

# Mobilizing cooperative capabilities to cope with climate change

Producer organization: Kassena Nankana Baobab Cooperative Union (KANBAOCU)



Ghana - Climate Resilience Case Study No. 3

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## Forest and Farm Facility

Awaregya, J. and Amoah, C. (2020) Mobilizing cooperative capabilities to cope with climate change. ORGIIS Ghana and IIED, London, UK.

## **Acknowledgements**

This case study was commissioned using a template prepared by the International Institute for Environment and Development (IIED) for the Forest and Farm Facility (FFF) a co-management partnership between FAO, IUCN, IIED and Agricorn. The FFF is supported by the governments of Sweden, Finland, Germany, Norway, the Netherlands, the European Union, and the United States of America. The case study has been reviewed by Duncan Macqueen IIED and revised by the author and laid out by Geraldine Warren of IIED.

The authors are grateful for the opportunity to conduct the case study on KANBAOCU's contribution to climate resilient business models, under the guidance of Sophie Grouwels and Elvis Kuudaar. The authors acknowledge contributions of relevant information gathered through many protracted one-on-one telephone interviews and small group discussions by means of call conferencing services, held between the authors and key informants and interviewees. These included 17 KANBAOCU executive members, 4 ORGIIS staff, 5 SACL officers. Other sources of information were derived from Aduna UK Ltd., Savannah Fruits Company Ltd., Olam Ghana, Sekaf Ltd., Tree Aid Ghana, SNV Netherlands Development Organisation, the FAO IFAD's Northern Rural Growth Programme, and the Credit Unions Association of Ghana.

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Cover photo: Women Shea collectors in Tele-Bere, Ghana sorting shea nuts before washing and drying. ORGIIS, Ghana.

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## EXECUTIVE SUMMARY

The Kassena Nankana Baobab Cooperative Union (KANBAOCU) has prepared this case study to contribute to existing pool of knowledge on building business and climate resilience. The aim is also to contribute to improvements in policy around climate change adaptation, business and climate resilience, and cooperative enterprise development. The case study defines key steps that KANBAOCU have been taken to become more climate resilient.

KANBAOCU is a locally controlled forest products cooperative union that worked initially in baobab and shea nut value chains, and has now expanded and diversified into other crop, livestock, and tree value chains. For example, the union also works with honey, beeswax, and sesame value chains but these are not its focus. The union is in seven districts of the Upper East Region of the Republic of Ghana. It was established as a cooperative union in 2010 and operates in community, district, and international markets. The union includes 45 registered cooperative societies, working with 175 group enterprises composed of 12,376 women and 485 men. KANBAOCU has a longstanding support partner in the Organization for Indigenous Initiatives and Sustainability (ORGIIS), a non-governmental organization (NGO) in Ghana.

In mobilizing the institutional capabilities and growth of its member-cooperatives, the KANBAOCU and its member-cooperatives have, over the 15 years, taken diverse measures and actions to manage climate risks. To make its value chains more climate resilient and profitable, the KANBAOCU and its member-cooperatives have worked consistently to increase the adaptive capacities within its integrated crop-tree-livestock systems. Women, youth, and poor marginalized persons within KANBAOCU's parkland landscapes adopt a climate change strategy based on adaptation measures that can be readily executed. For example, members strive for diversified production systems that integrate many value chains. They also implement diverse yet practical solutions to optimise business and meet the increasing demand for products by suppliers, while adapting to climate threats and risks. For example, having been extensively trained and equipped in organic composting by use crop-livestock-tree residues, KANBAOCU and its member-cooperatives have skills and knowledge to increase water retention capacities that increase soil moisture and nutrient status. This improves production in crop farms to the benefit of its tree populations and ecosystems in its key watersheds.

KANBAOCU members have built their resilience in part through horizontal diversification of their value chains. This diversity has strengthened agro-ecological resilience across multiple crops. KANBAOCU has helped members actively re-introduced and promoted indigenous drought-tolerant crop varieties of millet, cowpea beans, Bambara nuts, and groundnuts. Increased tree-planting efforts have improved the density and diversity of vegetation cover in parklands to enhance biodiversity in CREMA zones and corridors in KANBAOCU operational districts and communities. Between 2015 and 2017, KANBAOCU worked hard to diversify its product portfolios to reduce the effects of perceived climate threats and calculated climate risks on its adaptive capacities and business resilience. To realise its objectives, KANBAOCU conducted an extensive tree census on baobab and shea. This has helped it determine the quantities of baobab and shea it can produce and/or aggregate within target tree product categories to supply to its local and export markets. KANBAOCU has also diversified into NTFPs and livestock.

A second strand of KANBAOCU's work on climate resilience has involved the vertical economic diversification within its crop, NTFP and livestock value chains. This has involved moving beyond harvesting of basic products towards value added processing of a wide range of products. These efforts over recent years have increased the numbers of markets into which members can sell products – and thereby increasing their resilience.

KANBAOCU has provided technical interventions that have also improved resilience. It has encouraged restoring vegetation along the fringes of White Volta and Sissili basins, and the Tono, Ve, and Bongo watersheds to improve rainfall and moisture regimes. It has improved water harvesting techniques for dry season vegetable production by its women farmers' cooperatives and groups. KANBAOCU has also worked to ensure long-term sustainable improvements in soil fertility by use of land management practices such as short duration fallows of 2 to 3 years across its slopes and hilly terrains, sandy hydromorphic and lowland valley areas between and along the catchment areas of the White Volta river, the Tono River, and the Sissili river.

Additionally, KANBAOCU has worked to improve institutional and business capabilities. For example, it has stabilised institutional financial resilience by improving savings and loans capabilities. During its weekly group meetings, and monthly meetings as well as during its apex meetings and general assembly meetings, KANBAOCU conducts and supports its members share their knowledge, experience, and lessons on savings and loans processes. They learn from one another how to develop shared savings to invest in new production systems, how they diversify their value chains to improve access to markets for its diverse products, and increase their collective business scale to ensure it enjoys repeat business from its customers and suppliers in domestic and export markets.

At the level of the union, KANBAOCU has also already established a Village Savings and Loans Association (VSLA) that is operational. This for mobilizing savings and giving small credit to individual members when the savings cycle of 12 months ends. KANBAOCU has an Apex body of its VSLAs for which there is planned progression into a larger recognizable body such as a regional/provincial Cooperative Credit Union, under the supervision of Ghana's national body of credit unions called the "Credit Unions Association of Ghana (CUAG)"

Finally, despite all its improvement and enhancements, KANBAOCU still needs support for business incubation, and institutional capacity development, as well as technological and financial support to address the challenges of its diversified value chains. It requires support to cope with business and supply risks in the face of advancing climate threats and desertification in its savannah-sahel agroecological zones.

# 1. INTRODUCTION

## 1.1 NAME AND VISION

The business name of the forest and farm producer organisation (FFPO) that is the focus of this case study is Kasena Nankana Baobab Cooperative Union (KANBAOCU). KANBAOCU envisions “a world of forest and farm producers with enhanced cooperative development and secured sustainability in a green value chains and carbon-neutral landscapes”.

KANBAOCU's mission is “to expand, diversify, strengthen and transform its target value chains into channels for enhanced dependable sustainable income generation, higher business profitability, increased inclusion, improved biodiversity conservation, and landscape management for members, cooperatives, and communities”.

## 1.2 LOCATION

KANBAOCU is situated in the guinea savannah - sahel agro-ecological belt of West Africa. It is located principally in the savannah agro-ecological zone and parts of sahel agroecological zone of Ghana. In the savannah agro-ecological zone, KANBAOCU operates mainly in Kasena Nankana municipality and eight (8) rural districts, namely Kasena Nankana East district, Bongo district, Talensi district, Nabdum district, Builsa North district, Builsa South district in Upper East Region of Ghana, as well as Sissala East and Sissala West districts in Upper West Region of Ghana.

The main forest and farm resources upon which KANBAOCU operates are staple and cash crops, non-timber forest products (NTFPs), and livestock value chains. KANBAOCU crop value chains are mainly traditional “female” crops and staple “male” cash crops. To explain, crops cultivated, managed, controlled, and owned by women are regarded traditionally as “female” crops. These include traditional legumes (groundnuts, beans, and cowpeas) and vegetables (peppers, okra, kenaf, amaranths, and others). Crops traditionally considered as “male” are staple cash crops and include sorghum, millet, yam, maize, and rice. With increased access to agricultural extension services by rural women farmers, there is now no clear distinction between “female” or “male” crops. Women now have open access to any crop varieties of their choice, provided they can access appropriate farmland sizes they desire for their production needs.

In its NTFPs value chains, KANBAOCU members are focused on native indigenous tree species, particularly on baobab (*Adansonia digitata*), shea (*Vitellera paradoxa*), locust bean (*Parkia biglobosa*), balanite (*Balanites aegyptica*). KANBAOCU also works with exotic non-native tree species including neem (*Azadirata indica*), moringa (*Moringa oleifera*), mango (*Mangifera indica*).

The basket of products derived from indigenous native non-timber forest resources include baobab powder and oil, shea nuts and butter, powder, and seeds from locust bean pods, balanite nuts and oil. The products derived from tree species mentioned are used for nutritional, culinary, medicinal, and spiritual/ritual purposes.

Products derived from modern exotic trees are used mainly for crop protection and for ethno-veterinary uses in human and livestock health management. Neem leaves and seeds are processed and used as pesticides for crop protection and for ethno-veterinary uses. Moringa leaves and seeds are used as extracts in crop growth regulation, human and livestock nutrition and ethno-veterinary purposes. Mango seeds are gathered and processed into powders and oil emollients for crop growth and cosmetic purposes.

## 1.3 FOUNDATION AND MEMBERSHIP

KANBAOCU was founded early in 2010 as small gathering of women in response to Ghana's evolving democratic processes when local communities were tasked to select male and female representatives to participate in community meetings and decision-making on their development initiatives.

The request triggered the mobilisation of women leaders in each community to represent women and girls in the 31<sup>st</sup> December Women Development Movement, through which processes the Kasena Women’s Association (KWA) was born in 5 communities of the then Kasena Nankana district which as administratively established in 1938 in the Northern Territories, a British protectorate in the then Gold Coast in the Gulf of Guinea of western Africa.

During the era of women’s mobilisation by the 31<sup>st</sup> December Women Development Movement, the women leaders and their group members were mobilised to support community development efforts identified to improve living standards of their communities. One thing that was promoted within the women group mobilisation was to set up financial contributions made of weekly dues, with cash derived from incomes realised after each market visit when they have sold some farm products. These funds were used to transport their leaders to events and meetings outside of their communities, and the remaining funds were used for solidarity purposes to mitigate suffering of members in distress.

The Kasena Women’s Association was later transformed into an umbrella body known as the Kasena Nankana Women’s Association (KNWA). This aimed to mobilise and canvas women groups from two main ethnic tribal groupings: the Kasena ethnic group located in communities along the Ghana - Burkina Faso boundary, and the Nankana ethnic group located in communities between the Frafra ethnic tribes to the east, and the Bulsa tribes to the west (Awedoba, 2010).

The association’s activities expanded to increase their solidarity efforts through savings and loans to support their members to undertake farming, trading, and other initiatives. Their influence was deepened at community and district levels, but they were under the leadership of the 31<sup>st</sup> December Women Movement at regional and national levels. The work in that era set the stage for massive transformation in women liberation and empowerment, not only among the Kasena and Nankana ethnic groups, but in almost all ethnic groupings and communities in Ghana.

Upon the return to democratic constitutional rule in Ghana in 1992, the power and influence of the 31<sup>st</sup> December Women Movement waned, resulting in its regional and district branches evolving into diverse women groups, associations, and federations. Between 2000 and 2005, most of the women groups and associations, including the Kasena Nankana Women Association, which had previously worked with, and under the authority of the 31<sup>st</sup> December Women Movement disintegrated for lack of leadership and resources.

**Figure 1. Operational Locations of KANBAOCU Cooperative Enterprises and Membership**

District/Location	Communities	Name of Union	Number of enterprises	Men	Women	Total members
Kasena Nankana West District	6	Buru Cooperative Union	21	46	1053	1099
	5	Pindaa Pio Kwoga Cooperative Union	17	15	738	753
	8	Nakong Women Cooperative Union	26	94	1466	1560
	6	Kayoro Women Cooperative Union	22	85	1331	1416
	4	Sanyiga Kasena Cooperative Union	16	38	767	805
Kassena Nankana Municipal Assembly	4	KOLBITA Cooperative Union	17	65	635	700
Bulisa North District	2	Bulisa North Cooperative Union	7	34	281	315
Bulisa South District	10	Bulisa South Cooperative Union	31	67	1591	1658
<b>4 Districts</b>	<b>45 communities</b>	<b>8 Cooperative Unions</b>	<b>157 enterprises</b>	<b>444 males</b>	<b>7862 females</b>	<b>8306 members</b>

Between 2005 and up to 2010 the Kasena Nankana Women Association (KANWA), composed of about 150 women groups in 45 communities, struggled to survive by means of their small savings and levies. When one support NGO called the Gia Nabio Agroforestry Development Organisation (GNADO) exited, another indigenous local non-profit organisation, the Organisation for Indigenous Initiatives and Sustainability (ORGIIS) came to the rescue of the KANWA. It worked hard to build their technical, organisational, and financial capacities to desirable levels. In 2010, the 35 women cooperatives were then constituted into an apex cooperative union, registered as Kasena Nankana Baobab Cooperative Union (KANBAOCU) which has since expanded.

The role played by savings and credit/loans have been, and are still, very crucial to KANBAOCU member's survival, progression, and future resilience. KANBAOCU itself has a shareholder structure based on membership contributions (one-time registration fees and monthly dues). Members also collect weekly VSLA levies when determined appropriate by the respective cooperative. Members can also buy more shares according to Ghana's cooperative regulations. Regulations and terms of memberships are clearly explained to avoid misunderstandings and grievances. Members receive benefits in the form of income generated and access to 'soft' loans, as well as the strong solidarity they enjoy with their cooperatives.

KANBAOCU mainly uses its own savings as equity to start-up new enterprises. But each cooperative runs a village savings and loans association (VSLA) to undertake weekly levies of at least GHS 10.00 (US\$2.00) where each GHS 5.00 (or US\$1.00) counts as a share over 52 weeks, generating GHS 520.00 (US\$104.00) per annum. Out of the GHS 520.00 mobilised per group member per year, GHS 20.00 (3.85 per cent) is paid to KANBAOCU for office administration and management.

The remaining GHS 500.00 (96.15 per cent) per member per year is set aside for loans for members in good standing (active paying members with a savings track record). These 'soft' loans are to support members and can include for example cover for ill health or bereavement or to cover school fees. ORGIIS encourages the women, their cooperative enterprises, and KANBAOCU to avoid entering other loan arrangements that may saddle them with debts if not properly managed. There is a service fee of GHS 10.00 per every GHS 100.00 borrowed per month. This arrangement allows members' VSLA savings to be used solely for business enterprise purposes.

The savings made by the cooperatives are collectively owned. Unusually, no dividends are shared at the end of the annual savings cycle. Instead, the money mobilised from VSLA savings is used to purchase and stock-pile raw materials. For example, women's enterprises aggregate baobab and shea nut raw materials they harvest into bulk. What is not used for household purposes is sold to KANBAOCU, which stocks raw materials for use by its cooperatives and their group members. Price margins are established by the apex body when the cooperatives and groups need raw materials for their processing activities. The bulked stocks serve as business 'loans'. No direct cash loans are given to purchase baobab and shea nuts. Where required, members can access cash loans for small items of equipment used for processing operations or for business purposes but outside the baobab and shea nut value chains.

## 1.4 BUSINESS PROPOSITION

As indicated earlier, KANBOACU was originally known as KANWA that started as a gathering of loose women groups producing high quality baobab products. At its origin, it was supported by GNADO, and later was supported by ORGIIS to be properly established as a legally recognised body under the Cooperative Laws of Ghana. Initially, between 2000 and 2005, the value proposition by KANWA was to produce and process baobab products, and to ensure all-year round supply of baobab products. After having deepened its operations in the baobab value chain up to 2005, KANWA was then faced with challenges of yearly fluctuations in baobab supply and revenues caused by increasing variability in rainfall distribution and unpredictable weather fluctuations. It was observed that years of low baobab production alternated with years of high shea production.

Additionally, since 2010, members of KANBAOCU were confronted with unforeseen severe prolonged droughts immediately followed by heavy rainstorms and flooding resulting in heavy losses in their crop farms. These climate variations required new thinking. The Cooperative Union identified and worked to increase production, processing, and trade in various tree crops that were less affected such as tamarind (*Tamarindus spp.*), parkia bean (*Parkia biglobosa*), and neem (*Azadirachta indica*). From



2010 to present day, 2020, the strategy of widening its basket of value chains was effectively executed to increase market penetration of the three new value chains (tamarind, parkia bean, and neem) into local markets at community, district and zonal/provincial levels.

## 1.5 MARKET CONTEXT

KANBAOCU works in four types of value chains, namely: (i) food crops, (ii) non-timber forest/fruit products (NTFPs), (iii) wood-based tree products, and (iv) livestock. Apart from indigenous staple crops (millet, sorghum, beans, maize, and native vegetables – okra, pepper, and leafy vegetables), the present food crop value chains are brewer's sorghum, maize, sesame, and fonio (a new value chain entrant). Fonio (*Digitaria exilis*) is food security crop in northern Ghana and the savannah agro-ecological belt across West Africa, that thrives well under poor soil fertility and drought-tolerant conditions, produced mainly by women, and is now exported to Europe, US, Arabia and Asia.

The NTFPs comprise of baobab, shea, moringa, parkia beans, balanites, neem, and mango. Apart from the NTFPs mentioned above, KANBAOCU also produces and sells wood-based tree products at community level to provide their energy and other needs to sustainably contribute to climate change mitigations. These include production of hard wood and soft wood tree seedlings, natural regeneration and coppicing, woodlots for firewood, rafters, poles, and twines.

In terms of markets, KANBAOCU operates in value chains at local market level on baobab, shea, moringa, sesame, fonio, parkia beans, balanites, neem, and mango. Some products are sold mostly in community and district markets. But KANBAOCU also works with national and international off-takers of its products in a series of value chains including some that are well-developed: baobab, shea, sesame (see below) and some underdevelopment: parkia tamarind and balanites (see below)-with planned expansion of its moringa and fonio value chain, for increased competitiveness into its supply chains, to off-takers and exporters.

### 1. **Baobab value chain:**

The baobab value chain is composed of production, aggregation, processing, marketing, and export. Traditionally, baobab powder is produced from baobab pods and sold for household consumption and to local processing firms in Ghana as vitamin C enrichments. In the export market, an average of 65 metric tonnes of baobab powder has been produced since 2012. In 2018/2019 production year, a total of 80 MT valued at GHS 3,040,000 was exported to Europe, principally by Aduna UK Ltd.

### 2. **Shea value chain:**

Traditionally, raw, fresh shea nuts are de-pulped, parboiled, cured, and thoroughly dried to obtain dried shea kernels. The dried shea kernels are sold in community markets to handcrafters to process into shea butter for sale and/or for household consumption. Apart from household uses and local trade, dried shea nuts (kernels) are aggregated and exported, annually of about 160 metric tonnes mainly through ORGIIS to Ghana Nuts Company Ltd. and Olam (Ghana) Ltd. to Japan, China, and other South East Asian countries. At local community market level, dried shea kernels are handcrafted into shea butter for household uses (culinary, medicinal, and other uses). The main competitors in the production of shea nuts and shea butter are Sekaf Ghana Ltd. as well as Plantations Ltd. and JakSally Co. Ltd.

### 3. **Sesame value chain:**

Sesame seeds are mainly produced annually in small farms by women groups as part of farm production. Sesame is produced on farms of less than 2 hectares, on the average, though some large-scale sesame farms. Through ORGIIS, the KANBAOCU produces sesame oil from high quality graded sesame seeds and marketed at local district and national markets. High grade sesame oil is produced to meet export orders from Savannah Farmers' Company and Ghana Nuts Company Limited, and other emerging Ghanaian exporters to Japan, China, and South East Asian countries. There are new export opportunities to Europe yet to be exploited. Until 2019, there has been little competition in the sesame value chain at local market level for KANBAOCU because sesame production is relatively new in its

operational districts. With the strong foundations established, KANBAOCU will continue to enjoy a majority share of the sesame seed market in northern Ghana

#### **4. *Parkia beans value chain:***

In the parkia bean value chain, KANBAOCU operates on three main products, namely: yellow powder for household family consumption, graded dried parkia beans for processing into fermenting into a paste which is dried up for household culinary purposes. Generally, parkia bean production is undertaken by women at farm level, and consumption is done principally household, while surpluses are sold in local community markets, and during years of bumper harvest, the beans are further aggregated for speculative trade at district market level. The parkia bean value chain is an emerging enterprise though it is one of the oldest indigenous value chains, besides shea and other native non-tree products, in the NTFP sector in savannah agro-ecological zone of Ghana. The production, processing, and trade in parkia beans is predominantly done by women and girls in their communities. Sale and aggregation are done in local markets.

#### **5. *Tamarind value chain:***

In the tamarind value chain, the main products include tender tamarind leaves eaten as cooked vegetables and sauces; tamarind pulp processed into syrups and drinks; and from the pods, tamarind seeds. These products are used mainly at for household consumption, and surplus harvests are sold in local markets in northern Ghana. Though not considered as “export” goods, some local tamarind aggregators do supply dried tamarind pulp in sacks for sale to traders in neighbouring community markets in Francophone West Africa, namely: Burkina Faso, Togo and Benin where some manufacturers produce syrups and drinks to serve the growing interest and market in African savannah-sahel fruit products. There is no readily available data on processing and conversion ratios to determine tamarind outputs, productivity, and profitability. KANBAOCU however indicated that tamarind production and export is estimated to be about 0.25 metric tonnes per year though there is exact data on the real volumes and value produced and exported.

#### **6. *Balanites value chain:***

As in the case of tamarind, the production and consumption of balanite syrup and drinks is an age-old indigenous native non-timber tree product used for nutritional, cosmetic, social, and spiritual purposes in the savannah agro-ecological zone of Ghana. Beyond the production and sale of balanite products in local markets in KANBAOCU’s operational districts, there are plans to increase its production coverage and tonnage to exploit the balanite market in neighbouring francophone West African countries with high demand for balanite nuts, butter, and oil for their growing natural cosmetic markets and for export markets in Europe and North America. For balanite oil extraction, KANBAOCU has plans to build extraction equipment and smart technology for improved extraction, productivity and profitability as done in Francophone West African countries.

## **2. THE NATURE OF THE CLIMATE CHANGE THREAT**

### **2.1 PERCEIVED THREATS**

In terms of the nature of the climate change threat, KANBAOCU and its members are worried not only by climate threats but also threats to agro-ecological systems (loss of biodiversity), threats to business and socio-economic models. Specific climate change threats of dwindling poor crop yields and little harvests include frequently changing rainfall patterns evidenced by early onset of rains. These are sometimes prolonged into harvesting months or end abruptly much earlier than expected, with a severe shortfall of rains during maturation months of most crops.

In the KANBAOCU operational districts, the climate changes experienced by its members also drive increasing variable and extreme weather events that cause alternating droughts and flooding consecutively in 2018 and 2019 as reported by Flood List (2018), BBC (2019) and GBC (2019). These involved unrelenting rising temperatures, strong heat waves, rampant and severe malaria cases, and increased insect bites.

It was reported that in April 2017, Ghana experienced a sharp alteration in its weather which resulted in widespread flooding reported in over five regions out of which four were heavily affected. These floods caused devastating impact to people's health, safety and destruction to properties and livelihood (Relief Web 2018).

Reduction in production and revenues, as well as other climate change effects that are predicated by unpredictable flowering and fruiting of crops and NTFPs including stable and cash crops, sesame, shea, baobab, and other products, as well as unpredictable invasion of migratory birds, coupled with invading pests and diseases such as fall army worms, shea leaf blights, baobab leaf sclerosis, among others.



Ghana flooding kills 34 during heavy rains in 2018. Source: <https://phys.org/news/2018-09-ghana-heavy.html>



Ghana 2019 floods: At least 28 people die in heavy rain. Source: [https://ichef.bbci.co.uk/news/660/cpsprodpb/18189/production/\\_109279689\\_flood1.jpg](https://ichef.bbci.co.uk/news/660/cpsprodpb/18189/production/_109279689_flood1.jpg)



GBC (2019) Floods continue to claim lives and property in Ghana. Source: <https://www.gbcghanaonline.com/featured/floods-continue-to-claim-lives-and-property-in-ghana/2019/>

## 2.2 IMPACT ON FOREST AND FARM RESOURCES

The impact and effects of climate change on the forest and farm resources are felt strongly and experienced by KANBAOCU and the enterprises of its member cooperatives. Different types of threats are felt at different levels, and include agro-ecological, economic, financial, biodiversity, and social threats and challenges. The agro-ecological impact on KANBAOCU's value chains is driven by the recent increasingly erratic rainfall with high weather variability, resulting in high variability of soil conditions, reduced performance of crop and tree, flowering and fruiting, leading to reduced yields and revenues. For example, on farm crops, there has been a gradual decline of 30% in crop yields, and particularly on conventional high-input, high-yielding crop varieties including maize, sorghum, and rice. The climate change impact on tree products and value chains have resulted in undeterminable yields resulting in unstable production volumes and reliability of supply volumes. Livestock, including chicken, guineafowls, ducks and turkeys, as well as small ruminants, have not been spared by the impacts of climate change and that has resulted in intrusion of chicken and guineafowls into crop farmlands, and over-browsing of vegetation and pastures in fallows and parkland, destroying young planted trees and naturally generated economic trees and vegetation.

In terms of farm crop value chains, KANBAOCU produces and supplies maize and sorghum to its main off-taker company, the Savannah Agri-Chains Limited, which in turn aggregates various tonnages for supply to Guinness Ghana Limited for production of cereal-based products for local consumption in Ghana and for export. In 2015, more than 80 metric tonnes were produced by KANBAOCU with about 90% quality, for its off-taker and were later marketed to Guinness Ghana Limited to meet its orders. With unreliable production caused by climate change effects, KANBAOCU and its off-taker could only meet less than 70% of orders from Guinness Ghana Limited in 2017, and a further reduction in quantity and quality from 75 to 63 metric tonnes aggregated and long-hauled to suppliers.

Other production value chains, in the NTFP sector, for example, the baobab value chain have seen strong fluctuating tonnages and prices after the drought years of 2015, 2016, and 2017 aggregated for its facilitating partner, ORGIIS, and supplied to an exporter, Aduna UK Limited.

With a relatively recent intervention and limited stakeholder engagement, KANBAOCU and its members have worked tirelessly with ORGIIS, its supporting partner, at landscape level in the Upper East Region to promote environment protection and biodiversity conservation. In terms of the impact and effects of climate change events on biodiversity interventions in 27 out of KANBAOCU's 45 partner communities and 2 surrounding Community Resource Management Areas (CREMAs), a biodiversity corridor carved out to promote, support and protect landscapes, natural resources and human settlements explained in Asare R. A et al. (2013). It was explained that over the last decade, between 2010 and 2020, there has been a clearly noticeable loss of crop diversity witnessed by the loss of drought-resistant, early maturing varieties of their native staples. Having observed that due to high-yielding features, cooking characteristics and consumer preferability, the native crops are being out-competed, the KANBAOCU and its members are now working hard with ORGIIS, its supporting partner, to protect, regenerate, and restore the crops' economic value and the interest of consumers in crops that were formerly loved and cherished by native populations and general society in the guinea savannah agro-ecological belt of West Africa.

Equally evident are losses of biodiversity in pollinating insects, bees, and as well as losses of biodiversity in birds, bats, squirrels, and small mammals in the parklands and landscapes. The knowledge of such losses was acquired through scientific CREMA-based interventions at community and district level. Since 2015, the KANBAOCU has been working, at its own pace, with its partner district assemblies, the Game and Wildlife Department, and local communities to reduce the uncontrolled and needless use of pesticides that unfortunately kill masses of beneficial insects and other fauna, and to control bush fires and illegal wildlife trade between and within the transboundary communities, particularly, of Ghana and Burkina Faso.

## 2.3 IMPACT ON BUSINESS AND FINANCE

The financial impact of climate change affects all KANBAOCU's value chains. All have experienced some reductions in monetary value of products and lower prices. For example, on farm crops the monetary values of maize, sorghum and sesame have fallen from 100% to 85% and further down to 65% between 2015 – 2016, 2017 and 2018 - 2019 respectively and their price stability have reduced with wide fluctuations of between 10% and 25% over the 5 year period. With the other minor crop value chains, especially rice, millet, beans, and vegetables, there is yet no reliable data assembled by KANBAOCU.

For the tree product value chains, KANBAOCU reports that there are moderate fluctuations in supply prices ranging between 10% and 15% in the two main value chains, namely baobab and shea. Similarly, and as in the case of the minor supportive crop value chains, KANBAOCU does not have updated and reliable data to analyse the minor NTFP value chains, that is, parkia beans, tamarind, balanites, moringa, neem, and mango value chains in its operational communities and districts.

## 2.4 IMPACTS ON VULNERABLE GROUPS

In terms of social impact, it was explained by KANBAOCU members that the threats and events caused by climate change affect different social groups, but more heavily on women and girls, as well as young people. For example, in the events of droughts and floods that occurred between 2010 and 2015, and in 2017 and 2018, it was women and young people who suffered the most, from hunger and unsafe water consumption, from malaria and insect-bites, from diarrhoea and other water-borne diseases.

In some of KANBAOCU's farming communities and remote rural settlements, many young people and pregnant women who were in distress from malaria, labour, and pregnancy complications were swept away, together with the pregnant women in the 2017 and 2018 swift floods when they attempted crossing dangerous streams and rivers to access dire health services in health facilities far and out of their easy reach.

### 3. RESPONSE OF BUSINESS AND FINANCIAL MODEL TO IMPROVE CLIMATE RESILIENCE

#### 3.1 AGRO-ECOLOGICAL DIVERSIFICATION

New processes of diversification of natural resource use are guided by a ‘**Doable-Urgent-Bold-Equitable**’ (DUBE) approach to resilience that is applied by KANBAOCU and its members. The DUBE Approach is applied to enable their businesses adapt to climate threats at three levels, namely, household, cooperative and district levels. The DUBE Approach targets decision-making and planning to ensure that planning outcomes are driven by strong expectations that the measures are feasible and “Doable”. They must also be stimulated with a sense of “Urgent” action. Decision-makers must have “Bold” determination to achieve measurable results in the face of threats and risks, while ensuring that participation and benefit-sharing are “Equitable”

Within the approach, diversification was pursued in two dimensions (horizontal and vertical) to achieve business stability and climate resilience. Horizontal diversification has to do with increasing the agro-ecological diversity, the numbers of species from which value chains are derived. For example, this might be done by introducing more crop species, and expanding from baobab value chain into shea value chain, and now to parkia, tamarind and other value chains, as well as, with these diversifications guided by FAO (2018). Vertical diversification entailed economic diversification, increasing the numbers of product lines (raw produce, processed/refined products, oils, etc.) within a specific value chain. This deepens and diversifies incomes from production to processing and value addition, and from local suppliers and marketing, towards exports.

##### **Horizontal diversification**

An assessment of KANBAOCU’s horizontal value chain diversification was also performed. This was to present the current situation and relevance of the contribution of each value chain to business stability and climate resilience of KANBAOCU and its member-cooperatives.

##### **a) Horizontal diversification in crop value chains**

As mentioned elsewhere in this report, when the Kasena Nakana Women Association (KANWA) became defunct, the KANBAOCU was founded in 2010, and took over leadership and annexed all the members of the defunct KANWA. KANBAOCU evolved and developed into a fully-fledged apex body of cooperatives and enterprises, thus vertically diversifying its 2 initial crop value chains from millet, cowpeas, and beans into five new value chains, namely maize, sorghum, soybeans, sesame and fonio. A summary of each of the seven crop value chains are presented in Table 3.1. below.

**Table 3.1. Horizontal value chain diversification and contribution to climate resilience by KANBAOCU’s main crop value chains.**

Round of diversification	First round of diversification		Second round of diversification			Third round of diversification	
	Millet	Cowpeas & Beans	Maize	Sorghum	Soybeans	Sesame	Fonio
Crop value chain							
Lifespan of value chain: Years of production prior to 2020.	15 years	15 years	10 years	10 years	8 years	5 years	1 year

##### **b). Horizontal diversification in tree NTFP value chains.**

An assessment was made to understand the factors and processes employed in horizontal diversification of KANBAOCU’s tree NTFP value chains and contribution to business stability and climate resilience. This assessment measured value chain diversification and contribution to climate resilience enjoyed by KANBAOCU and its member-cooperatives. The diversification pursued by KANBAOCU in its eight tree NTFP value chains has contributed significantly to the overall diversification and resilience of KANBAOCU members. The summary of each of the eight tree NTFP value chains are presented in Table 3.2 below.

**Table 3.2. Horizontal value chain diversification and contribution to climate resilience by KANBAOCU’s tree NTFP value chains**

Round of diversification	First round of diversification		Second round of diversification			Third round of diversification		
NTFP Value chains	Baobab powder & oil	Shea nuts & butter	Locust bean condiment	Balanite nuts & pulp	Tamarind pods & pulp	Moringa leaves, seed & oil	Neem seed & oil	Mango fruits, nuts& oil.
Lifespan of value chain: Years of production prior to 2020	5 years	5 years	2 years	2 years	2 years	1 year	1 year	1 year

**c). Horizontal diversification in livestock value chains.**

The assessment of horizontal diversification of KANBAOCU’s livestock value chains and their respective contributions to business stability and climate resilience is illustrated. The summary of each of the eight livestock value chains are presented in Table 3.3 below.

**Table 3.3. Horizontal diversification and contribution to business stability and climate resilience by KANBAOCU’s livestock value chains.**

Round of diversification	First round of diversification		Second round of diversification			Third round of diversification	
Livestock Value chains	Chicken	Guinea fowls	Pigs	Ducks	Turkeys	Small ruminants	Cattle& Donkeys
Lifespan of value chain: Years of production prior to 2020	5 years	5 years	4 years	5 years	5 years	Planned, not yet started.	Planned, not yet started.

### 3.2 ECONOMIC DIVERSIFICATION

Before economic diversification commenced, KANBAOCU’s main value chains involved the production and marketing of raw unprocessed products: baobab powder and shea nuts in the NTFP sub-sector. Other native indigenous economic value chains were crop products such as ground nuts and vegetables (pepper, okra, kenaf, and bissap) which are mostly produced by women.

The horizontal economic diversification from crop value chains into NTFP value chains was triggered by rapidly dwindling crop yields and lower incomes caused by increased droughts and advancing desert. The women cooperative members have always relied on their native crops for food and income. The rapid changes in yields and incomes during the last decade compelled the new women’s cooperative union to think deeper to explore possible opportunities to diversify the products sold from their baobab and shea value chains. KANBAOCU worked hard to overcome many obstacles to increase the volumes of production in the two value chains, including baobab powder (and later baobab seeds for oil extraction) and shea nuts for cash sale and for processing into shea butter for local and export markets.

**Vertical diversification**

Vertical diversification is a term used to describe the factors and processes that add value to the components of any value chain. A chronological approach seeks to make progress from initiation with raw material sales to present date sales of processed products. During information gathering of the case study, agro-ecological diversification was assessed vertically on its crop, NTFP, and livestock value chains. The assessment documented the year of initiation of components of each value chain, for example, the initiation or start-up year of raw commodity aggregation (first degree of diversification), the year of initiation of processing and value addition (second degree of diversification), and the start-up or initiation year of trade and marketing components (third degree of diversification) of each value chain. The vertical diversification in each of the value chain divisions (crop, tree NTFPs, livestock) was assessed.

**a). Vertical diversification in crop value chains.**

KANBAOCU's vertical diversification in its seven crop value chains was pursued at three stages of its value chains – primary stage (raw produce), second stage (processed products), and third stage (finished products). The assessment of the vertical diversity was performed in crop value chains, namely: maize, sorghum, soybeans, and sesame as well as fonio value chains. For each value chain and for each stage, an assessment covered: year started, the 2018 production (in metric tonnes), the 2018 value of production (in thousands of Ghana cedi), and volume of exports (in metric tonnes). Finally, assessment of KANBAOCU's vertical diversity offered an understanding of the lifespan of value chain from start-up to date (in April 2020), and the proportion of contributions of the each value chain to improvement in KANBAOCU's overall adaptive resilience to threats of climate change, business stability, gender and social inclusion, and institutional vigour and tenacity. In the crop value chains 57.5% of the total diversification possible had been deemed to take place. The summary of the assessment on crop value chains are presented in Table 3.4. below.

**Table 3.4. Vertical diversification and contribution to business stability and climate resilience by KANBAOCU's crop value chains (averages across all crops).**

Crop value chains	Primary/initiation stage: production of raw produce/materials		Second/evolving stage: value addition to products	Third/stabilising stage: production of finished goods
	Produce/product	Native variety	Improved variety	Processing value added
Average lifespan of value chain: Years of production prior to 2020.	15 years (but much earlier than 2005)	10 years (may be, earlier than 2010)	10 years (may be, earlier than 2010)	0 years (not yet started but will be commenced beyond 2020)

**b). Vertical diversification in tree NTFP value chains.**

As with KANBAOCU's 7 crop value chains, vertical diversification was pursued in its 8 tree NTFP value chains. It covered the three stages of diversification in its 8 value chains – a). primary stage (raw produce), b). second stage (processed products), and c). third stage (finished products). The vertical diversity was assessed at each of the three stages on KANBAOCU's 8 tree NTFP value chains. The assessment covered each of the 8 value chains and for each stage of diversification. From the assessment, KANBAOCU's vertical diversity was offered an opportunity to understand and appreciate the proportions of contributions of each value chain to KANBAOCU's overall adaptive resilience to threats of climate change and business stability. The assessment on vertical diversification showed that KANBAOCU's efforts at vertical diversification in its eight tree NTFP value chains had begun more recently and had only achieved 46.25% of the possible diversification that could be made to help adapt to challenges and threats in its operations for stronger business and deeper climate resilience. The summary of the assessment on the tree NTFP value chains are presented in Table 3.5 below.

**Table 3.5. Vertical value chain diversification and contribution to business stability and climate resilience by KANBAOCU's tree NTFP value chains (averages across all NTFPs).**

NTFP value chains	Primary/initiation stage: production of raw produce/materials		Second/evolving stage: value addition to products		Third/stabilising stage: production of finished goods
	Produce/product	Native variety	Improved variety	Processing value added	Stabilising value added
Average lifespan of value chains: Years of production prior to 2020	5 years	5 years	2 years	2 years	Not yet started.

**c). Vertical diversification in livestock value chains.**

An assessment on KANBAOCU's 7 livestock value chains was performed to provide knowledge of the current relevance of vertical diversification. The assessment covered the three stages of vertical diversification primary (initiation) stage focused on production of raw produce, a second (evolving) stage on processed products, and a third (stabilising) stage with a focus on finished marketable products. For each stage of diversification, the assessment covered each of the 7 livestock value chains. It was found from the assessment on KANBAOCU's vertical diversity, a better appreciation of the contributions of each livestock value chain to overall adaptive resilience to threats of climate change



encountered and the business stability currently enjoyed by KANBAOCU. Analysis of KANBAOCU's efforts at vertical diversification showed that the seven livestock value chains had achieved 40% of the total possible diversification within KANBAOCU's overall adaptive resilience for stronger business operations and climate adaptation. Table 3.6 below presents summary of the assessment on the livestock value chains at the three stages, namely: primary stage (production of raw materials), second stage (value addition to products) and a third stage (production of finished goods).

**Table 3.6. Vertical diversification and contribution to business stability and climate resilience by KANBAOCU's livestock value chains (averages across all chains).**

Livestock value chains	Primary/initiation stage: production of raw materials		Second/evolving stage: value addition to products	Third/stabilising stage: production of finished goods
Lifespan of value chain: Years of production prior to 2020	5 years	5 years	Not determinable	Not determinable

Over the years, KANBAOCU and its cooperatives progressed from production into aggregation and storage, and then actively progressed into trade and marketing when KANBAOCU was able to partner with its main off-taker, Savannah Agri-Chains Limited. Most of the crop value chains which are now fully engaged in by KANBAOCU were started earlier but were only active since 2010.

### 3.3 SOCIAL DIVERSIFICATION

KANBAOCU understands that cultural and social services are rooted in individual need and shaped by the social and cultural context. For example, conflicts that surface and can be dealt with by the trans-disciplinary and social interaction skills acquired by KANBAOCU leadership and management. One important socio-cultural services provided by KANBAOCU include resolution of conflicts on land tenure, labour arrangements, marketing of products, indigenous technical knowledge, group dynamics and community organization. The union also provide support on cultural nutrition habits, gender, and the well-being of its members (see Frasier et al., 2016 and Boafo, 2014).

Other social capabilities cultivated and developed by KANBAOCU that have enabled it business to invest in diversified economic activities and strengthened its financial resilience include:

- communal labour work sessions by cooperative members and their community groups such as youth groups, artisanal groups, and tradesmen.
- solidarity support for members' social events such as marriage, weddings, festivals, funerals, and graduations.
- cooperative savings and loans that transformed KANBAOCU's finance from an apex cooperative VSLA body into KANBAOCU Cooperative Credit Union under the Cooperative Credit Union Association of Ghana (CUAG).
- the promotion and support for participation in Ghana national health insurance scheme (NHIS) for registration and renewal of subscription by card holders; and
- the promotion of community educational insurance scheme for members' children in pre-school, basic and junior high schools.

### 3.4 OTHER RESILIENCE MEASURES

A range of other measures have been used to improve resilience including technical interventions, and institutional and business capacity development. Such measures have supported KANBAOCU resilience over the 5 years of its existence.

#### a) Technical interventions in land, soil, water, biodiversity, and climate change.

There have been three rounds of technical interventions aimed at diversifying technical approaches and deepening the resilience of KANBAOCU's enterprises and institutions. Those interventions were focused on: (i) land access and management, (ii) soil and water management, (iii) environment and biodiversity, and (iv) climate change adaptation.

Earlier than 2010, the first round of interventions included reintroducing indigenous crop production practices with attempts to control land degradation and deforestation and ploughing by use of donkeys. Soil fertility and water management interventions were also based on native indigenous practices, namely: crop rotation with fallowing, and soil-top manure application. The environment and biodiversity conservation interventions during the initial round of interventions started with the control and reduction of bush burning, and natural tree regeneration by protection from indiscriminate bush burning. The first round of climate change adaptation interventions was targeted at the use of drought- and flood-tolerant crops, and expansion into tree resources value chains.

The second round of interventions between 2010 and 2015 focused on the introduction of improved methods. The emphasis in land access and management was to introduce new methods and techniques in land access and management involving contouring with tie-ridging, and tractor ploughing with contouring. Soil and water management now targeted compost production and utilisation, and erosion control and moisture conservation. Environment and biodiversity conservation during the second round focused on developing economic tree nurseries and annual planting, and CREMA application in parklands to improve community resources management in KANBAOCU partner communities. Interventions in climate change adaptation included the introduction and use of agro-forestry practices, and integration of economic trees in parklands.

During the third round of interventions from 2018 onwards, the focus was on innovative approaches in land access and management, soil and water management, environment and biodiversity, and climate change adaptation. For example, interventions in land access and management focused on zero-tillage with animal traction, and innovative GPS farm mapping. Soil and water management interventions included small well-digging and rain harvesting, and nematode control by use of phyto-pesticide. Diversification in environment and biodiversity aimed at the reduction of hunting and wildlife trade, and savannah -sahel biodiversity corridor restoration. Climate change adaptation is now, in 2020 and beyond, aimed at integrated disaster and climate change adaptation, and high-impact climate resilient technologies. The diversification in strategies and measures on land, soil, water, biodiversity, and climate change adaptation contributed substantially to KANBAOCU's efforts at building its technical adaptive resilience to secure sustainable business impact and innovative climate adaptation outcomes through enhanced diversification in its technical interventions.

## **b) Institutional and business capacity development**

Institutional strengthening activities have focused on four main areas: (i) staff capacity and competence development; (ii) business competitiveness and legal compliance; (iii) finance and resource mobilization; and finally (iv) service provision to members. Capacity building commenced soon after the establishment of KANBAOCU in 2010. Once again, three rounds of capacity building interventions can be described including a). conventional practices to build the adaptive capacities of KANBAOCU, b). strategic approaches to achieve adaptive resilience, and c). innovative technologies to strengthen KANBAOCU's institutional and operational sustainability.

Conventional practices to improve staff capacity such as practical training, as well as supervision and follow-up, were conducted from 2010. These soon turned to strategic efforts at building staff capacity in enterprise development through business incubation trainings. Innovative approaches such as business coaching and mentoring are planned for 2020 and beyond.

In 2010, efforts also began to improve the efficiency and productivity of KANBAOCU's enterprises and value chains. In the initial five years there was a conventional emphasis on competitiveness and legal compliance. Between 2012 and 2016, strategic trainings worked to achieve high production volumes in its baobab and shea value chains, with interventions aimed at increasing negotiation and bargaining skills in pricing and profitability, conducted in 2015 and 2016. In 2017 and 2018, the focus turned towards increasing and improving product quality standards. Innovative plans are afoot in 2020 and beyond to improve adherence to regulations to standards for local and international markets.

Conventional approaches to improve financial and resource mobilisation were undertaken to contribute to KANBAOCU's business sustainability. KANBAOCU's efforts at financial and resources mobilisation started in 2010 and sought to build skills of its members in financial record management and simple book-keeping. Later, KANBAOCU adopted a more strategic approach and pursued an aggressive drive on savings and small loans in 2012, which was later followed by encouraging equity investment access

by its members between 2014 and 2016, accompanied by fund raising and fund management. Further innovations are planned for 2020 and beyond, including a deeper drive will be pursued on increasing its stock of equipment and logistics control.

Conventional service provision was pursued to provide membership benefits to KANBAOCU's cooperative members from 2010. More strategic services such as business incubation and development were pursued between 2012 and by 2014 greater social inclusion was also targeted, alongside business connectivity between the members. Innovative processes from 2018 are building up and improving KANBAOCU's market connectivity and public relations so that from 2020 and beyond, it is planned to conduct advocacy and community engagement for increased access to policy stakeholders at regional/provincial and national levels.

The contribution of the four domains assessed has improved KANBAOCU's climate resilience by improving institutional and business stability in KANBAOCU's enterprises and respective value chains.

### 3.5 PARTNERSHIPS

KANBAOCU's partnerships over time have supported and enabled it to diversify production, processing and marketing, and value chain development, and supported it to improve its gender and social inclusion efforts, beyond the confines of KANBAOCU and its member-cooperatives. Its success and achievement can be traced back to the partnerships it has been engaged in, namely: technical, business, and financial partnerships, and collaborations with traditional and governmental authorities.

#### a) Technical partnerships

KANBAOCU enjoys support and enablement from four technical partners: ORGIIS, Ghana National Sesame Business Farmers Association (GNSBFSA), Peasant Farmers' Association of Ghana (PFAG), and the newly formed forest and farm platform called Ghana Forest and Farm Advocacy Platform (GhaFFAP).

#### b) Business partnerships

The business partnerships operated by KANBAOCU are with three main business partners.

- **Savannah Agri-Chains Company Limited (SACL)**

Savannah Agri-Chains Company Limited (SACL) is an indigenous Ghanaian company focused on sustainable production and export of high quality, community processed natural products to the international edible and cosmetic markets. SACL is the main off-taker that buys almost all the products and related services generated by KANBAOCU, and after aggregating the products into larger volumes for market and export. Details of SACL can be found at:

<http://www.savannahagrichainsltd.org/products.php>.

- **Savannah Fruit Company (SFC).**

Also, one business partner of KANBAOCU is the Savannah Fruit Company (SFC). The Savannah Fruits Company (SFC) Savannah Fruits Company is a Ghana-based company that manages its international supply chain and logistics right from the collection of nuts in the shea parklands of West Africa, all the way through state of the art organic refining in European facilities and onto our clients. Savannah Fruits Company practices a socially and environmentally responsible business and ensures value addition at source is maximized. Details of SACL can be found at: <https://www.savannahfruits.com/>.

<https://www.bioghana.net/membership-list/savannah-fruits/>.

- **Aduna UK Ltd.**

Aduna UK Limited is an Africa-inspired health food and social business that seeks to increase the natural vitality of Africa's super foods such as baobab, moringa and fonio, while creating sustainable livelihoods for small-scale producers. To date, Aduna has created sustainable incomes for over 850 baobab producers in Northern Ghana, including the KANBAOCU and hundreds more producers across the continent. Aduna means 'life' or 'world' in Wolof, the local language of Senegal and The Gambia

where its co-Founders discovered their passion for Africa. Aduna applies innovative model that flips the aid model on its head by focusing on the creation of demand, with the goal of creating long term sustainable markets and livelihoods. <https://lnkd.in/efP9q23>. Details of Aduna UK can be found at: <https://www.aduna.com/>

### c) Financial partnerships

KANBAOCU has limited financial partnerships from which it can access additional financial resources for its growth and expansion. KANBAOCU Cooperative Credit Union has been registered in 2019 but to take off. COVID-19 has stunted and delayed its initial implementation steps with the Cooperative Credit Unions Association of Ghana (CUAG). There are several finance institutions from whom KANBAOCU's members seek financial assistance, including rural and community banks such as the Nara Rural Bank, the Sinapi Aba Microfinance Company, as well as small loans and savings enterprises. KANBAOCU recognizes the efforts and contributions of such rural banks and micro-finance institutions in as much as its members are supported financially to achieve their goals and objectives in improving and diversifying the production, processing and marketing activities in their respective value chains, and also for gender and social inclusion, as well as the economic development of their communities and districts.

## 3.5 CUSTOMERS

KANBAOCU's customers in local markets such as community and district markets include aggregators and traders in seven principal markets in Bolgatanga, Navrongo, Paga, Sandema, Tumu, Bawku, and Walewale. Also, KANBAOCU serves customers such as small-scale aggregators in minor NTFP value chains such as parkia beans, balanite, tamarind, and mango; as well as small processing enterprises in sorghum, millet, baobab, shea, and minor NTFPs. At national and international market levels, KANBAOCU's customers include a). Savannah Agri-Chains Company Limited (SACL) as KANBAOCU's primary off-taker of all its raw and processed products; b). KANBAOCU works both directly and indirectly with Ghana Nuts Limited, Savannah Fruit Company, and other national level purchasing companies and processing firms; and c). KANBAOCU works indirectly with Aduna UK Ltd. through ORGIIS and SACL.

## 3.6 MARKETING STRATEGY

KANBAOCU has adopted a 5P marketing strategy that comprises:

- **Products.**

KANBAOCU's operates an integrated value chains strategic model by which it continuously evolves and transforms its production chains. The model is expansion-driven and exerts strain and stress on its financial, material, and human resources. But it affords KANBAOCU the ability to strategically review, adjust, and modify its plans and resources. This has enabled KANBAOCU to stay afloat, swim across, and navigate around obstacles and impediments along the road to success.

- **Pricing and prices.**

KANBAOCU's pricing policy and prices respond to different segments and customers while also reflecting value chain and production costs. KANBAOCU has a price discount policy that is based on volumes, quality, and grades of its products. KANBAOCU also enjoys negotiation and bargaining and so it only sets fixed prices on hedged supplies, especially for international exports, particularly baobab powder and oil, shea nuts and butter, and sesame seeds. At the domestic market level, KANBAOCU responds to its customers' characteristics and needs to generate win-win-win situations of consumers/customers, the KANBAOCU itself, and its member-cooperatives. In some situations, the desire of other companies to stubbornly maintain prices and profit margins have caused the weakening of the customer base to the advantage of KANBAOCU and its operations.

- **Promotions.**

KANBAOCU applies strategic approaches to promote its products, maintaining and increasing its sales and deepening its relationships with its partners, building, and maintaining its customer and client base.

It also promotes its brand for effective access to funds and investments to meet the demands and needs of its numerous value chains and products. Competitor's efforts have also yielded strong results to make their outcomes come close to KANBAOCU in terms of production, aggregation, processing, and export capacities – so there is constant need to innovate.

- **Placement and locations.**

The placement and locations of KANBAOCU reflect its unique status as an indigenous social enterprise composed mainly of women and youth. The KANBAOCU's operational centre is in Paga town, a frontier-border community between Ghana and Burkina Faso located in the two Kasena Nankana districts, generally regarded as very remote from Ghana's urban centres. Thus, KANBAOCU needs to work hard to ensure its products reach required markets.

- **Pace.**

KANBAOCU's pace is set by consistently adjusting and adapting its plans, operations, and customer base to continue producing better results. An example is the conscious and deliberate diversification and inclusion of new value chains such as sesame, fonio, neem, moringa and other NTFPs as well as diversifying and expanding its livestock value chains. Other social enterprises and production companies have failed to survive because they lacked the pace to adjust their value chains to respond to challenges in its business environment and climate change threats and risks resulting in weak systems and operations.

## 4. CONCLUSIONS

### 4.1 MAIN CONCLUSIONS

KANBAOCU's current business model is a climate-resilient social enterprise. Based on its value chains approach, it has also developed strategic expansion plans around an integrated model that is focused on improved capacity, enhanced competence and standards compliance, high competitiveness, strategic connectivity, through long-term commitment, transparent collaboration, and innovative partnerships. The main drivers of viability and success in KANBAOCU as a social business enterprise include:

- value chain diversification (both horizontal and vertical)
- increasing numbers of sustainable, inclusive, market-based multi-stakeholder partnerships.
- geographic expansion
- incremental technology and skills development
- innovation-based productivity enhancement
- equity mobilization and a commitment to re-investment

### 4.2 INVESTMENT CHALLENGES

In terms of investments in its members institutions, natural resource base, business partnerships and finance, KANBAOCU has encountered, navigated, and managed many challenges. Some of these have been improved by KANBAOCU's DUBE climate-resilience model. KANBAOCU's efforts have focused on key strategies and accompanying actions that have been performed in line with the drivers listed above:

- Mobilising natural resources for climate resilience – this has included all KANBAOCU's value chain development work in crops, NTFPs, livestock and other natural resources.
- Mobilising economic partnerships to diversify its business value chains has also been quite difficult for KANBAOCU climate resilience actions and measures which are aimed at increasing the participation and commitment of stakeholders, including KANBAOCU, ORGIIS, SACL, Local Governance, and Traditional Authorities.
- Mobilizing institutional membership of KANBAOCU – this was achieved by increasing its number of operational partner communities and by attracting, engaging and building the

commitment of existing non-member enterprises within and outside of its present catchment areas to expand membership to strengthen its institutional resilience. This also aimed at engaging them in mobilizing equity and investment from its members and member-cooperatives and partners' investment portfolio for short term financing.

- Mobilising finance for KANBAOCU's operations – this has been very rough and tight, in that its climate-resilient value chains have been the sole source of savings and loans from its cooperative union and non-banking institutions. After registration, the KANBAOCU planned to operationalize its own Cooperative Credit Union except for the unexpected COVID-19 and its negative impacts. Also, KANBOACU has long-term plans to set up its own Rural/Community Bank to expand its basket of financial services.

### 4.3 BENEFITS AND THEIR DISTRIBUTION

In terms of benefits from these climate resilience actions and their distribution to members, KANBAOCU has clear laid-down rules for benefit-sharing to ensure transparent, equitable, and responsive distribution and access by various membership categories. Also, KANBAOCU has a strong consensus-based dispute resolution structure spanning from group level to cooperative and community levels, and then further to KANBAOCU apex leadership level. Though not yet triggered, the final rule is activated when disputes remain unresolved, KANBAOCU will approach and engage appropriate traditional authorities to arbitrate and provide a final resolution and settlement.

## REFERENCES

Ahenkan A. and Boon E. (2011). Non-timber forest products farming and empowerment of rural women in Ghana. *Journal of Environment, Development and Sustainability* Volume 13.

Asare, R. A., Kyei, A., & Mason, J. J. (2013). The community resource management area mechanism: a strategy to manage African forest resources for REDD+. *Philosophical transactions of the Royal Society of London. Series B, Biological sciences*, 368(1625), 20120311. <https://doi.org/10.1098/rstb.2012.0311>.

Atangana A., Khasa D., Chang S., and Degrande A, (2014). Socio-Cultural Aspects of Agroforestry and Adoption. *Tropical Agroforestry* (pp. 323-332). October 2014. DOI: 10.1007/978-94-007-7723-1\_17.

Awedoba, A. K. (2010). *An Ethnographic Study of Northern Ghanaian Conflicts: Towards a Sustainable Peace: Key Aspects of Past, Present and Impending Conflicts in Northern Ghana and the Mechanisms for Their Address*. African Books Collective. p. 289.

Boafo Y.A, Saito O, Takeuchi K. (2014). Provisioning ecosystem services in rural savanna landscapes of Northern Ghana: an assessment of supply. *Utilization, Drivers Change J Dis Res*. 9:501-515.

Flood List (2018). Ghana – Dozens Killed by Flooding in Northern Regions. Source: <http://floodlist.com/africa/ghana-floods-northern-regions-september-2018>.

Fraser, J., Diabaté, M., Narmah, W., Beavogui, P., Guilavogui, K., De Foresta, H., & Junqueira, A. (2016). Cultural valuation and biodiversity conservation in the Upper Guinea forest, West Africa. *Ecology and Society*, 21(3). Retrieved April 20, 2020, from [www.jstor.org/stable/26269973](http://www.jstor.org/stable/26269973).

GBC (2019) Floods continue to claim lives and property in Ghana. Source: <https://www.gbcghanaonline.com/featured/floods-continue-to-claim-lives-and-property-in-ghana/2019/>

GhaFFaP (2020). Launch of Ghana Federation of Forest and Farm Producers (GhaFFaP). *AgricInGhana Media* on Thursday, March 12, 2020. Source: <http://agricinghana.com/2020/03/13/ghana-federation-of-forest-and-farm-producers-launched/> Accessed on May 28th 2020.

IFRC (2018). Northern Ghana in urgent need of food after devastating floods, Source: <https://www.ifrc.org/ar/news-and-media/news-stories/africa/ghana/northern-ghana-in-urgent-need-of-food-after-devastating-floods/>

News Ghana (2020). GhaFFaP advocates for policy interventions for smallholder farmers. Source : <https://newsghana.com.gh/ghaffap-advocates-for-policy-interventions-for-smallholder-farmers/>. Accessed on May 28th, 2020.

Relief Web (2018). Ghana: Floods Emergency Plan of Action (EPoA) Final Report Operation no. MDRGH014