Revising the taungya plantation system: new revenue-sharing proposals from Ghana

V.K. Agyeman, K.A. Marfo, K.R. Kasanga, E. Danso, A.B. Asare, O.M. Yeboah and F. Agyeman

Recently approved arrangements for the taungya system – involving interplanted food crops and timber trees – are designed to entitle all stakeholders to the plantations' benefits and give them a long-term interest in maintaining trees.

Plantation development has for a long time been identified as one of the important strategies required to meet the demand for wood resources in Ghana, where the rate of forest cover loss remains high (1.7 percent per year in the 1990s [FAO, 2001]).

In the 1930s the Government of Ghana launched a plantation development programme using the taungya system, devised in Myanmar, in which farmers are given parcels of degraded forest reserves to produce food crops and to help establish and maintain timber trees. The intention was to produce a mature crop of commercial timber in a relatively short time, while also addressing the shortage of farmland in communities bordering forest reserves. About 75 percent of Ghana's current total area of commercial public and private forest plantations of 35 000 ha were established using the taungya system.

Food crops, especially annuals such as plantain, cocoyam and vegetables, were interplanted with determined tree species. The food crops were normally cultivated for three years, after which the shade from the trees impeded further cultivation of the crops.

Under the traditional taungya arrangements, Ghanaian farmers had no rights to benefits accruing from the planted trees (Milton, 1994) and no decision-making role in any aspect of forest management (Birikorang, 2001). As a result, farmers tended to neglect the tree crops and to abuse the system. For example, farmers

- deliberately killed planted seedlings to extend their tenure over portions of land, since a successful plantation meant the discontinuation of cultivation on allocated plots;
- cleared more land for plantation development than needed for the available seedlings;
- failed to weed around tree seedlings, thereby retarding their growth so as to extend land-use rights beyond three years;
- illegally farmed other areas in forest reserves, degraded or not, which were not allocated for taungya;
- planted food crops that were not compatible with the tree crops, leading to reduced tree growth.

Other problems included lack of supervision by the Forestry Department (now the Forest Services Division of the Forestry Commission), inadequate financing mechanisms and abuse of power by public officials, especially in farm allocation (Agyeman *et al.*, 2003).

V.K. AGYEMAN

A one-year old taungya plot in Ghana; at this point, the food crop (plantain) still dominates over the trees

V.K. Agyeman is in the Forest Plantations Development Centre, Ejisu, Kumasi, Ghana.
K.A. Marfo is in the Crops Research Institute, Fumesua, Kumasi, Ghana.
K.R. Kasanga and **F. Agyeman** are in the Ministry of Lands and Forestry, Accra, Ghana.
E. Danso and **A.B. Asare** are in the Resource Management Support Centre, Forest Services Division of the Forestry Commission, Ghana.
O.M. Yeboah is in the Institute of Land Management and Development, KNUST, Kumasi, Ghana.

The system was suspended in 1984. However, in spite of the problems, forest-adjacent communities still viewed the taungya system as potentially one of the most beneficial forest tenure systems, and they requested its reintroduction, albeit with changes.

PROPOSED MODIFIED TAUNGYA SYSTEM

A proposal for a revised taungya system, which would be self-financing and sustainable, was designed through an 18-month consultation process (July 2001 to December 2002) initiated by the Government of Ghana, with support from FAO and the World Bank. The dialogue involved key stakeholder groups including farmers, landowners, local communities and non-governmental organizations (NGOs).

In the proposed system, farmers would essentially be owners of forest plantation products, with the Forestry Commission, landowners and forest-adjacent communities as shareholders. Previously, the Forestry Commission was the owner of plantations established using the taungya system, and only landowners, not farmers, received benefits from the tree crops.

All participants in the modified taungya system, including farmers, would be eligible for a share of the benefits accruing from the plantation. The consultation process devised an equitable benefit-sharing framework based on the contributions of the participants:

- farmers would carry out most of the labour, including pruning, maintenance and tending;
- the Forestry Commission would contribute technical expertise, training for farmers to carry out their functions efficiently, equipment and tools, and would be responsible for stock inventory and auctioning or marketing of products;
- the landowner (i.e. traditional authority) would contribute land;
- the forest-adjacent community would provide support services in the form of protection of the investment from fire and encroachment.

The consultation process also recommended specific policy and legislative reforms to strengthen tenure and resource use rights and to secure greater participation for disadvantaged groups (land-poor and land-insecure households, tenant farmers, women, migrants, farm labourers and nursery operators).

The new proposals have been approved by the Cabinet. They are expected to lead to increased revenue and other benefits to farmers and landowning communities in line with the objectives of the 2001 Ghana Poverty Reduction Strategy.

Equitable benefit-sharing framework

Analysis of the estimated value of stakeholder contributions to plantation investment was used to propose the following benefit-sharing framework, adjusted according to stakeholder expectations regarding the benefits they would receive: farmers and the Forestry Commission should each receive 40 percent of benefits accruing based on their inputs, while landowners should receive 15 percent (i.e. traditional authorities 7 percent and tribal landowners 8 percent) and forest-adjacent communities should receive 5 percent. The estimated costs and suggested benefits of the four key stakeholders at discount rates of 6 and 10 percent are presented in the Figure.

The benefit-sharing frameworks under the old taungya system and the modified taungya system are compared in the Table.

Most stakeholders (with the exception of the Forestry Commission) were of the view that the Forestry Commission, farmers and landowners, including forest-adjacent communities, should receive one-third of the revenue accruing from the system. Therefore the scenario more than meets farmer expectations, but landowners would benefit less than they hoped.

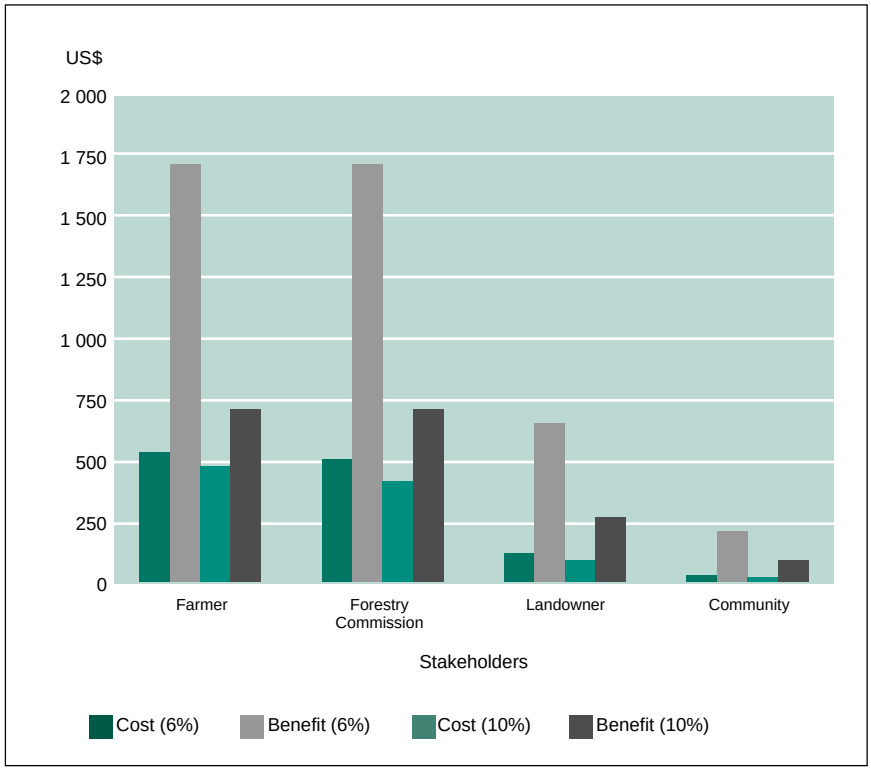
A number of stakeholders felt that these benefit-sharing arrangements should be further negotiated between the parties on a case-by-case basis, but that care should be taken to protect the rights of the disadvantaged groups.

There was general consensus among stakeholders that for the modified taungya system to be sustainable, there should be a continuous flow of benefits to participating farmers after the harvest of food crops at the end of the third year, as well as some bulk payment at the time of harvesting of logs. The short-term benefit flows should further attract farmers to invest labour on a continuous basis, while the bulk payment at the end would make the farmer and investor share risks.

Strengthening land tenure and resource use rights

Land tenure arrangements need to provide sufficient security for sustainable tree plantation investments. Farmers need to feel confident that their rights will not be taken away in the medium and long term.

When forest reserves were created in the 1930s, different resource rights were envisaged, aimed at developing a revenue base for chiefs and resource-owning communities. These included the rights of farmers who already had farms in the reserve area to continue to farm in designated areas; customary rights of individuals or communities to the forest reserve land (including indigenous cultural or religious rights), if not considered harmful to the forest; and the right of forest-adjacent communities to access forest resources in the forest reserve for domestic purposes (e.g. medicinal uses,



Estimated costs and suggested benefits (40% for farmers, 40% for the Forestry Commission, 15% for landowners and 5% for local communities) at discount rates of 6% and 10%

home consumption, poles for construction).

However, despite the intent, there was no legislation to ensure these rights or to ensure an equitable flow of benefits to landowners and local communities or their consultation on decisions influencing resource utilization and management.

The Timber Resources Management Amendment Act, 2002, and the Forest Plantations Development Fund Amendment Act, 2002, strengthen the ownership rights of farmers and would provide for incentives for the modified taungya system.

Institutional arrangements

An elaborate institutional framework has been proposed, intended to ensure, among other things:

- equity and transparency in land allocation to farmers;
- implementation of appropriate procedures for developing and documenting land lease and benefit-sharing agreements;
- clear and reliable systems for addressing grievances of stakeholders (and farmers in particular).

The highlight of the institutional arrangements is the establishment of Land Allocation and Taungya Management Committees at the community level, headed by the Forestry Commission but predominantly comprising farmers, for the development of forest plantations within degraded forests. These committees would be responsible for allocation of degraded lands to farmers, monitoring farmer and Forestry Commission performance, instituting sanctions and settling disputes. The committees would also be responsible for ensuring the compliance of all parties within the contract agreement.

The Forestry Commission is expected to keep a detailed register of participants. Copies of benefit-sharing agreements, which may be in the form of bonds, should be lodged with the Attorney-General's Department and other relevant institutions. At present, the Forestry Commission's capacity to compile and store these elaborate records is doubtful. However, the Government of Ghana, with the support of the World Bank, the United Kingdom's Department for International Development (DFID) and the African Development Bank, is working to strengthen capacity in all districts, including the supply of equipment and staff responsible for dealing with communities; these ongoing efforts provide some basis for optimism.

Ensuring participation

The formation of Land Allocation and Taungya Management Committees at the local community level should enable all stakeholders to consult each other and coordinate their efforts to address the major issues and impediments to implementation of the system. It will be a challenge, however, to accommodate the diverse, sometimes conflicting interests of the numerous stakeholders so as to engage and sustain their good will, their commitment and in some cases their active participation.

Comparison of benefit sharing frameworks under the old taungya system and modified taungya system (percentage share of benefits)

Stakeholder	Old taungya system	Modified taungya system
Public agencies		
Forestry Commission	60	40
District Assembly	20	0
Administrator of tribal lands	4	0
Subtotal	84	40
Local community groups		
Tribal landowners	9	8
Traditional authority	7	7
Forest-adjacent community	0	5
Farmers	0	40
Subtotal	16	60
Total	**100**	**100**

Estimated financial benefits of the system

A financial analysis was carried out based on projections of two investment scenarios, the modified taungya system and smallholder forest plantation development without food crops. The analysis was based on actual costs and revenue and covered a project cycle of 25 years, which is the maturity period of *Tectona grandis*, the most commonly planted tree species. The analysis showed an estimated internal rate of return (IRR) of 16.2 percent for the modified taungya system and an IRR of 13.6 percent for smallholder forest plantation development.

CONCLUSIONS

The modified taungya system has potential to lead to a win-win situation for all participants. However, several possible constraints need to be addressed:

- a loss of common property resources which could be of particular value to poor and vulnerable groups;
- a breakdown of social structure and community cohesion, arising from the empowerment of only some sections of the community (Butcher, 2001);
- differences in access to land, which may increase along gender and ethnic lines. ◆

Bibliography

Agyeman, V.K., Kasanga, K.R., Danso, E., Marfo, K.A., Whiteman, A., Asare, A.B, Yeboah, O.M. & Agyeman, F. 2003. *Equitable forest reserve plantation revenue sharing in Ghana.* Report for FAO.

Birikorang, G. 2001. *Wood industry and log export ban study*. Consultancy report for the Ministry of Lands and Forestry.

Butcher, C. 2001. *Social appraisal of Government of Ghana and African Development Bank support to forest plantation development project.* Consultant's report submitted to the Department for International Development (DFID), UK.

FAO. 2001. *Global Forest Resources Assessment 2000 – main report.* FAO Forestry Paper No. 140. Rome.

Milton, R. 1994. *Some issues and observations arising from District taungya studies … for use in discussion for development of FP4 – Forest Reserve Rehabilitation*. Forestry Commission memo. ◆

Community-based wildlife management in Africa

D. Williamson

How rural people can share the economic benefits from wildlife resources.

Douglas Williamson is Forestry Officer (Wildlife and Protected Area Management), Forest Resources Division, FAO Forestry Department, Rome.

Among conservationists and wild-life managers, it is becoming widely accepted that the future of wildlife in developing countries depends largely on its capacity to deliver benefits to rural people and that the most effective way of delivering benefits to rural people is to give them the right and the responsibility to manage wildlife. Translation of this idea into a practical and sustainable reality on the ground has been limited and patchy, but there are success stories, and over the past two or three decades important lessons have been learned about involving communities in the management of wildlife and other natural resources.

Potentially the largest source of benefits to rural people from wildlife is wildlife-based tourism, including trophy hunting. For example, in 1996 trophy hunting alone contributed US$225 million to the economies of South Africa, the United Republic of Tanzania, Zambia and Zimbabwe (Elliott and Mwangi, 1998). Wildlife tourism has the potential to contribute much more than it currently does because it is labour intensive and depends on a range of goods and services that can be provided by local people. At present local people often benefit less than they could and should, but mechanisms are being developed to increase their participation in wildlife-based tourism. For example, some governments make the awarding of business licences to tourist operators conditional on partnerships with local people. Some international ecotourism companies are well advanced in the process of involving local people in their operations, through both employment and the purchase of goods (e.g. handicrafts, fruit and vegetables) and services (e.g. laundry). One such company is Wilderness Safaris, which operates mainly in southern Africa.

Bushmeat is also an important source of human benefit. The actual amount of bushmeat being harvested is difficult to quantify because the harvest is mostly informal and illegal, but it is clearly enormous. In Côte d'Ivoire, for instance, it was estimated that in 1996 around 120 000 tonnes of wild meat was harvested by over a million hunters (Caspary, 1999a, 1999b). This was more than twice the yearly production of meat from domestic livestock, and its market value of around US$150 million represented 1.4 percent of the gross national product. The amount of bushmeat being harvested in the Congo Basin has been variously estimated as 1.2 million, 2.5 million and 5 million tonnes. These numbers support the widely held view that wild meat is an important component of the dietary intake of many people. Many people also sell bushmeat in order to generate income for other purposes.

In Namibia, community-based wildlife management has contributed to significant progress through the establishment of conservancies. These are legally recognized and democratically governed associations of community members living in a designated area with specific, devolved rights to benefit directly from natural resources and responsibilities for their sustainable use and management. The policy that enables conservancies to become established and operational was enacted in 1996 and the outlook for their future is promising. The harvestable value of wildlife in the areas where they operate has increased by 30 times since 1980. The current value of wildlife-based tourism in this area is US$10 million and is projected to increase to US$30 million to $40 million (USAID, 2002), which could result in a doubling of the average income of rural people in the area.

One of the crucial lessons learned through experiences with community management is that not all communities are stable and socially cohesive, and their members do not always act in concert or make all decisions for the common good. Moreover, there is no guarantee that decisions made by communities will necessarily accord with the interests of biodiversity conservation. For example, a community may want to exterminate large predators that might be attracted into the area through reforestation, whether the predators are endangered or not.

Successful community-based natural resources and wildlife management involves a set of conditions and measures, all of which need to be addressed. These include:

- policies, laws and regulations which allow and enable effective action at the local level;
- effective institutions at all levels – from national government to local government to village and community, including non-governmental and civil society organizations – and provision of technical, economic and management capabilities;
- knowledge management to provide the information and knowledge that is needed for good economic, governance and environmental outcomes;
- capacity building, in other words investment in human resources, which is required in the domains of environment, economics (marketing, business skills) and governance (rights, organizational management);
- integration of policies and laws in different sectors, which are sometimes contradictory and confusing and therefore tend to inhibit investment in natural resource management.

D. WILLIAMSON

The harvest of bushmeat is mostly informal and illegal, but it is still an important source of food and income

D. WILLIAMSON

Potentially the largest source of benefits to rural people from wildlife is wildlife-based tourism

Bibliography

Caspary, H.-U. 1999a. *Utilisation de la faune sauvage en Côte d'Ivoire et Afrique de l'Ouest – potentiels et contraintes pour la coopération au développement.* Eschborn, Germany, German Agency for Technical Cooperation (GTZ).

Caspary, H.-U. 1999b. When the monkey "goes butcher": hunting, trading and consumption of bushmeat in the Tai National Park, Southwest Côte d'Ivoire. *In* M.A.F. Ros-Tonen, ed. *NTFP research in the Tropenbos Programme: results and perspectives*, p. 123-130. Wageningen, the Netherlands, Tropenbos Foundation.

Elliott, J. & Mwangi, M. 1998. *The opportunity cost of the hunting ban to landowners in Laikipia, Kenya*. Laikipia Wildlife Economics Study, Paper No. 4. Washington, DC, USA, African Wildlife Foundation.

United States Agency for International Development (USAID). 2002. *Nature, wealth and power in Africa: emerging best practice for revitalizing rural Africa*. Discussion Paper. Environment and Natural Resources Team, Sustainable Development Office. Washington, DC, USA.

Wild edible mushrooms from the forests of America's Pacific Northwest: a non-wood forest product that pays

P. Vantomme

With the rapidly expanding market for wild mushrooms, experienced gatherers can earn good wages.

The Pacific Northwest region of the United States and Canada is famous for its forests and fine timber and for some tree species (redwoods, Douglas firs) that attain world-record sizes. Timber producing and processing companies contribute significantly to the region's employment and economy.

Yet these forests are also the base for a prospering business of gathering wild edible mushrooms, both for local consumption and for export. Edible mushrooms have long been part of the diets of indigenous peoples and settlers in the region, but in the past few decades, with rapidly increasing numbers of immigrants from Asia, the interest in mushrooms is expanding quickly.

In the Pacific Northwest as many as 36 species of mushroom are gathered and traded, but porcini (*Boletus edulis*), chanterelles (*Chanterellus* spp.), morels (*Morchella* spp.), truffles (*Tuber* spp.), lobster mushroom (*Hypomyces lactiflorum*) and American matsutake (*Tricholoma magnivelare*) make up the bulk of the industry. The estimated size of the wild mushroom market in the states of Washington, Oregon and Idaho in the United States evolved from US$21.5 million in 1985 to $41.1 million in 1992 (Alexander, Weigand and Blatner, 2002).

Average prices paid to mushroom pickers between 1992 and 1996 ranged from US$5 per kilogram for porcini and morels to US$14 per kilogram for matsutake. The estimated average seasonal wage ranged from as low as US$830 for occasional harvesters to US$5 000 for a full season (Alexander, Weigand and Blatner, 2002). Experienced morel pickers were reported to earn an average wage of up to US$15 per hour in the Northwest Territories of Canada in 2000. (For comparison, the United States Federal Basic Minimum Wage is just over US$5 per hour.)

Pickers are immediately paid in cash by mushroom buyers, mostly small formal or informal businesses that supply both domestic and international markets. The commodity chain for distribution and export of wild edible mushrooms (fresh, dried or frozen) from the West Coast of the United States is particularly well developed.

Exports of edible mushrooms in general, both cultivated and wild, have grown in the past two decades, but wild mushrooms have surged in particular. For example, between 1989 and 1997, American matsutake exports to Japan climbed from US$2.5 million to $9.5 million (representing 275 tonnes). While the average export price of the cultivated *Agari-*

American matsutake (*Tricholoma magnivelare*) is one of the most popular mushrooms for export and brings in high wages for pickers

Paul Vantomme is Forestry Officer (Non-wood Forest Products) in the Forest Products Division, FAO Forestry Department, Rome.

cus spp. remained around US$2 per kilogram during that period, the prices of wild gathered "speciality" mushrooms were three to four times higher (Oregon Agricultural Statistics Service, 2002). Seattle, Washington in the United States is also the principal shipping point for wild edible mushrooms to the European Union.

The surge of interest in wild edible mushrooms from the Pacific Northwest has led to an increase in the number of harvesters. Not only has the number of traditional and occasional mushroom gatherers from the region increased, they now also face stiff competition from migrant pickers from outside the region. In addition, inappropriate mushroom picking techniques that affect the sustainability of the supply, such as raking (and damaging) the humus layer, are becoming more common (FAO, 2003).

Efforts are emerging in the region to "manage" natural ecosystems in an attempt to maximize production. However, the impact of silvicultural interventions such as thinning or clear cuts on mushroom yields is still poorly understood (Pacific Northwest Research Station, 2000) and annual yields are heavily influenced by available rainfall and the right ambient temperatures at key times during the year.

Forest landowners, both private and public, are gradually regulating collection by restricting or regulating pickers' access to their forests, and are collecting income at the same time. For example, the sale of 3 733 permits for collecting matsutake in Winema National Forest, Oregon in the 1997 season brought in more than US$365 000 (USDA Forest Service, Pacific Northwest Region, 2002.). Regulation of access can be complicated and costly (especially as regards monitoring) and has serious social implications, including frequent violent conflicts among gatherers or between gatherers and landowners or timber contractors. Successful control will depend on a pragmatic approach that protects the natural resources while allowing equitable access to collectors and fair compensation to forest owners.

The many and often conflicting demands from different user groups for forest products (timber and a variety of non-wood forest products including also floral greens, natural honey, berries and medicinal plants) create a great challenge and a demand for conflict-management arrangements and innovative forest management and policies at all levels, from landowners, municipalities, user groups and non-governmental organizations to concerned state and federal agencies. In view of the high financial stakes of several of the uses involved, administrators in the region are hastening to fine-tune forest policy and regulations governing access and user rights and to promote forest management that accommodates a wide range of forest uses.

Bibliography

Alexander, S.J., Weigand, J. & Blatner, K.A. 2002. Nontimber forest product commerce. *In* E. Jones, R. McLain & L. Weigand, eds. *Nontimber forest products in the United States*. Lawrence, Kansas, USA, University Press of Kansas.

FAO. 2003. *Wild edible fungi – a global overview of their use and importance to people*, by E. Boa. Non-Wood Forest Products Series. Rome. (In press)

Oregon Agricultural Statistics Service. 2002. *Oregon Agri-facts*, Vol. 17-02. Available on the Internet: www.nass.usda.gov/or/AF17-02.pdf

Pacific Northwest Research Station. 2000. *Symbiosis and synergy: can mushrooms and timber be managed together?* Science Findings No. 28. Portland, Oregon, USA, United States Department of Agriculture (USDA) Forest Service. Available on the Internet: www.fs.fed.us/pnw/sciencef/Scifind28.pdf

United States Department of Agriculture (USDA) Forest Service, Pacific Northwest Region. 2002. *Special projects and programs – matsutake mushrooms.* Internet document: www.fs.fed.us/r6/winema/specialprojects/matsutake.shtml