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IN

BUNDLING AGRICULTURAL PRODUCTS WITH ECOSYSTEM SERVICES: INCENTIVES FOR ECOAGRICULTURE LANDSCAPES

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Background

Agriculture is the basic sector of Africa's economy on which the majority of people depend for their livelihood. This is especially true for Sub-Saharan Africa (SSA), with a combined population of about 200 million people and with highly variable domestic production, limited tradability of food staples, and foreign exchange constraints in meeting their food needs through imports (World Bank 2007).

High rural population growth, escalating poverty (rural poverty rates of more than 50%), perverse policies and bad governance have led to the steady expansion of cropping areas into forested lands. In only 15 years (between 1990 and 2005), Africa has lost nearly 10% of its forest area (FAO 2007). This is of great concern particularly in tropical Africa, an ecoregion that covers an area of approximately 20 million km² across a dozen West, Central, and East African countries. 3.6 million km² of this area are covered by rainforests, representing 18% of the world's closed tropical forests (FAO 2003).

The African tropical rainforests are evergreen forests, characterized by high humidity and annual rainfalls of >2500 mm. They contain most of the region's biological diversity, both in terms of quantity (species numbers) and quality (endemic species). Their carbon stocks per hectare are higher than that of any other terrestrial ecosystem in SSA (FAO 2003). The dense rainforest types cover nearly 86.5 million hectare and are concentrated in the rich Guineo-Congolean belt in West and Central Africa. This belt holds over half of all the species in the Afro-tropical realm, including 8,000 plants, 80% of which are endemic. Although 20% of the remaining forests in West Africa and 7% in Central Africa are now in protected areas, important gaps have been identified in the existing protected area system, especially within the Guinea-Congolean belt.

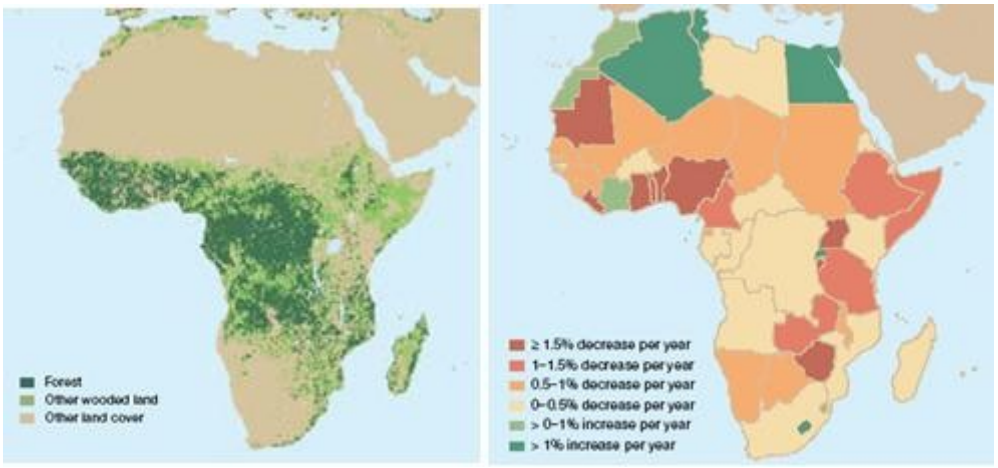

Figure 1. Forest resources in Africa: Extent of forested areas (left) and forest change rates by country or area between 2000 and 2005 (right). Source: FAO 2007.

These last remaining African rainforests are depleted and degraded at alarming rates for the economic benefits of unsustainable logging, excessive firewood extraction and irrational conversion to arable land, ranching and settlements (Figure 1). Forests are converted without consideration of the capability and limitations of the land, which in turn has led to soil depletion, declines in food production, and increased poverty in many countries.

The innovation

The Allanblackia *tree and its uses*

Allanblackia (Clusiaceae) is an evergreen forest tree native to the African tropical rainforests, and can be found all across tropical Africa, from Liberia to Tanzania. *Allanblackia* trees are especially abundant in African wet forests, which are important biodiversity hotspots threatened by deforestation and land conversion (Figure 1).

Allanblackia fruits (nuts) are a valuable non-timber forest product (NTFP). The seeds (Figure 2) have a high content of edible fat and are traditionally harvested on a subsistence basis for domestic use as cooking oil and for soap-making. The pods can only be collected when they are ripe and have fallen to the ground, so harvesters have to compete with rodents and other animals that feed on the seeds. In areas where *Allanblackia* is frequent on farmland, the fruits are therefore preferably harvested from wild trees within the farm, and to a lesser extent from forests or reserves.

Figure 2. *Allanblackia* fruits, on the tree (left) and split open, with seeds cut in half (right) (Source: Novella Africa Initiative)

Allanblackia trees are common on farms, albeit not in high densities. Wild *Allanblackia* stands are usually maintained after forest clearing and farmers appreciate them, since they do not have a large canopy and integrate well with agricultural crops. They are used as shade trees on cacao plantations, and are valued for keeping the soil moist in drier areas. The fruits attract wildlife, and farmers often lay traps around the trees to capture bush meat, mainly small rodents and Bush Tailed Porcupine.

The traditional use of *Allanblackia* seeds as cooking oil and for soap-making has decreased in most parts of Africa over the last decades, in favor of other, mostly liquid oils and industrial soaps. In Tanzania there was some small-scale commercial use of *Allanblackia* nuts over 50 years ago, as a cocoa butter substitute. However, the fat was considered of low value at that time because it is solid at ambient temperatures, and in consequence the market never developed to a profitable size.

Precisely these characteristics have recently attracted the attention of international food companies and led to an increasing popularity of the *Allanblackia* tree in the last years: The fat from *Allanblackia* seeds has a relatively high melting point, making it congeal easily at room temperature. The special fat composition (about 60% stearin and 35% olein acids) results in unique physical and nutritional properties, and a great potential for use in novel consumer products on the basis of edible fats. *Allanblackia* fat is especially efficient as a substitute for palm oil and has the right properties for use in high quality spreads (margarine) and soaps. Production of these products on commercial scale enables access to markets of considerable sizes.

Due to the characteristics of its seeds, *Allanblackia* is of high potential interest to the development of rural communities in tropical Africa, where the trees occur naturally in the wild (wet forests, often protected areas) as well as scattered on smallholder farms and commonly-owned lands of rural communities. One mature female tree produces about 50 kg of seeds per year, and approximately 3 kg of seeds are needed to produce 1 kg of *Allanblackia* oil (i.e., ~15 kg of oil/tree). The market price of *Allanblackia* is comparable with palm oil, being sold for about USD 650/t for refined oil in Europe.

The Novella Africa Partnership

In 2002, the international food company Unilever co-founded the Novella Africa Partnership (www.allanblackia.info, Figure 3) to scale up the production of *Allanblackia* oil in Africa and at the same time reduce poverty and promote sustainable enterprise. The public-private partnership operates in five target countries (Liberia, Ghana, Nigeria, Cameroon, and Tanzania) and brings together Unilever, the World Conservation Union (IUCN), the World Agroforestry Centre (ICRAF), the United States Agency for International Development (USAID), the Netherlands Development Organization (SNV), the Swiss State Secretariat for Economic Affairs (SECO), a number of African governmental agencies, civil society organizations and local communities.

The broad aim of the partnership is to scale up the production of *Allanblackia* oil by developing a socially acceptable, environmentally sustainable and financially viable supply chain for a novel product – from seed collection by local communities through processing to international marketing. Developing this new NTFP of African tropical forests sustainably will ensure economic long-term viability of the endeavor. Crucial to the

success is "bundling" of the product (*Allanblackia* oil) with the environmental service of biodiversity conservation and marketing it as such, so that the final product is internationally recognized to be of sustaina-

Figure 3. Web portal of the *Allanblackia* Novella Africa Initiative (**www.allanblackia.info)**

ble origin. Such a market-based financing mechanism contributes to safeguarding both local livelihoods and biodiversity in the tropical forest belt in Africa.

By "bundling" a new commodity product (*Allanblackia* oil) with the environmental service of biodiversity conservation (plus rural development and poverty alleviation), the undertaking contributes to a set of interdependent objectives:

1. ***Preservation of natural habitats and global biodiversity***

   Developing the sustainable use of a hitherto hardly used but abundantly available NTFP promotes the environmentally-friendly and small-scale use of tropical forests by local communities. It raises the awareness of the importance of caring for the environment in local communities and provides an incentive to maintain and enhance the integrity of the resource – especially if the buyers demand good practice.

2. ***Long-term alleviation of poverty in poor rural communities***

   Providing rural communities with a new, additional and sustainable source of income, improves their livelihoods and alleviates rural poverty. The price paid for *Allanblackia* nuts makes the work of gathering

them at least as rewarding as other current activities. Prices are increasing steadily over the last years, and are currently clearly above that level. The communities involved in the partnership benefit from other activities carried out by the partners in the project, including education, health care and community development.

3. ***Development of local economies***

   The value of the product is increased locally/nationally as much as possible before being exported. This provides existing local small businesses with the opportunity to benefit from a variety of activities along the supply chain: transport of nuts and/or oil, extraction of oils from nuts, refining of oils. The businesses involved also benefit in terms of training, through the transfer of technical knowledge and capacity building in sound business practices and planning.

4. ***Guaranteed market for specified quantities at a pre-set price***

   Unilever guarantees long-term demand and buys all *Allanblackia* nuts that are being collected at a price that is fair to the partners and on the other hand reflects the value that this new raw material has in the products where it will be used (connected to the world market price of palm oil). This guarantee enables the whole supply chain to work with confidence towards growing the business. Furthermore, Unilever commits to buy nuts only from those communities that implement the recommendations towards sustainable use of the forest.

The long-term vision of the initiative is to set up a sustainable sourcing system of *Allanblackia* nuts. The commercial use of the nuts should generate enough income to enable the wild gathering to continue after start-up project activities have ended, and thus make a lasting impact on the development of rural communities, income levels and the environment. By that time, the communities involved should have learned to value the sustainable use of their forests and have come to realize that repeated knowledgeable use is more profitable for all than a one-off logging.

Furthermore, farmers are encouraged to incorporate *Allanblackia* trees into their farming systems and plant new *Allanblackia* trees in areas where land has been cleared or abandoned. This form of smallholder agroforestry production contributes to better landscape connectivity and can help enhance the integrity of forest landscapes. Other activities during the start-up phase of the Novella Africa Partnership include the promotion of community forest reserves and the establishment of alternative income generating activities such as beekeeping, snail rearing etc.

The actions

The idea came initially from Unilever who were looking for opportunities to expand their choice of edible fats from sustainable sources. When researching alternative sources of unprocessed, hard fats in Ghana, they came across the fat made from *Allanblackia* seeds – a tree that had never been commercially exploited in Western Africa and less so traded internationally. The opportunity is therefore entrepreneurial from the core: to establish a new industry in Africa.

To develop a supply chain for a novel commodity product, the Novella Africa Partnership faced a number of serious challenges:

- Lack of knowledge on how a robust supply chain for *Allanblackia* oil could be developed in a manner that is economically viable, socially equitable and environmentally sustainable
- Uncertainty about the supply potential of the resource, and how its collection and marketing could operate in practice
- To trade and use *Allanblackia* oil internationally, the product had to be legally granted "food grade" status
- Uncertainty about how to ensure that *Allanblackia* oil development becomes a long-term incentive for forest conservation and not just a short-lived initiative

During the first five years of the partnership, the following activities were carried out:

1. Conduct pilot studies to explore the supply base

Detailed pilot studies were conducted at different field sites in the five target countries to improve knowledge about the local supply base, and identify strategies of how to best develop an economically viable, socially equitable and environmentally sustainable supply chain for the production of *Allanblackia* oil.

2. Establish ecological, economical and sociological foundations

To establish the ecological, economical and sociological foundations of the program, scientific investigations were conducted assessing the socio-ecological status of the *Allanblackia* tree and socio-economic relations and indigenous knowledge within forest communities. Based on this understanding, the strategies were improved for establishing a sustainable wild gathering system of *Allanblackia* nuts under biodiversity guidelines. At the same time, the partners involved raised the knowledge required to set up small-scale community-based plantation systems. Research activities focused on the following aspects:

- *Ecological sustainability*: What is the role of *Allanblackia* in the ecosystem, how abundant are the trees, where do they grow, when do they flower and fruit?
- *Sociological sustainability*: Who gathers the nuts, when and how is it done, what is a reasonable price, how to best make the money available, what is the impact on local communities, how to involve various levels of government?
- *Economical sustainability*: What are the most effective incentives for the various actors in the supply chain, how to ensure equitable benefit-sharing in the long term, how to link the supply chain with world market prices?

3. Develop best-practice guidelines for wild harvesting of Allanblackia *seeds*

An independent standard setting process was initiated, guided by the IUCN as a neutral body. Best-practice guidelines for the wild harvest and small-scale on-farm production of *Allanblackia* were developed and pilot-tested to put in place basic safeguards needed to prevent negative social and

environmental impacts. The guidelines were shared with other companies and trading partners and will be used to set industry standards in the future.

4. ***Setting up collecting systems of* Allanblackia *seeds at the community levels***

Building on the knowledge gained from activities 1 to 3, several projects were initiated to scale up *Allanblackia* production in partnership with non-profit organizations and local governments. Farmers were trained on how to collect, dry and sell the seeds, boosting local incomes and creating a completely new source of supply for export.

5. ***Establish biodiversity programs in areas where* Allanblackia *is found***

The initiative promotes the commercial exploitation of a nut that is collected mainly from wild stands on farms and in forest reserves. This means that the safeguarding of the natural resource base is crucial to the sustainability of the endeavor. Community-based work therefore centered on the sustainable use of the forest. The wild harvesting of *Allanblackia* nuts is promoted as the main example, but – depending on local conditions – other activities such as beekeeping and snail rearing are also advocated. The awareness of the value of the habitat was raised and best practices to protect and restore endangered habitats were shared. Special efforts were made to ensure that the benefits of the program are transparent and shared by all involved.

6. ***Promote the incorporation of* Allanblackia *into traditional agroforestry systems***

New trees were planted on farms, and farmers were encouraged to include *Allanblackia* as shade trees in existing cacao plantations, or develop new agroforestry systems incorporating *Allanblackia* with various combinations of fruit trees and cacao. ICRAF provided the know-how required to multiply, plant and grow the *Allanblackia* trees, and tree nurseries were established at several project sites. It has to be annotated here that widespread maturity and common fruiting cannot be expected until 15-20 years after planting saplings. Grafted material and a minority of small wildlings can fruit sooner, but diameter increments are likely to be similar whether grafted or not, and it remains to be seen how rapidly the productivity of grafted trees can develop.

7. ***Setting up marketing systems at the community levels***

Supply chain stakeholder analyses were conducted and Business Development Services (BDS) trainings were organized for a selected group of stakeholders. Partners were assisted to set up commercial businesses in a way that supports the local communities and is in harmony with local customs. In most villages, focal persons were recruited to run local buying centers where the *Allanblackia* seeds can be brought, weighed and sold. Local business partners were sought to help with the buying of the seeds, the transport and the crushing. The resulting oil is used to make consumer goods, both within the countries and abroad. The sub-regional spread of this new commodity opens possibilities for developing pan-African trade in the continent, including the development of African local markets for different products based on *Allanblackia* oil thus providing a mixture of local markets and international export for the oil. Unilever is already present in Ghana, Nigeria and Tanzania, and helps in developing such markets at the first stage.

8. Monitoring and evaluation

Methods were developed for the biological monitoring of *Allanblackia* and associated vegetation as well as for tracking socio-economic outcomes and market developments. Periodic evaluations serve as guides to assure that no negative impacts are being registered, or to remedy and correct them in case they should occur.

Impact

Baseline

At project start in 2002, there was no known trade of *Allanblackia* seeds in West and Central Africa (Liberia, Ghana, Nigeria, and Cameroon), and only limited national trade in East Africa (Tanzania). *Allanblackia* played a minimal role in livelihoods in all target countries, since the income generated by *Allanblackia* was low in comparison to other produce.

Allanblackia oil had never been traded internationally, and at project start the product was not approved internationally for use in food products.

Although measurable impacts on livelihoods and ecosystems are not to be expected before 2015, some benefits are already obtained by stakeholders participating in the *Allanblackia* initiative. These are especially visible in Ghana and Tanzania where most project activities were focused during the first five years of activities:

Poverty alleviation: Allanblackia *seeds as a new source of income*

a) Opening of new markets

Unilever has invested considerable research and financial resources to obtain the food grade status for *Allanblackia* oil. An important milestone was reached in 2008, when the European Commission formally approved the use of *Allanblackia* oil in spreads. By acquiring Novel Food clearance, the European market has been opened and first *Allanblackia* products should soon be available for sales.

b) Scaling up of Allanblackia *production*

In Ghana, a gradual increase in the volume of *Allanblackia* seeds collected can be observed in the first years of project activities. From a modest 9 tons in 2004, the volumes increased to 42 tons in 2005, to 110 tons in 2006, went down to 70 tons in 2007 (due to a low fruiting season of the trees), and up again in 2008 to 100 tons. This could also have been enhanced by the gradual price increases.

These seed volumes collected are far from the projected goals (1000 t of seed or 250 t of refined oil after year 1 for Tanzania, and 4500 t seed/y for Ghana by 2007), since their estimation was based on assumptions that were not correct (the amount of seeds available from the wild was overestimated).

c) Income generation for nut collectors and farmers

In Ghana, a total of 200 communities are engaged seriously in the collection of *Allanblackia* seeds. More than 3200 people are active collectors, and a cumulative total of 10,000 community members have participated in village campaigns. When summing Ghana and Tanzania together, in total around 10,500 people are taking part as collectors of seed from *Allanblackia* trees growing in the wild and on farms (Figure 4).

Figure 4. Farmer drying *Allanblackia* seeds on improvised drying mat (IUCN 2008a,b)

The price obtained by collectors per kilogram of *Allanblackia* seeds has increased more than three-fold in Ghana between 2002 and 2007 (from ~0,40 to ~1,50 USD/kg). Although the income gained from *Allanblackia* can still be described as meager, it constitutes now an important supplement to the total household income. Some collectors are still dissatisfied with the price paid, and the amount of time and energy spent on gathering and processing - yet they still engage in the collection, likely due to the steady increase in the price over the last years and the constant education programs. Village focal persons earn more than double of what they received at project start (~25 USD/month). Half of this is fixed income, the other half is depending on volume. In total, farmer incomes have been boosted by an estimated USD 120,000.

d) Tree nurseries for further scaling-up of Allanblackia *production*

Six new nurseries have been established in Tanzania producing and selling *Allanblackia* trees. Several existing nurseries have been given an additional tree to add to their assortment. All nurseries have received technical assistance and some support for the initial required investment (seeds, material). In total, around 40,000 *Allanblackia* seedlings have been raised for planting in farmers' fields in Tanzania and Ghana.

e) Business and employment opportunities for processors and other supply chain actors

A number of nurseries, transport firms, crushers and export firms are actively involved in the *Allanblackia* supply chain and earn normal charges for their services.

Transfer of technology and skills, infrastructure

Local communities have not only diversified their income sources and increased their income levels, but also gained more stability over time. Capacity-building has provided farmers with the ability to produce better quality products, make better informed choices for their agri-businesses, and increased their knowledge on how access to markets can be obtained. The fact that the *Allanblackia* chain has to be sustainable from an environmentally point of view also contributes to the long-term competitiveness.

All actors in the supply chain have benefited from the exchange of knowledge and expertise provided by the project activities. They obtained essential selling and marketing skills and working knowledge of record keeping, business planning, financial management, entrepreneurship, safety and quality. For example, crushers have been able to improve the operations and technical outfit of their plants. They can also use this knowledge and standards to produce better local oils and thus improve the profitability of their operations. Rural storage (warehousing) facilities have been improved, and a rural banking/payment system has been installed.

To a lesser extent, schooling of girls and boys, health care and HIV/AIDS awareness has been promoted.

Biodiversity conservation

It should be emphasized that the aim of the Novella Africa Initiative is not to encourage the establishment of large monoculture *Allanblackia* plantations, but a mixed system based on forest restoration (wild harvesting) and agroforestry. Project activities therefore will result in diverse agroforestry systems that are managed in a sustainable way and do not require the use of pesticides or chemical fertilizers. At the same time, natural forests in areas that are threatened or already seriously damaged by logging (since *Allanblackia* was not considered as useful, it mainly served as firewood) will be restored.

After the first three years, the knowledge and understanding of local communities of the need to conserve trees on farms as well as in their natural habitat has increased tremendously. Most farmers participating in the Novella Africa Partnership now leave trees and especially *Allanblackia* wildlings on their farms, and the demand for planting materials from nurseries has increased significantly. In several communities, the Chiefs and elders are planning to establish *Allanblackia* nurseries within the communities. This is a very positive development and shows the general acceptance of the project.

The additional trees planted reduce erosion, and contribute to CO_2 sequestration and the conservation of local biodiversity. African forests and the landscape in general benefit as the supply chain has to be sustainable (i.e., no deforestation, no monocultures, etc.). The initiative has also added value to government policies on participatory forest management.

Carbon

In the context of carbon sequestration, no quantitative assessments have been conducted so far, but it is likely that the situation is similar to cacao, with some shade beneficial in the early phases of establishment, but a more open canopy promoting fruit production at more advance stages.

Enabling conditions

The following opportunities were determinant in facilitating the successful adoption and up-scaling of the endeavor:

a) Market demand

Allanblackia has the ideal composition as a fat for margarine and soap, but has not yet been exploited on commercial scale for any application with a high added value. There are two markets of considerable size which enables the commercialization of *Allanblackia* on a large scale and therefore offers the opportunity for a profitable involvement of a great number of local and international supply chain actors: 1) The market for spreads and cooking products in Europe (~USD 1.8 billion), and 2) The market for soaps in Africa (>USD 770 million).

b) Profitability

Compared to common crops like maize and tea, *Allanblackia* trees have a relatively high profitability. Other advantages are that *Allanblackia* trees do not need a lot of maintenance, and that the harvest season is in a relatively quiet period. It does not compete with other principal crops (such as cacao), so in general farmers will have time available for earning an extra income. Also, commercializing *Allanblackia* at international scale will not have a negative impact on local livelihoods or food safety since currently the nut is hardly being used.

c) Sustainable harvesting

The fact that *Allanblackia* trees are not yet domesticated and are harvested from the wild (from forests or wild trees on farms) provided the opportunity to market the product together with the additional asset "sustainable". By "bundling" the product (*Allanblackia* oil) with environmental services, the undertaking would promote the environmentally-friendly and small-scale use of tropical forests by local communities, thus contribute to the conservation of biodiversity. The planting of new *Allanblackia* trees would contribute to the restoration of damaged forests and degraded lands, and to landscape integrity and forest connectivity.

Critical factors: The role of bundling

As mentioned above, the role of "bundling" a new commodity product (*Allanblackia* oil) with the environmental service of biodiversity conservation – and marketing it as such – is crucial to the success of the initiative. If the final product was internationally recognized to be of sustainable origin, then this would be the first case of marketing where a crop itself would become a "brand" or "eco-label", standing for sustainable production that safeguards both local livelihoods and biodiversity in the tropical forest belt of Africa.

At the same time this opportunity constitutes a risk, since it is crucial for the credibility of the final product that "Best Management Practices" for sustainable harvesting are established by a neutral body, accepted by the consumer, and applied consequently by the producers and other actors in the supply chain. Non-compliance at any level within the supply chain can endanger the credibility of the final product and hence success of the endeavor as a whole.

Lessons learned about bundling

Biodiversity conservation

The whole approach of marketing *Allanblackia* oil as a sustainable product is based on the assumption that wild harvesting from forests and farms promotes the sustainable use of tropical forests and thus contributes to the conservation of biodiversity.

However, preliminary results of biological baseline studies have brought up the need to study some of the underlying assumptions more in depth. It has been found, for example, that *Allanblackia* resources are fairly common and robust in some countries and therefore promotion of *Allanblackia* planting will not necessarily result in an enhanced diverse forest landscape in these regions. On the contrary there is a risk that it may result in the replacement of more diverse and scarce forest trees currently found in farms and fallows by *Allanblackia*. In other countries in change, the wild harvesting of *Allanblackia* seeds from forest reserves would not be a sound basis for the development of a viable *Allanblackia* trade since it is not sustainable. For example, in Ghana the number of *Allanblackia* trees is limited, resulting in limited volumes of seeds. Here, ways need to be found to avoid that excessive wild picking of *Allanblackia* nuts endangers natural regeneration.

Ultimately, *Allanblackia* tree planting initiatives could lead to the creation of new hybrid varieties utilized on large estates or plantations, which would replace the diversity of existing agro-ecosystems by monocultures based on narrow improved genetic materials. To counteract these types of developments, it is recommended to integrate *Allanblackia* planting into a program of landscape-level restoration that encourages conservation and preservation of a range of forest products in agro-ecosystems.

Improved livelihoods and poverty alleviation

Socio-economic baseline studies and a detailed pricing study in Ghana have concluded that currently, collecting *Allanblackia* in addition to cacao production does not produce as much impact as when other NTFPs such as "Abesebuo" and "Atooto" are added. The current purchasing price of *Allanblackia* may therefore not be incentive enough to collectors of wild *Allanblackia* trees because large quantities of seeds may not be collected and processed. Furthermore, in Ghana the *Allanblackia* harvest season coincides with large labor demands on the farm and the harvest season for a number of other forest products that frequently have a better price on the market than *Allanblackia*. Here, concentrating on *Allanblackia* during the cacao "off-harvest" season would be most beneficial. In order to be sustainable in the long run, *Allanblackia* planting strategies in Ghana need to be integrated with existing farming strategies. Concrete suggestions include the

integration of *Allanblackia* into existing cacao farming systems, and the development of new agroforestry systems that incorporate various combinations of fruit trees with cacao.

Legal aspects

Allanblackia is a non-timber forest product (NTFP), hence legal and institutional challenges associated with its development must be resolved in the context of national NTFP development regimes.

a) Wild harvesting from forest reserves

In Ghana, the 1992 Constitution and the 1994 Forest and Wildlife Policy have established an adequate policy basis for *Allanblackia* harvesting from forest reserves. However, there have been instances when collectors wanted to enter forest reserves to collect *Allanblackia* seeds but forest guards denied them the access because they were not aware of the legal permission of NTFP collection from reserves. In any case, a dialogue is needed with the regulatory bodies concerned with harvesting natural resources from the wild (such as the Forest Services Divisions) to allow some amount of wild picking of *Allanblackia* nuts while ensuring natural regeneration. Efforts should be undertaken to include *Allanblackia* into national afforestation programs and plantation development plans.

b) Wild harvesting outside of forest reserves and land tenure

In Ghana, there are currently no national laws regulating NTFPs other than wildlife outside of forest reserves. *Allanblackia* collection from farms and from wild trees outside of forest reserves is therefore regulated by customary laws, which follow social consensus and are in a state of flux as contending interests compete for control over land resources. For example, many communities adhere to the traditional system of sharing (*abonu* or *abusa*) where the land owner takes half or one third of the proceeds collected. Such arrangements might become complicated and lead to conflicts over land rents in communities when the crop goes fully commercial and prices increase significantly.

In the BESAP (Bundled ecosystem services and agricultural products) typology developed in Chapter 2, the *Allanblackia* case would fall under the "trust-based" Type 7 of "Products from well-managed ecosystems". So far, Unilever is the only buyer of *Allanblackia* seeds, and Unilever only buys from producers that follow certain ecological management guidelines. Thus, other international market actors can have trust that all *Allanblackia* nuts and oils are sourced either from diversified agroforestry systems or from sustainably managed natural forests. Therefore, no label or certification is necessary to differentiate one *Allanblackia* brand from another. However, if another company would enter the market and start growing the crop profitably as a monocrop, then Unilever might require a label to maintain consumer-trust in the sustainability of their *Allanblackia* products.

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