hoogenbosch, L. 2010. *Forest plantations and livelihoods in Ghana's high forest zone*. MSc thesis University of Amsterdam. Available at [http://home.medewerker.uva.nl/m.a.f.ros-tonen/bestanden/Scriptie\\_Lucien%20Hoogenbosch\\_final.pdf](http://home.medewerker.uva.nl/m.a.f.ros-tonen/bestanden/Scriptie_Lucien%20Hoogenbosch_final.pdf).
- Insaideo, T.F.G., M.A.F Ros-Tonen and E. Acheampong. In press (a). *The Modified Taungya System as a social safeguard: Reconciling legal timber production with rural livelihoods for the poor*. (Under review).
- Insaideo, T.F.G., M.A.F Ros-Tonen and E. Acheampong. In press (b). On-farm tree planting in Ghana's high forest zone: The need to consider carbon payments. In R. Muradian and L. Rival (eds.) *Governing the provision of ecosystem services*. Heidelberg: Springer.
- Shepherd, G. and J. Blockhus. 2008. *PROFOR Poverty-Forests Linkages Toolkit*. [www.profor.info/profor/node/103](http://www.profor.info/profor/node/103).