HALBA: Promoting cocoa agroforestry in Ghana

HALBA and the Sankofa Project

HALBA is a Swiss producer of sustainable chocolate, snacks and baking and cooking ingredients. It belongs to the Coop Group. HALBA promotes a dynamic agroforestry (DAF) model in various parts of its supply chain, such as the Sankofa Project in Ghana. Dynamic agroforestry focuses on optimizing the overall system, not maximizing individual crops. It mimics the succession and structure of the ecosystem in which cocoa naturally grows. It includes multiple strata and a closed nutrient cycle. This means that cocoa is planted in a dense and highly diverse system (see planting design elaborated by Ecotop, Figure 1).

The Sankofa Project builds on lessons from ongoing dynamic agroforestry programmes in Latin America, including the Finca project, which HALBA has been implementing in Ecuador since 2016. HALBA has set a target of procuring at least 50% of its cocoa beans from DAF systems by 2040, and 100% by 2050. The total amount of cocoa in HALBA's supply chain is estimated to cover approximately 5,000 hectares (ha); so far, HALBA and its partners have transformed about 927 ha of cocoa plantations into DAF systems.

The Sankofa Project aims to contribute to income diversification, climate resilience, food security and biodiversity conservation in the communities of Goaso, Bibiani, Kasapin, Kukuom and Sankore in Ghana (see Figure 2). The project takes a multistakeholder approach, and has the goal of helping to support the sustainable livelihoods of actors in the cocoa supply chain, as well as those in the value chains of other crops in these landscapes.

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The opinions and views expressed in this publication are based on the company's input and do not necessarily reflect the views of Tropenbos International, Tropenbos Ghana or Nitidae.

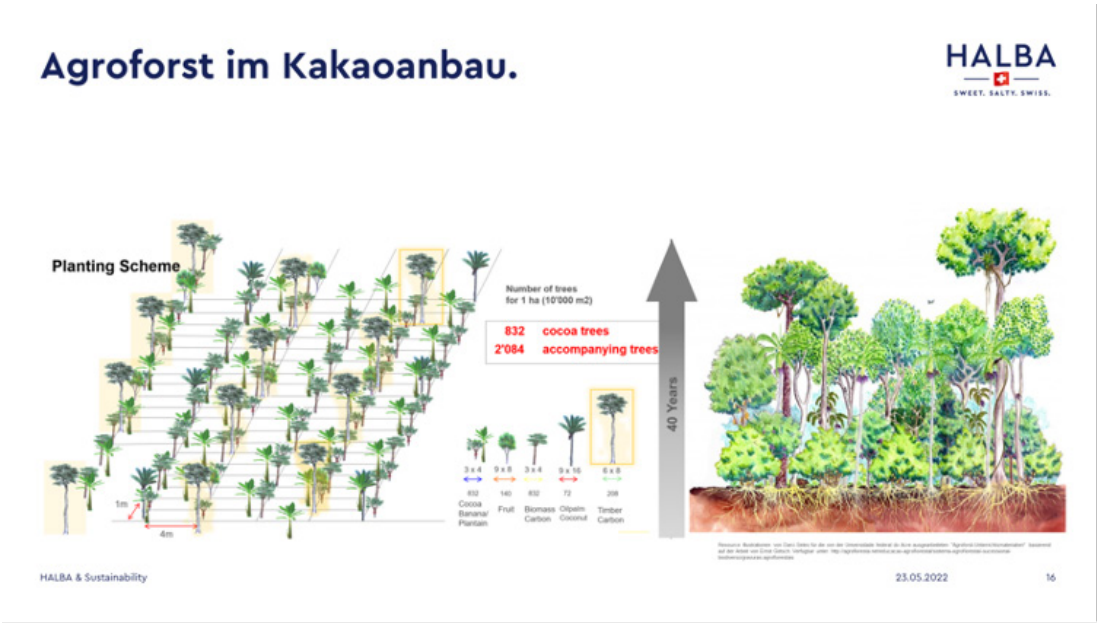

Figure 1. Example of the design of a DAF plot

By 2022, the Sankofa Project reached 2942 farmers and 17,652 household members who have benefitted from the project since it began in 2019. Together with these farmers, HALBA established 215 hectares of DAF plots by 2022. Moreover, the project supported farmers to establish 355 ha of Climate Smart Cropping System (CSCS), a model for growing food crops in a diverse system that increases farm income and food security.

Figure 2. Locations of the Sankofa Project in Ghana

What is agroforestry and why is it important?

HALBA realizes that monoculture cocoa production models, which are highly dependent on external inputs and vulnerable to climate impacts, are not profitable for farmers in the medium and long term. This means that farmers' livelihoods are at risk and there is a chance that they will move to other crops, which also poses a risk for the company's supply chain. HALBA's dynamic agroforestry strategy is based on the understanding that diversified and highly productive systems are needed to sustainably increase the productivity of cocoa farms, improve food security and livelihoods, increase the resilience of current and future generations of farmers, prevent shortages of raw material and help to protect forests and other ecosystems. Moreover, HALBA knows that the long-term success of agroforestry is determined not by specific shade levels or number of tree species, but by the

continuous balancing of plant density, layers and the resulting variations in shade and light. This is what dynamic agroforestry is about. It has the potential to increase cocoa yields and help restore and conserve ecosystem functions such as carbon storage, soil fertility and water retention.

In addition to cocoa, a DAF system includes annual food crops (such as corn, beans, manioc and bananas) and fruit trees (such as mango, avocado and orange) as well as fast-growing tree species (which produce biomass quickly) and slow-growing high-value (native) timber trees. The system produces large quantities of organic material, which is cut and left in the field to prevent the soil from drying out. This mulching also improves soil fertility, eliminating the need for external fertilizers.

In the first year, a DAF plot has more than 2,700 trees, consisting of more than 20 different species, in addition to cocoa trees (832 per hectare) and several other food crops, shrubs and leguminous plants. In subsequent years, tree density will be reduced; in particular, fast-growing species may be removed. A 30-year-old plot may consist of more than 300 medium- and long-lived, in addition to cocoa (see Table 1 and 2 in the Appendix)

The cocoa yields of DAF plots in Bolivia are between 600 to 1000 kg/hectare. Since the DAF plots in Ghana have been established in 2019, it is too early to report on cocoa yields.

Figure 3. Development of a DAF plot over time in the Sankofa project close to Goaso, Ghana

HALBA's strategy for promoting dynamic agroforestry

The Sankofa Project supports farmers to transform their farms into a DAF system, and contributes to the marketing of products from the DAF farms. The project also provides institutional support to KKFU), a key partner. The steps in this transformation, described below, are implemented by project partners. ITC coordinates the project, which is implemented with the assistance of Fairtrade Africa, Ecotop and the technical team of KKFU.

Transforming farms to DAF systems

The Sankofa project targets old unproductive farms, which are rehabilitated and transformed into DAF systems. At the start of the Sankofa Project, the team carried out awareness campaigns in the selected communities, encouraging farmers to participate.

The project team mapped the farms of interested farmers, and checked if they qualified for the Gold Standard.[1] For those farmers who did qualify, the project team then worked together with them to transform their farms into a DAF system. Some cocoa farmers are trained as agroforestry experts (lead farmers) and are able to coach other cocoa producers as they convert to agroforestry. All farmers are trained to manage their DAF plot effectively.

1 Gold Standard certified projects reduce greenhouse gases and support the sustainable development of the country where the project is based.

The project provides planting materials and the necessary tools. All trees and plants are planted within a two-day timeframe, by farmers and trainers working together. Farmers can choose their preferred crops from within the wide range of staple food plants that are offered by the project (e.g., okra, tomatoes, yam, eggplant), but must follow the established planting scheme (see Figure 1) in order for the farm to qualify as a DAF system.

The team returns after two to four months for strategic pruning. After this, the team conducts regular visits to interact with the farmer, jointly evaluate the plot and provide guidance on further pruning, management and replanting, and planted timber trees that are relevant for carbon storage are registered for Gold Standard certification.

Gold Standard carbon mitigation

Through integrating timber trees in DAF, the project aims to achieve the mitigation of 75,000 metric tons of CO2 within the value chain of Coop Group over the course of 30 years, in line with the Gold Standard. This contributes to mitigate CO2 emissions caused by the group's business activities, and mobilizes additional financing for project implementation. The project cannot yet report results on this target, since carbon measurements and claims cannot be made until after at least four years, when the timber trees have grown and are certified by the Gold Standard. It is important to note, that the carbon removal is not claimed by any of the project partners, but contributed to the climate target of Ghana .

Marketing of diversified crops

The Sankofa Project also aims to support farmers in establishing links with markets for non-cocoa crops from their DAF systems. By 2022 the farmers in the project harvested and sold approximately USD 290'970 worth of these crops, including yam, maize, mucuna, plantain, canavalia and pigeon pea, and additional income is expected as the project progresses. The project has developed a marketing strategy to further strengthen these linkages, where KKFU acts as the aggregator and marketer of diversified crops. KKFU extension officers will advise farmers on how to harvest and store their produce to meet market quality and standards. The project team has already held discussions with several market partners who are interested in buying sustainably produced crops from the DAF (and CSCS). The project is also exploring opportunities for processing some of the produce in the communities, to add local value.

Living-income pilot

For the 2020–21 and 2021-2022 season, farmers who participated in the project were paid the Fairtrade Living Income Reference Price. This meant that in addition to the Fairtrade Minimum Price and the Fairtrade Premium for all Fairtrade-certified cocoa beans, HALBA paid a supplementary amount, the Fairtrade Living Income Differential, of USD 289 per mt for 2020/21 and of 355 USD per mt for 2021/22 season for Fairtrade-certified cocoa beans supplied by the participating farmers. In total, HALBA paid 113'866 USD for the Fairtrade Living Income Differential 2020/21 for 384 mt of cocoa beans and 134'243 USD for 2021/22 for 364 mt of cocoa beans.

Institutional support to KKFU

In addition to direct support to KKFU and its members, the project partners support the cooperative to make the transition to certified organic cocoa. The project also invests in the capacity of KKFU to ensure their members' sense of ownership of the project and its long-term outcomes. Through the project, KKFU recruited and trained 20 extension officers in the project communities, as well as an overall field coordinator who will gradually take over the project's technical and managerial aspects. In addition, under the new marketing strategy, the position of marketing officer will be fully integrated within KKFU's structure. This will ensure that the marketing of DAF produce will be led by the cooperative.

Key lessons and challenges

Motivating farmers and aligning with the cooperative's objectives are key to success: The wide range of benefits of the DAF approach was immediately clear to the farmers, which provided a strong motivation for them to take part in the project. The fact that a DAF farm creates a positive cash flow in the first year, and the increased food security at the household and community level, were particularly important motivating factors. The payment of the Living Income Differential was another strong incentive. HALBA will continue these payments in the future and extend it to the increasing number of project farmers. In addition, the company's close collaboration with KKFU contributed to the success of the project. By aligning with the strategy and ambitions of the cooperative and its members, and investing in their technical and organizational capacity, the project gained their strong commitment to its long-term outcomes.

Unpredictable weather makes it difficult to determine the best time to plant: Because of the large number of trees that need to be planted to establish the DAF plot, it is important to plant at a time when it is not too dry and not too wet. Erratic rainfall patterns make it difficult to predict when this will be. The project is liaising with the Ghana Meteorological Agency to collect and analyze weather forecast data to help determine optimal planting times.

The complexity of the project has increased costs: First, the cost of mobilizing and selecting farmers in line with the Gold Standard requirements has proved more complex than expected. Participating farmers are distributed across a large geographical area. The distances between them, together with the resource-intensive nature of DAF, has made logistical arrangements complex and expensive. It was also difficult to get good-quality planting materials to the project communities at the right moment. Ensuring that extension officers are located within the communities has already reduced some of this logistical complexity.

Gold Standard requirements are difficult to meet on dynamic agroforestry farms: The project aimed to pilot the combination of highly complex agroforestry with CO2 mitigation compliant with the Gold Standard. This turned out to be very difficult and resource intensive. Gold Standard selection criteria are very strict and difficult to adapt to the smallholder context and to DAF. For example, Gold Standard requires no deforestation on the plots in the 10 years prior to DAF-establishment, however DAF necessitates clearing of most biomass on plots prior to its establishment, even if the existing on-plot vegetation is considered a forest according to the Ghana forest definition. Other bottlenecks refer mainly to the Gold Standard eligibility criteria on legal ownership of land, eligibility assessment and some measurement reporting and verification (MRV) requirements. To facilitate MRV through the Gold Standard, project partners are currently working together with Gold Standard to adapt its requirements related to these bottlenecks with the aim to allow for more practicable but still robust mechanisms for impact measurement and environmental integrity. For the next project phase starting in 2023 project partners are also exploring innovative and robust ways and mechanisms for integrity in large-scale landscape-like interventions.

Next steps

Engaging government actors to promote scaling up: Recently, officials from the Ghana Cocoa Board and Cocoa Research Institute of Ghana (CRIG) visited the DAF farms. They expressed interest in including elements of the model in their agroforestry recommendations to cocoa farmers; for example, on the weed control strategy used in DAF. In 2022, the Sankofa Project established a model DAF plot at CRIG's premises for critical study and analysis.

Increasing ownership by KKFU: KKFU will be supported by the project to take full ownership of the project, which includes absorbing the extension officers in its structure and transferring the positions of field coordinator and marketing officer to KKFU.

Improve understanding of the business case for DAF: The project partners will study the full range of cost and benefits of DAF, to see how it can become a viable business model. Initial investments for the farmer include planting material and labour for plot establishment. Labour costs lessen over

time, in particular due to a decrease in the time spent weeding, and input costs can also be lower than they are in monoculture farming. In return, the system provides cash flow in the first year from food crops, as well as income from cocoa and other commodities over time. There are also many environmental benefits and social benefits at the farm, community and landscape level. The project partners aim to identify possible funding for plot establishment. This would enable farmers to adopt the DAF approach with limited or no external financial support, but with continued technical support from the cooperative. This funding may come, at least partially, from climate finance, which should be invested in holistic landscape approaches with benefits for people, nature and the climate and not used for offsetting or anything the like (see WWF guidance "Fit for Paris").

Finally, HALBA recognizes that some **knowledge gaps** limit the successful scaling up of DAF practices in Ghana:

- How can the logistical challenge of getting the planting material best be solved - Where should nurseries be created, and how to distribute seedlings effectively?
- Can access to diverse planting materials for farmers be increased? Can the adoption of more varied species by farmers be promoted? How should species composition be adjusted in each region? Should it be based on climate as well as access to different markets (in some regions there may already be a supply chain for certain agroforestry products)?
- Services to DAF farmers — What are suitable models for setting up professional nurseries and pruning services (including high tree pruning)? How can this create additional employment opportunities in communities?

Appendix: Examples of DAF plot composition

Table 1. Plant density in the first year after implementing DAF, Ghana

Type	Plants per ha	Notes
Cocoa plants	832	Grafted, certified species
Native timber plants	208	Species with medium to long life cycles; on average, at least 12 species and species from natural regeneration such as *Terminalia, Mansonia, Nauclea, Guibucia, Khaya, Triplochiton* and *Milicia*
Biomass trees	832	Short-life-cycle pioneering species such as *Senna Acacia, Albizia*; at least four species
Palms	72	Coconut and/or oil palm; at least two species
Fruit trees	144	Citrus, mango, avocado, rambutan trees; at least seven species
Cashew	832	For additional biomass production
Gmelina	832	For additional timber production after 10 years
Bananas/plantains	832	Common and popular local species to meet the farmer's needs and for sale to the local market
Biomass shrubs	20 kg (seed)	Bixa orellana, pigeon pea (*Cajanus cajan*), Mexican sunflower; at least two species
Biomass weeds	TBD	Elephant grass
Leguminous plants	72 kg (seed)	Bush beans, Canavalia, cowpeas, peanuts
Manioc	625 batons	For consumption and/or sale to the local market
Yam root (seed)	1,600 seeds	For consumption and/or sale to the local market
Cocoyam	TBD	Varies according to needs of the farmers
Corn	16 kg (seed)	For consumption and/or sale to the local market
Vegetable seeds	120 g	Aubergines, chili peppers, tomatoes
Other	TBD	Ginger, turmeric, pumpkin, peanuts/Jerusalem artichokes

TBD: To be determined

Table 2. Number of plants in a 30-year-old cocoa plantation

Type	Plants/ha	Notes
Cocoa plants	832	Grafted, certified species
Native timber trees	130	Species with medium to long life cycles; on average at least 12 species, and species from natural regeneration such as *Terminalia, Mansonia, Nauclea, Guibucia, Khaya, Triplochiton* and *Milicia*
Palms	72	Coconut and/or oil palm; at least two species
Fruit trees	144	Citrus, mango, avocado, rambutan trees; at least seven species
Cashew	30	For additional biomass production
Cocoyam	TBD	Varies according to the needs of the farmers
Other	TBD	Ginger, turmeric, pumpkin, peanuts/Jerusalem artichokes