

Notes on Developing a Sustainable Guidelines Strategy for Allanblackia Harvesting

Kojo Amanor
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1. Elements influencing a sustainable harvesting strategy

A sustainable harvesting strategy will depend upon:

- current geographical distribution of Allanblackia;
- the possibility of altering this distribution through cultivation and other practices;
- the demand and price for Allanblackia oil and the nature of the current market and potential market for the oil and oil products.

2. Sources of Allanblackia fruits

The possible sources of Allanblackia are:

- wildings occurring in:
 - forest reserves
 - uncultivated forest lands outside of forest reserves including gallery forests on stream banks, sacred groves and other dedicated forests
 - fallow and farm
 - plantations, such as cocoa
 - home gardens (trees preserved around the compound)

It is possible that plants incorporated into farming systems may have different characteristics than those in forest reserves, if they are selected for particular fruiting characteristics.

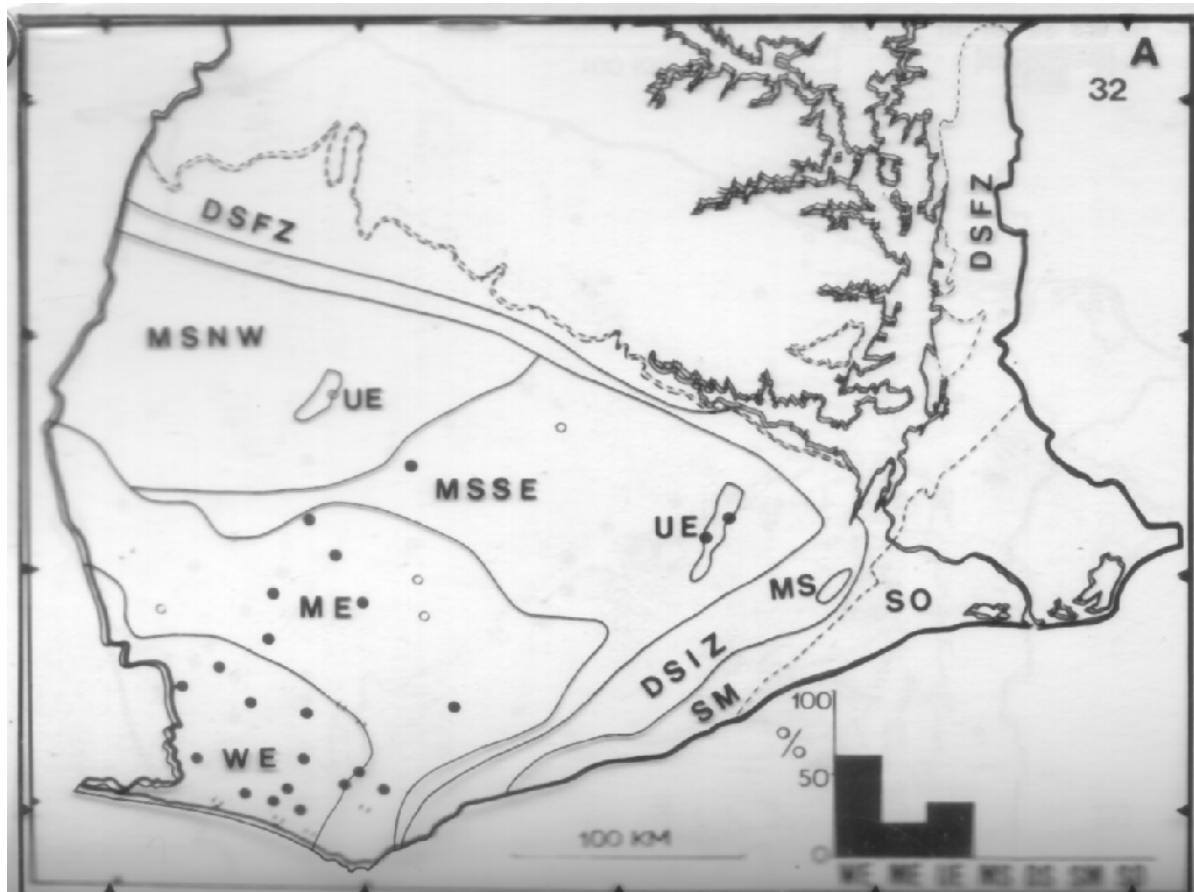
- planted species in commercial plantations, woodlots and other agroforestry systems

2.1. The strategy can be based on maximising the potential of collection of wildings and on current distribution, developing future plantations, or a combination of both approaches.

3. Current distribution of Allanblackia in Ghana

According to Van Rompaey (2003) the main distribution is in the wet evergreen forests where citing from Hawthorne (1995) he estimates densities of 900 trees per km² in the 5-30 cm diameter class and 200 trees in 30 cm and above category. Van Rompaey interpolates that this works out at 800 trees per km² in the 10 cm girth diameter class or 8 trees per hectare. Half of these trees will be fruiting as a result of dioecy. The most populated sites are on slopes and away from disturbed areas (Hawthorne 1995)

According to Hall and Swaine (1981) about 55 percent of *Allanblackia* trees in a sample of undisturbed areas were located in Wet Evergreen forests, 20 percent in Upper Evergreen and 15 percent in Moist Evergreen. Their favoured location was on acidic soils low in calcium, magnesium and potassium. Hawthorne (1995) notes that the tree is scattered throughout the semi-deciduous forest. Irvine (1961) locates its habitat in wet places, and notes it is common in places, particularly in west but also in parts of Ashanti where its wood is used for pit-props and bridge piles and the twigs to make candlesticks. Irvine writes, “The tree is abundant in Ghana, and recommended for cultivation”.



Distribution of *Allanblackia* from Hall and Swaine 1981

WE Wet Evergreen ME Moist Evergreen UE Upper Evergreen MSNW Moist Semi-Deciduous North West Subtype MSSE Moist Semi-Deciduous South East Subtype.

3.1. Distribution on Farmland

Nkyi's (1989) survey of trees preserved in farming systems in Ashanti, including Moist evergreen forest, does not make mention of *Allanblackia*.

Table 1 Trees preserved in mature cocoa plantation in the Asankarigwa district.

Tree (scientific name)	Tree (Akan name)	no of farmers preserving species	percentage of farmers
<i>Ceiba pentandra</i>	Onyina	51	36.4
<i>Rauvolfia vomitoria</i>	Kakapenpen	32	22.9
<i>Ficus exasperata</i>	Nyankyerene	31	22.1
<i>Milicia excelsa</i>	Odum	28	20.0
<i>Alstonia boonei</i>	Nyamedua	27	19.3
<i>Cola nitida</i>	Bese	27	19.3
<i>Triplochiton scleroxylon</i>	Wawa	25	17.9
<i>Petersianthus macrocarpus</i>	Esia	22	15.7
<i>Funtumia elastica</i>	Frumtum	22	15.7
<i>Terminalia superba</i>	Ofram	21	15.0
<i>Piptadeniastrum africanum</i>	Danhoma	21	15.0
<i>Khaya ivorensis</i>	mahogany/dubini	19	13.6
<i>Musanga cecropioides</i>	Odwuma	14	10.0
<i>Terminalia ivorensis</i>	Emire	14	10
<i>Trema orientalis</i>	Asesia	13	9.3
<i>Celtis milbraedii</i>	Esa	11	7.9
<i>Pycnanthus angolensis</i>	Otie	11	7.9
<i>Nauclea diderrichii</i>	Kusia	10	7.1
<i>Newbouldia laevis</i>	Sesemansa	10	7.1
<i>Allanblackia floribunda</i>	Sonkye	9	6.9
<i>Sterculia tragacantha</i>	Sofo	9	6.4
<i>Alchornea cordifolia</i>	Ogyama	9	6.4
<i>Tieghemella heckelii</i>	Baku	9	6.4
<i>Macaranga barteri</i>	Opam	8	5.7
<i>Erythrophleum ivorense</i>	Odom	8	5.7
<i>Bombax sp.</i>	onyina koben/ akata/akonkodie	8	5.6
<i>Dacryodes klaineana</i>	Adwea	7	5.0
<i>Trichilia monadelpha</i>	Tanuro	7	5.0
<i>Antiaris toxicaria</i>	Kyenkyen	6	4.3
<i>Entandrophagma candollei</i>	Cedar	6	4.3
no of farmers		139	

Source Amanor (1994)

However in a survey of tree management practices among farmers in the Begoro, Mampong, Akyem Oda and Asankarigwa forestry districts (Amanor, 1994), *Allanblackia* was one of the trees preserved by farmers in cocoa plantations in the Asankarigwa district, where its seeds were prepared by women into cooking oil. Although not one of the most popularly preserved trees, its preservation was nevertheless significant. It was also one of the most important undomesticated trees whose fruits were utilised. At Akyikyere more than 40 percent of interviewees claimed to use the fruits.

Table 2 Wild forest fruits consumed by farmers
(% of farmers)

Tree (scientific name)	Akan Name	Kamaboi	Kamaso	Akyikyire	Sompire	Total
	None	32	30	3	16	20
<i>Dacryodes klaineana</i>	Adwea	55	51	76	58	60
<i>Allanblackia floribunda</i>	Sonkye	3	16	43	30	25
<i>Tieghemella heckelii</i>	Abako	13	19	38	26	24
<i>Tetrapleura tetraptera</i>	Prekese	19	5	16	6	12
<i>Carpolobia lutea</i>	Ofewa/Afiafia	13	19	.	13	11
<i>Cola gigantea</i>	Wawatapo	6	16	3	3	7
<i>Irvingia gabonensis</i>	Abesebuo	.	11	5	.	4
<i>Napoleonaea vogelii</i>	Obua	19	.	.	.	4
<i>Aningeria robusta</i>	Asamfena	3	.	.	3	1

Source Amanor (1994)

While *Allanblackia* has been preserved within the cocoa sector in the Western Region, it is not clear how significant this preservation is, and the extent to which *Allanblackia* continues to be preserved in new planting. As the cocoa industry ages in the Western Region it is not clear what the future of cocoa will be. Will farmers be able to replant cocoa on already cultivated land or will they diversify into new crops or revert to food crops? In the past, as cocoa becomes senescent farmers have moved into new frontier areas in which mature forest exists. Will attempts at rehabilitating old cocoa lead to more use of inputs and less shade trees? Alternatively, difficulties of rehabilitating cocoa can lead to new space for new agroforestry systems. More data is needed on developments in the cocoa sector and their implications for future development. Some organisations are working with communities to promote sustainable cocoa cultivation, and organically certified cocoa. This includes Conservation International and Kuapa Cocoa, who are mainly working in the Central Region. It may be useful to establish links with such projects to find out about the directions these projects are developing and the potential of incorporating *Allanblackia* production as a product of environmentally-friendly cocoa plantations.

According to research carried out by FORIG, estimates for tree density in off-reserve areas of HFZ is 6.6 million trees, based on a survey of 336 hectares giving an average of 1.5 trees per hectare. It is not clear how this takes into consideration different patterns of distribution in different forest types. Out of this total, 31 per cent of trees were fruiting, of which all lay in the 10-20 cm girth class. In the forest reserves it was estimated that there were 1.9 million trees. Out of a total of 8.5 million trees 78 percent lay in off reserve areas. However, these estimates are not broken down into ecological zone and it is not clear how they account for different distribution patterns in different forest ecotones.

The Friends of the Nation (2003) report of the piloting of *Allanblackia* seed collection in the Eastern and Western Region, found significantly more nuts in the Western Region than the Eastern Region. Only 140 kg of nuts were collected in the Eastern Region as compared to 1,856 kg in the Western Region over the same period. The main distribution was in forest reserves: “The *allanblackia* tree can scarcely be found in off-reserves”. However, the discussion on tenure arrangements in the same report seems to suggest that in the Mpohor Wassa district in the Western Region trees are found in farming areas, since it largely deals with farm tenure. Arrangements. Fifty eight percent of those interviewed, “stated that maintenance was in the form of weeding around trees and this was done by cocoa farmers and their labourers. The remaining 42.3% said no maintenance is carried out on the trees since they are in the wild”. Similar comments were made in the Wassa Amenfi district – “maintenance is indirectly done since farmers do occasionally clear bushes around them when they are weeding”. In contrast in the Fanteakwa district in the Eastern region no farmers mentioned any maintenance of the tree and in East Akim only a few mentioned any maintenance.

3.2 Summary of distribution patterns

The off reserve areas are important areas for potential *Allanblackia* harvesting, particularly in the Western Region. They need to be targeted alongside forest reserves, which still contain significant numbers of trees. The most important areas are likely to be situated in the Wet Evergreen and Moist Evergreen areas of the Western Region and in Upland Evergreen forests such as Atewa Range in Eastern Region and Tano Offin forest reserve. However, it is not clear the extent to which the distribution outside farming areas is concentrated on farms and recent utilised fallow, or if the distribution is more clustered in marginal farming land, on slopes with poor acidic soils and on banks of streams.

Tentatively, we could expect distributions in forest reserves in the Western Region in the range of about 8 trees per hectare, while in farming areas (including fallow land) at about 1 tree per hectare. The Friends of the Nation (2003) report tends to suggest that most people harvested *Allanblackia* away from farms and that distance from settlement is a factor, which will determine the economic thresholds of viable price. We need to get a clearer idea of specific locations from which rural communities harvest *Allanblackia*.

4. Ownership, access and tenure

Tenure aspects of *Allanblackia* are likely to be influenced by the extent of cultivation, the extent of land under plantations and short cycle bush fallowing, the extent to which trees are actively preserved within existing farming systems or occur on marginal land, and the commercial value of the crop and its uses in the domestic economy. In the high forest zone most land is now under family or individual ownership, and has acquired a commercial value as a result of the expansion of cocoa. There are few waste lands or bush areas where people can freely clear new land through their own effort and put it under crops. In contrast with shea picking areas in the north, there is no area of general bush that does not belong to anyone where anyone can freely pick fruits. However, people have rights to pick fallow products for personal consumption from the fallows of others. When these products acquire commercial value tenure and access become more complex, and tenure tends to evolve with different parties attempting to redefine tenure rules to meet their interests. In some instances, chiefs claim ownership of the product as their ownership of the allodial rights of the land and issue permits to gatherers to exploit the products. These gatherers are usually migrants, since citizens usually have rights to use the products of the land and cannot be charged for use of their own fallow products. Chiefs have issued permits to gatherers for gathering wrapping leaves, rattan, rubber tapping, charcoal burning, etc. . In the shea nut areas of the north there are a variety of tenure systems. In some areas, rights to shea nuts are determined by farm ownership. In other areas women have rights to collect shea from bush plots. In other areas there are chiefs over shea trees who have rights to collect seeds from trees on farmers' land. In the mango producing areas in the transition zone, mangoes (which are not planted) are recognised as belonging to the farmer on whose land it occurs in. Cola nuts have been an important export of the high forest zone from the fifteenth century when it was exchanged for an assortment of goods from the sahel, in long distance trade involving luxury commodities. Ownership of cola was recognised as belonging to the farmers who had user rights in the land on which the tree was situated and not to the chief who held allodial rights (Arhin, 1994). While cola trees are usually preserved in cleared farm areas, in the New Abirem area they are also cultivated in plantations. In the high forest zone preserved fruiting trees are generally recognised as belonging to those who claim user rights over the land, rather than those claiming allodial rights.

4.1 Present arrangements for *Allanblackia* in off reserve areas

If most *Allanblackia* seeds originate on marginal land in which there is not clearly defined ownership and *Allanblackia* is highly profitable, competition over seeds may lead to tenure disputes. It is important to clarify tenure rules with chiefs and the communities at the beginning of the project and establish a transparent set of rules on which members of communities agree. It is also important to establish the rights of migrant farmers, particularly since there are many migrants and migrant communities in the Western Region. It is important to establish the rights of women and youth, who are often disadvantaged in accessing land but the groups with most interest in exploiting alternative and supplementary livelihoods.

The importance of tenure issues and their clarification on common land, marginal land and fallow suggests that group formation is important. This can be approached through three different avenues:

- working through chiefs to target the community in general;
- working through the Unit Committees and structures of decentralisation
- working through specific community groups and associations, such as women and youth within a poverty alleviation framework.

It is important to involve all these level of groups to ensure that the structures are inclusive rather than exclusive, and that the existing power structures are aware of these developments and their implications, are generally supportive and not alienated from the project.

4.2 Forest reserve access

In forest reserves a different set of tenure rules occur. The forest reserves are considered to be owned by the chiefs and managed by the Forestry Department as their clients. The Chiefs receive royalties from timber minus the administrative charge of the Forestry Service. Local communities in theory have rights to collect products for domestic consumption but not for commercial transaction. Those wishing to engage in commercial exploitation of forest products gain permits from the Forestry Department for their exploitation. This includes rattans, pestles, wrapping leaves, but also raffia palms and oil palms for producing palm wine, which results in the destruction of the tree. However fruits are rarely collected from forest reserves and there do not seem to be any permit arrangements for this.

In recent years the Forestry Service has become concerned about the lack of downstream benefits for forest-edge communities and has been trying to promote the development of sustainable livelihood initiatives for forest edge dwellers, partly to mitigate interests in timber and chainsaw activities. However, little headway has been made in utilising forest products for sustainable livelihoods, and the sustainable livelihoods concerns have focussed around Forestry Customer Support Centres providing information and access to resources for a number of non-forest product activities such as bee keeping, mushroom growing, grasscutter rearing and timber woodlot production.

The Forestry Service has created Community Forestry Committees (CFCs) in a number of reserves, which function to build up linkages between the forestry service and forestry communities, and involve communities in forest management. At the moment these are being scaled up into a district structures in which Reserve Forestry Committees will be represented at a district forestry forum to examine forestry policy. The roles of the CFCs include:

- representing community interests in the design and implementation of forest reserve management plans;
- negotiating with timber concessionaires over Social Responsibility clauses
- negotiating contracts for community members to be involved in reserve management. This includes boundary maintenance, monitoring illegal activities in forest reserves, clearing fire belts in forest reserves, and carrying out replanting activities as in taungya.

Given the two interests of the Forestry Service in involving communities in forest management, and creating livelihood options for forest edge communities, with downstream benefits from the management of forest reserves, a potential exists for creating linkages between the Allanblackia project and the Forestry Service on Allanblackia harvesting in forest reserves with forest-edge community linkages, possibly mediated by the CFCs. However, this also needs to examine potential consequences, destruction of animal habitats and food supplies. In addition to being a food for rodents, Irvine (1961) also mentions antelopes as feeding on Allanblackia seeds

5. Cultivation

The viability of Allanblackia as a species for cultivation will depend upon a number of factors including the following:

- Market demand and market price and comparative advantage as compared to other crops such as oil palm - which also favours moist environments.
- The yield under cultivation, vulnerability of crop to pest attacks, response to inputs, spacing distance, impact on nutrients, etc.
- The duration till first fruiting, the consistency of fruiting, the number of years before fruiting declines, and the willingness of farmers to discount capital investments until the tree comes into full fruiting. The shea tree takes over ten years before it comes into fruiting when planted. This has hindered plantation development with the result that most shea butter is collected from trees that have been preserved by farmers rather than planted.
- the implications of dioecy for planting. Cola is another crop with similar problems, where its is impossible to detect the sex of the tree until fruiting. Recently hybrids have been created which overcome this problem.

5.1 Pathways to cultivation

There are a number of pathways to cultivation. This includes:

- Commercial plantation development. This would seem to be far off and dependent upon the development of considerable research, accessions of genetic material and experimentation.
- Incorporation of Allanblackia as one of a number of species in timber plantations (Allanblackia is classified as a Class III timber species) in which the fruits provide short-term value. A number of timber companies are developing outgrower community schemes with agroforestry components. Samratex at Samraboï have developed a scheme that combines timber trees with citrus plantations. The Forestry Service are also developing a plantation initiative which will create new plantations in degraded portions of forest reserves with private sector and community participation. Is there a role for Allanblackia in this?
- Promotion of Allanblackia as a shade tree in cocoa with complementary economic benefits. However, if Allanblackia harbours pests there may be drawbacks.

- Development of community woodlots. Communities can be encouraged to create small group woodlots of Allanblackia. There can be some form of support for these to ensure that the communities do not take all the risk in an uncertain, experimental project.
- A number of NGOs are developing sustainable agricultural projects, which try to preserve more forest trees and promote crops that can exist within a forest environment. The Joint Forest Management Project at Gwira Bansa (in another Samratex concessions), in which CARE International are participating, involves encouraging the cultivation of shade tolerating crops, such as black pepper, and the dissemination of timber tree seedlings to farmers. Farmers are encouraged to plant a few seedlings on their land. Could Allanblackia be a component of such a project? Several other NGOs are promoting woodlot development and cultivation of economically useful forest species. It should be possible to disseminate information to NGOs, trade unions involved in tree cultivation (such as the Informal sector of the Woodworkers Union and the Ghana Agricultural Workers Union), tree planter associations, etc. and to establish linkages on the promotion of Allanblackia.
- Cultivation can also be promoted in such places as along stream courses, in fire belts, including around forest reserves, and in home gardens around the household where fruit and spice trees are often planted.
- Promote experimental woodlots in which farmers participate in a research project with scientists to develop knowledge on Allanblackia cultivation and its potential.

5.2 It is likely that if Allanblackia harvesting proves to be profitable, individuals and community groups will start deliberately preserving or planting larger numbers on farm land and on common land (stream banks etc), leading to a significant build up of population. Perhaps a medium term strategy could encourage increased preservation and small scale planting of a few seedlings, limiting risk.

Commercial plantations will require the development of considerable research, research networks, and genetic accessions.

6. Research

At present there are many blanks in our basic knowledge of Allanblackia. This includes:

- Age at which Allanblackia starts bearing fruit and the number of years it produces fruits;
- Pests and the food chains of which it is a component - particularly important for cultivation of plantations and woodlots, but also has implications for quality harvesting of wildlings;
- Yield in different soil types and ecosystems;
- Potential products from the seed oil;
- The market and potential market for Allanblackia seeds and oil and its profitability;
- price comparisons with other plantation crops oil palm, cocoa (important for considerations of viability for cultivation);
- the price of seeds that would make Allanblackia harvesting attractive to community members as an off-farm livelihood option - the Friends of the Nation (2003) report suggested that farmers found existing selling prices to be low;

- variations in Allanblackia seeds and their impact on the quality of oil;
- storing and drying techniques and impact of fermentation on the quality of the oil.

7. Human Capital

At present there is a store of knowledge on Allanblackia among local communities that has not been systematically utilised. This includes:

- local knowledge of the habitats of Allanblackia, its fruiting characteristics, its life cycle and years to maturity, knowledge of its dioecy;
- different characteristics of variations in seeds and their oil processing potentials;
- different methods of processing oil and characteristics of the oil;
- problems of integrating trees into farm environment and impact of tree on crops and soils;
- pests and diseases of the tree.

Local communities can also provide a variety of seeds from different genetic stock and different microenvironments for accessions, which will be important in developing commercial varieties, and preserving genetic diversity. This raises important issues of intellectual property rights and community rights to their cultural intellectual property.

8. Risk, equity and codes of conduct

Since much remains unknown in the ecology, harvesting and processing of Allanblackia there are major risks in developing local dependency on Allanblackia for income. Are markets for Allanblackia going to be stable and long term or are they faddish? Is there potential for Allanblackia to develop as a high quality oil with a premium price or an environmentally certifiable product with a price premium, or are prices going to be low, not reflecting the allocation of time to harvesting? Will farmers be able to provide a stable supply of Allanblackia seeds from wild harvesting and other existing supplies or are unstable, irregular, erratic and poor quality seeds going to undermine market confidence and investment in processing mills? How are prices to be determined? What assurances can be given that seed purchasers and producers will not capture the price premium and that there will be downstream redistribution of wealth to the rural poor? Should Allanblackia be heavily promoted or be promoted as part of a diversified livelihoods strategies, providing wider choices and support structures for rural communities to overcome poverty?

A successful strategy will require much dissemination of information to communities on Allanblackia markets, potential products, and discussion and agreements of codes of conduct, on price setting, payment periods, timely collection of nuts, timely delivery of nuts, processing techniques and storage by farmers. This will ensure efficient marketing, quality control and inspire market confidence. What are the practises that communities need to develop to gain market confidence and promote interest in Allanblackia? Mechanisms need to be put in place to ensure that risks are smoothed out and that rural communities do not bear all the risks.

There is some indication in the Friends of the Nation report that the pulp of the fruits may cause irritation to the skin and the safe protective equipment for harvesting may be an issue.

9. Institutional innovations and strategic framework

Given the large interest in sustainable livelihoods and the large number of projects and organisations struggling with the development of this framework there are potential openings for entering into partnership with a number of organisations to gain a better handle on sustainable livelihood strategies and modalities. There is also the possibility of entering into synergic interactions in which Allanblackia harvesting can be built onto pre-existing community environmental programmes, providing organisations with support in building community sustainable livelihood programmes with an Allanblackia component. Potential partner organisations include Forestry Service, Community Forestry Committees, tree planting associations, NGOs such as Friends of the Nation, SNV, Care International, Friends of the Earth, etc, and trade union organisations. Timber companies who are interested in promoting sustainable practices and who have obligations and social responsibility agreements with communities to promote sustainable forestry with downstream benefits to communities and support community development projects are also potential partners. Other companies (such as Samratex and Swiss Lumber Company) have also developed plantation programmes with community participation and outgrower schemes which may provide some useful models or insights for the development of small-scale Allanblackia plantations.

Information can be disseminated to partner organisations through bulletins on Allanblackia and through workshops. There is also the need to exchange experiences and learn from others working in the field of sustainable livelihoods on modes of interacting with communities, forms of appropriate organisation, institutional linkages and contractual forms, developing appropriate ethical codes, etc.

9.1 Linkages need to be built with target communities in specific areas. This can include existing community groups, producers associations, CFCs, chiefs and elders, Unit Committees and Area Councils, women's groups, youth groups.

Linkages should aim to:

- disseminate information on Allanblackia and its economic potential
- learn from communities on their knowledge of Allanblackia, the characteristics of different fruits, variations between plants, etc.
- develop appropriate ethical codes on:
 - tenure, ownership and access, negotiate a transparent framework which meets equity requirements and promotes the involvement of the poor in harvesting;
 - establish an appropriate set of harvesting procedures that promote sustainability and equity and safety to health;
 - dealing with pests (that include rodents and possibly antelopes);
 - a code of conduct for farmers and buying agents and millers that engenders market confidence and trust;

- mechanisms and platforms for conflict resolution;
- mechanisms for spreading risk.

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