EVALUATION REPORT

Project: Improved efficiency and quality of cashew production and processing in Ghana

Ghana – Brazil – Germany

CENTER FOR STUDIES AND PROJECTS LLC

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INDEX

Glossary

ABC	Brazilian Cooperation Agency
ACA	Africa Cashew Alliance
AfDB	African Development Bank
EMBRAPA	Brazilian Agriculture Research Cooperation
CAADP	Comprehensive Africa Agriculture Development Program
ComCashew	Competitive Cashew Initiative
CRIG	Cocoa Research Institute Ghana
DAC	Development Assistance Committee
DCS	Directorate of Crop Services
ECOWAS	Economic Community of West African States
EUR	Euro
FAAP	Framework for African Agriculture Productivity
GADS	Gender and Agriculture Development Strategy
GAP	Good Agriculture Practices
GIZ	Deutsche Gesellschaft fur internationale Zusammenarbeit
GoG	Government of Ghana
Ha	Hectare
ISO	International Organization of Standardization
Kg/ha	Kilogram per Hectare
LAC	Latin America and the Caribbean
MoFA	Ministry of Food and Agriculture
MoFEP	Ministry of Finance and Economic Planning
MT	Metric Tons
NEPAD	Planting for Export and Rural Development
OECD	Organization for Economic Cooperation and Development
ODA	Official Development Assistance
PERD	Planting for Export and Rural Development
PLWD	Persons Living with Disability
PPRSD	Plant Protection and Regulatory Services Directorate
SRID	Statistical Research and Information Directorate
TCr	Triangular Cooperation
TCP	Tree Crop Production
WIAD	Women in Agriculture Directorate

Executive Summary

The external ex-post evaluation of the trilateral cooperation project "Improvement in cashew planting material and its by-products with processing technologies in Ghana" was conducted between August and October 2022. The Project was implemented in Ghana from 2017 to 2022 between Brazil-Ghana-Germany in collaboration with the GIZ Regional Fund for Triangular Cooperation in Latin America and the Caribbean. A participatory methodological approach was employed through the utilization of the OECD DAC evaluation criteria (relevance, efficiency, effectiveness, sustainability and impact), including the added criterion of coherence in two dimensions: (i) project and (ii) triangular cooperation, which were analyzed through triangulation, contribution analysis, and outcome harvesting methodologies. These were complemented with the guide for external ex-post evaluation of TCr projects developed by GIZ. Data from secondary and primary sources were used for the evaluation. The evaluation phases were document review, field phase with virtual and face-to-face interviews, drafting of the draft report, and finalization of the evaluation report. Twenty-five (25) interviews were conducted from relevant stakeholders purposively selected for the evaluation. Seventeen (17) respondents completed the online questionnaire and submitted directly to the Center for Studies and Projects LLC, Bolivia.

Triangular Cooperation (TCr), supported by the Regional Fund managed by GIZ, is based on the promotion of joint projects between a facilitating partner (Germany), pivotal partner (Brazil), and a beneficiary partner (Ghana). The partners complement each other and contribute to the project according to their capacities in specific contexts, creating bridges between North-South and South-South cooperation, in addition to generating knowledge sharing, technical expertise, and alliances to jointly address local, regional and national challenges and contribute to the SDGs. The background of the TCr project was based on a previous diagnosis and the needs of Ghana at the time. The African Development Bank (AfDB) and the Government of Ghana (GoG) funded the first cashew development project (CDP) in Ghana implemented by the Ministry of Food and Agriculture from 2002 to 2010 with a focus on improving production, processing, and institutional support systems. In 2009, GIZ Ghana commenced the GIZ/ComCashew project as a follow-up project of the cashew development project implemented through MoFA where farmer trainings, technical assistance, and business development services were provided to cashew processors. Due to the need for cashew research and development, and improved cashew planting material (high-quality clones) that are most suitable for Ghana, the project idea was conceived for planning, development, and implementation.

The project was designed within the policy framework of the Ghana Growth and Development Agenda II (GSGDA II) which recognized the promotion of non-traditional export products as a major source of revenue generation. The project was developed when Ghana was preparing for the 2016 presidential and parliamentary elections to elect a new government. The project commenced at a time when there

was a change in political leadership which necessitated the appointment of new sector ministers including the Ministry of Food and Agriculture. During the development of the project, Ghana had ten regions but in 2018, through a referendum, some regions were split to create a total of sixteen regions. It was executed when there was a shift in the development policy framework in 2017 after the Ghana Government launched the Coordinated Programme of Economic and Social Development Policies (2017-2024) for its implementation. The TCr project was implemented in the following eight regions in Ghana: Bono, Bono East, Savanna, Ashanti, Volta, Oti, Northern, and Upper West. Finally, the onset of the COVID-19 pandemic in December 2019, created implementation challenges however, the project achieved its intended results.

Project Summary

1. Date of elaboration:	27th November 2016.
2. Project name:	Production of Improved Cashew Planting Materials and By-product Processing Technologies for Ghana.
3. Cooperation areas:	Agriculture research, introduction, and adaptation of cashew planting materials; innovative cashew harvest, post-harvest, processing technologies; and good agricultural practices.
4. Partner countries of the project:	Brazil (Pivotal Partner) and Germany (Facilitating Partner).
5. Country of requesting partner:	Ghana (beneficiary partner)
6. Project volume	€ 700,000 euros (South offeror contribution € 300,000; € 300,000 by Germany and €100,000 as beneficiary contribution.
7. Institution coordinating international cooperation in the main partner country:	Brazil through the Brazilian Cooperation Agency (ABC).
8. Technical counterparts and their units in the main country:	Brazilian Agricultural Research Cooperation (EMBRAPA).
9. Executing institutions in the requesting partner country:	Directorate of Crop Services, Ministry of Food and Agriculture.
10. Institution of the facilitating country (Germany):	Deutsche Gesellschaft fur international Zusammenarbeit (GIZ) GmbH
11.Implementation period:	January, 2017- December, 2020.

The TCr project objectives were (i)improving the quality of research in the development of cashew clones that are high yielding and tolerant to major diseases and pests as well as adapted to local conditions. (ii) improving the efficiency and technologies of cashew processing and by-product processing.

Main results

The triangular cooperation modality had high relevance to Ghana's national development policies, The Coordinated Economic and Social Development Programme (2017-2024), and the National Gender policy. The TCr project also had high relevance for the following sectoral policies: Food and Agriculture Sector Development Policy II (FASDEP II, 2007); National Employment Policy (2014); Rural

Development Policy; Ghana National Climate Change Policy (2013); National Science, Technology and Innovation Policy (2017); National Nutrition Policy (2017); National Gender Policy (2015); Gender and Agricultural Development Strategy II (GADS II) and the Tree Crops Policy (2012). For Brazil, the Tcr was relevant for its policies for collaboration with developing countries like Ghana to promote learning exchanges in the cashew sub-sector. The project also emerged as a complementary project for what GIZ Ghana was doing as part of its mandate to develop the cashew value chain in Ghana.

The project contributed to the sustainable development goals (SDGs), mainly towards SDG2, End hunger, achieving food security and improved nutrition, and promoting sustainable agriculture. There was also a significant contribution to SDG 5, Achieve gender equality and empower all women and girls; SDG 8, Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work; SDG 12, Ensure sustainable consumption and production patterns, and SDG 17, Strengthen the means of implementation and revitalize the global partnership for sustainable development. Finally, it was relevant to the needs of the receiving country as Ghana had limited experience in the processing of cashew apples. Farmers had no access to improved and high-yielding cashew planting materials and good management practices for cultivation, harvesting, and post-harvest handling of the cashew apple. At the continental level, The TCr project contributed to the achievement of agriculture development initiatives in Africa through the Comprehensive Africa Agriculture Development Program (CAADP) of the New Partnership for Africa's Development (NEPAD) and the Framework for African Agriculture Productivity (FAAP).

The project design had a clear and coherent logical framework that served as a monitoring system of performance with planned activities, outputs, indicators, risk, and accompanying mitigation strategies. Although risk analysis and mitigation strategies were explicitly made, yet they did not take into consideration political factors such as changes in government as Ghana was preparing for an election in the year 2016 when the TCr project was formulated. This external factor in addition to the COVID-19 pandemic affected the normal performance of the project requiring some of the activities to be changed from planned.

The triangular cooperation management structure put in place demonstrated high efficiency in the performance of its role to achieve the project results through the use of human, financial and technological-know how the cooperation offered. For example, in order to overcome MoFA's challenge to supply farmers in all parts of Ghana with the improved cashew seedlings because of the large coverage, private cashew nursery operators were trained to support the nationwide distribution of the seedlings to farmers. Information received from officials working with the TCr partners revealed that the budget contribution was utilized as it was presented in the proposal with no extra contributions made. Again, despite the project duration being extended to the year 2020, it was with a no-cost extension. Through the cooperation project, subsidized

improved, and high-yielding cashew seedlings were distributed to both men and women farmers accompanied by training on GAPs to improve their production efficiency and yield. Again, small, medium and large-scale processors were provided with cashew apple and by-product technologies which have enhanced their processing efficiency.

The project demonstrated effectiveness and achieved the expected outcomes. The partners of the TCr agreed that, the three (3) lines of action were 96% fulfilled, with 86% of the target population reached. A 100% achievement was not possible because of the effects of changes in government and the COVID-19 pandemic elaborated earlier. The first line of action of the project with respect to indicators 1.1, 1.2, and 1.3 combined was 92.3% achieved as five (5) clones were received from EMBRAPA and established in Ghana and currently doing very well. Five (5) clones were selected from Ghana to be sent to Brazil, but this could not materialize because of the changes in Government in Brazil and EMBRAPA's internal processes. In addition, seven hectares (7 Ha) of scion banks had been established using the best clonal and polyclonal grafted materials in Ghana. The scion banks established would continue to provide high-quality scions for the production of grafted cashew seedlings in Ghana. Finally, 410,134 cashew grafts were produced and distributed to farmers in 17 districts of Ghana to establish at least 4,000 ha of new cashew farms.

Line of action 2, which focused on improving the efficiency and technologies of cashew by-product processing also had three indicators, 2.1, 2.2, and 2.3. Over 100% achievement was made as the mean score for the three indicators was 120%. Twenty (20) Experts and 200 Farmers (both from private and public sectors) had been trained in cashew apple processing with 42.5% of the trainees being women. Representatives from the Association of Cashew Processors, Ghana (ACPG), Natu Company Limited, and Winker Investment Limited also participated in the trainings.
A feasibility study and market analysis research were conducted to develop four (4) economically feasible business models for cashew apple processing in Ghana (two small- scale and two large-scale). Six analyzed and calculated business cases were shared with the cashew industry players. Discussions were held with some private companies on the linkage program (Blue Skies Ghana Ltd, Fan Milk Ghana Ltd, Pinora, OLAM Ghana Ltd). A medium scale project is yet to be implemented in Ghana involving OLAM Ghana Ltd, Fan Milk Ghana Ltd in collaboration with WIAD MoFA. The process started in 2021 where the Japanese Embassy in Ghana was approached for support for the procurement of processing equipment and glass bottling packaging. The Embassy requested for some documentation such as Food and Drugs Authority Certification, Environmental Permit, Bill of Laden for the equipment which the partners could not produce hence the process came to a standstill.

Line of action 3 which focused on the progress and outcome of the project by monitoring and evaluation was fully achieved. MoFA as a public sector institution steered

the management structure. Although the project management efficiency was not entirely efficient yet it was very inclusive with partners and stakeholders well represented at the steering committee meetings. The steering committee fulfilled its role with 200% achievement rate as they were supportive to address all the challenges arising during the project execution.

In terms of sustainability of the processes and results achieved, the project was considered highly sustainable in the long–term. Cashew productivity and production effects will continue to increase. Capacities of farmers, private cashew nursery operators, processors, researchers, and staff of MoFA have been strengthened and lasting expertise in the cashew value chain have been created in Ghana. The developed business models are expected to serve the industry players with anticipation that, new businesses in cashew apple processing would emerge in the short to long term. Knowledge and learning experiences gained by institutions and stakeholders through the TCr project will be transferred to the implementation of other projects. In the case of Ghana, the Ministry of Food and Agriculture has institutionalized the gains from the Triangular cooperation. The 5 acres of scion banks established in cashew-growing catchment areas in five regions of Ghana are still in use providing planting materials for farmers. MoFA is supporting the maintenance of the clones received from Brazil at the various trial locations through GoG support. The Women in Agriculture Directorate (WIAD) of MoFA is training women in cashew processing into several products such as juice, jam, biscuit etc. For example, WIAD trained the 2021 and 2022 batches of Miss Agriculture Ghana pageant contestants on cashew apple and by-product processing. The project results on cashew apple processing and by-product would be sustained and scaled up through new interventions not only on promotion of local consumption but also on processing cashew shells to extract CNSL and for the production of bio-energy. However, the sustainability of the small-scale cashew processor is threatened by limited financial resources for the procurement of needed processing equipment, storage facilities, etc by new entrants into the business.

The TCr projects resulted in the development of two training materials, printed, and published jointly by partners and these are valuable assets for the cashew sub-sector in Ghana for training cashew farmers and processors in the future. New triangular cooperation has been initiated between Brazil and Ghana on the exchange of agriculture inputs from Ghana under an umbrella of a regional project being implemented between the German government and the European Union. In 2020 after the TCr ended, Colombia, Ghana, and Germany initiated a Triangular Cooperation with EMBRAPA included. Ghana has made a request to Columbia on cashew development to sustain the gains from the TCr.

The immediate effect resulting from the TCr project intervention includes:
(I) capacities of farmers, private cashew nursery operators, processors, researchers, and MoFA staff have been strengthened with the required expertise for the Ghanaian

cashew industry.
(2) There is also a boost in cashew research in Ghana with respect to new technologies for cashew breeding and grafting using scion for improved and high-yielding cashew seedlings production.
(3) Farmers have readily available access to improved high-yielding planting materials for production.
(4) Ghana's cashew planting materials have increased through the clones received from Brazil.
(5) Total land area under cashew cultivation increased from 94,000 ha in the year 2017 to 212,400 ha in the year 2020.
(6) Cashew yield increased from 94,000 Mt in 2017 to 140,000 Mt in the year 2020. The gains from the project are still visible from 2020 to 2022. The land area under cashew cultivation increased to 234,171ha with a corresponding yield of 200,000 Mt in the year 2022.
(7) Volume of cashew exported from Ghana increased in 2017 to 2019 from 207,479 MT to 265,078 MT respectively. A reduction in the volume of cashew exported in 2020 to 251,615 MT was attributed to the COVID-19 pandemic.
(8) Value of cashew nuts exported in US$'000 also increased from the year 2017 to 2019 from 262,945 to 237,889 respectively. There was a reduction in the value of cashew exported in 2020 with a record of 217,766 due to the COVID-19 pandemic.
(9) Farmers, small, medium, and large-scale cashew apple processors have access to efficient technologies for processing. (10) Increased income of farmers, processors, and nursery operators has translated into improved household food and nutrition security.

Future anticipated impacts of the TCr intervention are:
(1) New processed cashew and by-products would emerge in the local and international markets.
(2) There will be continuous transfer of knowledge and skills obtained through the triangular cooperation to other farmers, processors, nursery operators and researchers
(3) New livelihood opportunities in the cashew sector would emerge to create employment for the youth such as pruners, sprayers, farm maintenance laborers, nursery grafters, and small-scale cashew processors.
(4) Ghana could build on the varieties received from Brazil to improve the sugar content of the cashew apples.
(5) After successful evaluation and conclusions made on the Brazilian clones, multiplication will be done and distributed to farmers. Thus, Ghana would increase its cashew varietal base. In addition, the clones could be further developed to get very excellent clones.
(6) The cashew processing business models that was shared with private business entrepreneurs would be taken up by small, medium, and large-scale processors to improve their businesses.
(7) Ghana could enter into trilateral Cooperation with other countries and share the

knowledge.

With respect to diversity, gender equality, intercultural, and other cross-cutting issues, the project took into consideration gender equality in the execution although human rights issues were absent. Targeting 50% cashew farmers was a challenge as men dominate in cashew production. However, the grafters and processors were mostly women (99%). During the learning exchange, diverse and inclusive participants comprising of men and women from Government, Research Institutions, and the private sector were involved in the learning exchanges abroad and tours. The project devised ways to address some of the religious and socio- cultural norms that had negative implications for the project. The environment within cashew farms are now clean as cashew apples are no longer left to waste on farms. Climate change mitigation have been achieved in the communities, thus improving the micro-climate in the cashew-growing areas in Ghana.

The added value of the TCr through its implementation are that: (i) The relations between Ghana, Brazil, and Germany have been strengthened. (ii) Ownership, co-responsibility, and trust among partners were achieved (iii) technical expertise and technological know-how of partners was valued in the cooperation modality (iv) Collaboration between partner institutions has been established (v) New triangular cooperation have been initiated with other countries (vi) Improvement in the project management capacities/ skills of staff who worked on the TCr project (vii) Alliances have been created (viii) Knowledge and learning experiences have been exchanged between Ghana, Brazil and German technical officials within the TCr framework.

Conclusions

The TCr project was very relevant to the three countries and further achieved the overall project outcome of improving the efficiency and quality of cashew production and processing for developing revenue streams for cashew sub-sector actors in the short, medium, and long terms. It was considered highly sustainable in the long–term as most of the processes have been institutionalized. Two key outstanding activities that the project could not complete were the inability of the five selected clones from Ghana to be sent to Brazil due to political changes in Brazil at the time and the inability of the cashew industry players to uptake the cashew business model by developing and marketing cashew products.

Recommendations

Based on the evaluation findings, the following recommendations among others are been proposed to the GIZ Triangular Cooperation Fund in Latin America and the Caribbean:

The TCr project effects have generated new needs for the requesting country which when addressed would further strengthen the cashew value chain development in Ghana. It is therefore recommended that a second phase of the project be designed to

address those critical needs and provide continuity of the initiative. In terms of the volume of funding and duration of the project, more funding should be committed to the project and the duration extended to five or six years considering that cashew is a tree crop and takes a longer time to develop.

In designing future projects, the risk analysis should include political factors, over use of water through irrigation, labour conditions and rights, and other unforeseen pandemics which could derail the smooth implementation of the project. The TCr partners should continue the dialogue with EMBRAPA to expedite action to ensure that the selected clones are sent to Brazil. Finally, for future TCr projects to include diversity, gender-transformative and inclusion approach in a more intense way, funds should be allotted for conducting a baseline study with an intersectionality perspective to inform the planning and design of future projects.

1. INTRODUCTION

Triangular Cooperation (TCr) is a development cooperation modality with antecedents dating back to the 1970s. It is a novel and constantly evolving mechanism that complements other traditional cooperation modalities such as multilateral and bilateral cooperation. "Triangular cooperation build bridges between North-South and South-South cooperation and are an instrument to establish strategic partnerships to jointly solve global challenges[1]. The evolution of TCr has been directly or indirectly influenced by a variety of events (world political and economic history, evolution of North-South cooperation, integration and association processes, creation of financing mechanisms, participation of the south in various international organizations, intraregional and interregional relations). Its principles include respect for sovereignty, non-interference in internal affairs and equality of rights. It is considered an instrument to promote the exchange of experiences between countries that share similar historical realities and challenges[2].

The Second United Nations High-Level Conference on South-South Cooperation (PABA+40, Buenos Aires, March 2019) highlighted the strategic importance of TCr in leveraging the complementarities, capacities, and strengths of the partners involved; mobilizing resources; promoting innovation in areas of cooperation that combine affordable solutions adapted to the respective contexts of intervention and; in forging partnerships aimed at implementing the 2030 Agenda. Its importance, potential and capacity to broaden the participation of the private sector, and other non-state actors (multi-stakeholder approach) that strengthens cooperation for development, and governance at different levels (local, regional and international) was also highlighted[3]. At the 20th session of the High- Level Committee on TCr in July 2021, it was emphasized that trilateral cooperation complements South-South cooperation and adds value to it by enabling developing countries, upon request, to access a greater quantity and variety of resources, expertise and capacities, which they deem necessary to achieve their national development objectives and the internationally agreed sustainable development goals[4]. The cashew project was selected for implementation based on a previous diagnosis and the needs of Ghana. The African Development Bank (AfDB), and the Government of Ghana (GoG) funded the first Cashew Development Project (CDP) in Ghana implemented by the Ministry of Food and Agriculture from 2002

[1] GIZ. Regional Fund for Triangular Cooperation in Latin America and the Caribbean. https://www.giz.de/en/worldwide/11821.html

[2] Ibero-American General Secretariat. Ibero-American Program for the Strengthening of South-South Cooperation. Towards 40 years of the Buenos Aires Plan of Action: Renewed Perspectives for South-South Cooperation in Ibero-America, 2017.

[3] Cortez A., M. and Flores, J. G., 2020, p.64.

[4] Report of the High-Level Committee on South-South Cooperation. https://www.unsouthsouth.org/wp-content/uploads/2021/08/20th-session-of-HLC-ES.pdf.

to 2010 which focused on improving production, processing and institutional support systems.[5] In 2009, GIZ Ghana commenced the GIZ/ComCashew project as a follow-up project of the Cashew Development Project implemented through MoFA with a focus on farmer training, technical assistance, and business development services to cashew actors. Due to the need for cashew research and development, and improved cashew planting materials (high-quality clones) that are most suitable for Ghana, the project idea was conceived for planning and development.

The selection of the cashew project was informed by the favorable harvest period of the crop in Ghana; its potential to generate significant employment in rural areas as well as export revenues from raw cashew nuts and kernel; its climate change and desertification mitigation properties, and the ability to improve rural livelihoods through income generation.[5]The project was designed to improve the efficiency and quality of cashew production and processing for developing revenue streams for cashew sector actors. Ghana like other African countries such as Benin, Nigeria, and Guinea- Bissau was experiencing raw cashew yield gap with a production level of a maximum of 700 kg/ha as of the year 2016, whereas Asia and Brazil had cashew yield levels of 1200kg/ha. This required assistance to address the issue so that farmers who had great potential could increase their productivity to close the yield gap and also provide raw materials to the local cashew apple processing industry which was still marginalized.

To increase cashew productivity, farmers must use improved cashew planting materials, employ good agronomic practices (GAP), harvest and post-harvest techniques. Again, the local cashew processors lacked modern processing technologies for cashew and its by-product. The demand for improved cashew planting material in the country's cashew-producing areas was very high[5]. The project was framed within the development priorities of Ghana and aligned with the National Gender Policy and seven priority areas of the Coordinated Economic and Social Development Programme (2017-2024) namely: Agricultural Transformation and Rural Development; Nutrition and Food Security; Gender Equality, Empowerment of Women and Girls; Employment and Decent Work; Climate Change mitigation; Advances and Opportunities in Science, Technology, and Innovation, Increasing Agriculture Yields, and Industrial transformation; and Agriculture and Rural Development.[6] The project further aligned to the following sector policies in Ghana; FASDEP II (2007); National Employment Policy (2014); Rural Development Policy; Ghana National Climate Change Policy (2013); National Science, Technology and Innovation Policy (2017); National Nutrition Policy (2017); National Gender Policy (2015) and; the Gender and Agricultural Development Strategy II (GADS II). The Tree Crops Policy/Strategy (2012) was designed

[5] TCr project proposal.

by MoFA to ensure sustainable development of the tree crops sub-sector in Ghana.

The Tree Crop Policy (TCP) is based on the Food and Agriculture Sector Development Policy II (FASDEP II), which takes into account the major strategic initiatives currently being implemented in Ghana. The project aimed at increasing the efficiency and quality of cashew production and processing to generate new income opportunities or revenue streams for cashew sector actors in Ghana. In this regard, the specific objectives of the project were to: (i) improve the quality of research in the development of cashew clones that are high yielding and tolerant to major diseases, and pests and also well adapted to local conditions; and (ii) improve the efficiency and technologies of cashew apple and by- product processing.

The project partners were the Ministry of Finance and Economic Planning (MoFEP), responsible for the coordination of all international cooperation[6]. The Ministry of Food and Agriculture (MOFA), and the Directorate of Crop Services (DCS) of the Ministry of Food and Agriculture served as the main counterpart for the project. In Brazil, the Brazilian Cooperation Agency (ABC), and the Brazilian Agricultural Research Cooperation (EMBRAPA). The German partners were GIZ Ghana, through the Competitive Cashew initiative (ComCashew), and GIZ Brazil through the Triangular Cooperation Program. The target population consisted mainly of men and women cashew farmers and those working in cashew by-product processing, cashew grafters in nurseries, as well as agricultural workers engaged in cashew nut collection for further processing. The partners showed high satisfaction in the way they worked together, trusting each other, owning the project, making use of their complementary strengths, learning, and co-creating of knowledge to ensure the sustainability of the networks and project results.

[6] The Coordinated Economic and Social Development Programme (2017-2024).

2. PRESENTATION OF THE PROJECT

2.1 Objectives

The project's general objective was to improve the efficiency and quality of cashew production and processing for developing revenue streams for cashew sector actors.

The specific objectives were: (i) To improve the quality of research in the development of cashew clones that are high yielding and tolerant to major diseases and pests and well adapted to local conditions. (ii)To improve the efficiency and technologies of cashew processing and by-product processing.

2.2 Indicators

The indicators of each of the project outputs are presented below:

Output 1: The framework for the delivery of cashew clones that are high-yielding and tolerant to major diseases and well adapted to local conditions is improved.

Indicator 1.1: 5 high-yielding and disease-tolerant/resistant cashew clones introduced and evaluated in Ghana by June 2019.

Indicator 1.2: 5 ha of scion gardens established in cashew-producing districts which would be used for the multiplication of improved cashew planting materials by June 2019.

Indicator 1.3: 300,000 successfully grafted cashew seedlings raised to be distributed to farmers by June 2019.

Output 2: The efficiency and technologies of cashew by-product processing are improved

Indicator 2.1: 2 cashew by-product processing technologies introduced to one (1) farmer group with at least 50% of farmers being women and one (1) private sector organization by June 2019.

Indicator 2.2: 2 viable business cases for cashew by-product processing developed based on I farmer group with at least 50% of farmers being women and 1 private sector organization by June 2019.

Indicator 2.3: Business linkages established with two (2) private sector organizations to develop and market cashew products by June 2019.

Output 3: The progress and outcome of the project are monitored and evaluated.

Indicator 3.1: The Project Management Structure is established and operational.

3. PROJECT'S CONTEXT BRIEF ANALYSIS

The project was designed when Ghana was implementing the Ghana Growth and Development Agenda II (2010-2013) as its development policy which recognized the promotion of non-traditional export products as a major source of revenue generation. In the design of the project, a baseline survey or gender and inclusion assessment were not conducted due to limited funds however, an exploration mission was undertaken to gather relevant information during the planning phase. The project was developed when Ghana was preparing for the 2016 presidential and parliamentary elections to put in place a new government. The project commenced at a time when there was a change in political leadership which necessitated the appointment of new sector Ministers including the Ministry of Food and Agriculture.

During the development of the project, Ghana had ten regions but in 2018, through a referendum, some regions were split to create a total of sixteen regions. Brong Ahafo Region which happens to be a predominantly cashew growing area in Ghana were split into Bono, Ahafo, and Bono East Regions. Finally, during the design of the project, no baseline survey or gender assessment in the project area was conducted to guide the planning and design of the project. However, during the project design, literature on gender issues along the cashew value chain in Ghana was used including the information gathered during the exploratory mission carried out by the project design team.

4. EVALUATION RESULTS

This section of the report presents the evaluation results based on the OECD DAC evaluation criteria, for the project and TCr modality dimensions and presented in the following order: Design relevance and quality; Internal and external consistency; Project effectiveness; Implementation efficiency; Effects achieved and foreseeable impacts; Sustainability of the processes and results; Value added; Gender approach and other transversal issues; and Assessment result ratings.

4.1 Design relevance and quality

The triangular cooperation modality was relevant for all three partners, Brazil, Ghana, and Germany. For Germany, the TCr project complemented the GIZ Ghana ComCashew initiative (Regional Project), and further contributed to the organization's core business of increasing the productivity of cashew production in Ghana and the processing of the apple and by-products including the provision of capacity building for cashew farmers. The project design was purposively and systematically designed based on identified needs of the receiving country. Thus the TCr was relevant as Ghana had limited experience in the processing of cashew apples. As such, cashew apples were abandoned and go wasted on farms whiles farmers concentrate on the sale of the nuts. Although Ghana had a huge potential market for cashew apples these challenges prevailed in the sector. In addition, farmers had no access to improved and high-yielding cashew planting materials and good management practices for cultivation, harvesting, and post-harvest handling of the cashew apple.

The TCr action provided a solution to these identified problems through the provision of high-yielding planting materials and also MoFA's capacity to produce improved cashew grafts was strengthened. With respect to good management practices to improve the farm environment, soil fertility and mitigate the impact of climate change, cashew farmers were trained on importance of intercropping cashew with other crops such as plantain, maize, groundnuts, yam, pepper etc; proper handling of agro-chemicals; row planting; mulching; irrigation methods; making of fire belt; cashew canopy pruning etc. The nursery operators were also trained on GAPs and how to conserve soil moisture using mulch and how to reduce the sun's intensity at the nursery through the use of shade nets.

The Brazilian Cooperation Agency's south-south cooperation policy is driven by the demands of partner countries, as such Brazil on the other hand was looking for a cooperation with African countries to share their tremendous experience in the cashew sector. They also sought to identify cashew planting materials that were resistant to diseases, anthracnose pests, and drought as they were challenged. Ghana however had clones with good characteristics as such, experts from Brazil also gained learning

experiences from Ghana. The idea for the project stems from previous experiences and established South- South cooperation. The African Development Bank (AfDB) and the Government of Ghana (GoG) funded the first Cashew Development Project (CDP) in Ghana which was implemented by the Ministry of Food and Agriculture from 2002 to 2010. It focused on improving cashew production, processing, and institutional support systems. In 2009, GIZ Ghana commenced the GIZ/ComCashew project as a follow–up project and worked through the MoFA on farmer training as well as technical assistance, business development services to cashew processors. The selection of the cashew project was informed by the favorable harvest period of the crop; its potential to generate significant employment in rural areas as well as export revenues from raw cashew nuts and kernel; its climate change and desertification properties and the ability to improve rural livelihoods through income generation. [7]

The project responded to a clear and proven specific need comprising of improved cashew planting material development and cashew processing technologies for processing cashew apple, kernel, and shell. Hence in 2016, the Ministry of Food and Agriculture submitted an official demand to the Brazilian Embassy in Ghana and articulated the joint proposal. The trilateral cooperation made it possible to initiate and implement the project otherwise the requesting institution, the Ministry of Food and Agriculture would not have the requisite financial resources to implement the project. The target project beneficiaries and stakeholders were well identified at the design stage and involved during the execution of the project.

During the project design associated risks and obstacles were defined and mitigation measures/ strategies documented. In the requesting country, there were relevant and suitable technical counterparts that considered the project's problems. Specifically, the project management committee (Joint committee and technical committee), Researchers from CRIG, Cashew Breeders and Propagators from the Agriculture Research Station, and the GIZ Ghana technical team. Brazil as a lead partner had long-standing cashew technological know-how and a huge comparative advantage of the cashew sector. EMBRAPA and ABC as institutions had the requisite expertise relevant for addressing the problem the TCr project addressed. GIZ's support strengthened the project and the dynamics of cooperation through its presence in Ghana and the fact that they were already working on a regional Cashew project, the ComCashew Initiative. Thus, the TCr complemented the Regional Initiative and the Government of Ghana's flagship Programme planting for Export and Rural Development (PERD) which contributed to the success of the project.

4.2 Internal and external consistency

The project developed a clear and coherent logical framework that served as a

[7] TCr Project Proposal.

monitoring system of performance with planned activities, outputs, indicators, risks, and accompanying mitigation strategies. The Triangular cooperation project contributed to the achievement of seven (7) sustainable development goals (SDGs) and directly to five targets. The main contribution is towards SDG2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture.

Specifically contributing to target 2(a) increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock genetic banks in order to enhance agricultural productive capacity in developing countries. There is also significant contribution to

- SDG 5: Achieve gender equality and empower all women and girls. With a focus on target 5(a) Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance, and natural resources, in accordance with national laws.
- SDG 8: Promote sustained, inclusive, and sustainable economic growth, productive employment and decent work for all with emphasis on target 8.2. Achieve higher levels of economic productivity through diversification, technological upgrading, and innovation, including a focus on high-value added and labour-intensive sectors.
- SDG 12: Ensure sustainable consumption and production patterns, with focus on target 12(a). Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production; and
- SDG 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development. With focus on target 17.6, Enhance North-South, South-South, and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, at the United Nations level, and through a global technology facilitation mechanism.[8]

The TCr project was consistent and contributed to the achievement of agriculture development initiative in Africa through the Comprehensive Africa Agriculture Development Program (CAADP) of the New Partnership for Africa's Development (NEPAD) and the Framework for African Agriculture Productivity (FAAP).[9] The TCr project had high relevance to the Coordinated Programme of Economic and Social

[8] United Nations. The 2030 Agenda and Sustainable Development Goals: An opportunity for Latin America and the Caribbean 9LC/G.2681-P/Rev.3.), Santiago, 2018.

[9] TCr Project Proposal.

Development Policies (2017 – 2024) with a direct contribution to the following priority areas: 2.2.8, 2.2.8 Agricultural Transformation and Rural Development specifically to 2.2.8.1 on Production Efficiency: Improving farmer access to production inputs, including planting materials and access to extension services. It further contributes to priority area 2.3.3 on Nutrition and Food Security; priority area 2.3.7 Gender Equality, Empowerment of Women and Girls, which requires all ministries, departments, and agencies to mainstream gender issues in their sector plans, programs, and projects; Priority area 2.3.12 Employment and Decent Work; Priority area 2.4.7 Climate Change mitigation.

Priority area 3.2.6 Advances and Opportunities in Science, Technology, and Innovation Increasing agriculture yields. Priority area 4.2.4 Industrial transformation with specific reference to (ii) Raw Materials for Industry: The production and supply of quality raw materials. For agro-processing, a program of support will be introduced for the cultivation of selected agricultural products as raw materials (including cashew). With respect to priority area 4.2.8 Agriculture and Rural Development the focus is on (i) marketing; (iii) production efficiency(iv) post-harvest management; and for priority area 4.4.19 Rural Development the focus is on promoting agricultural production and agro-processing, rural enterprise development.[10] Again, the TCr project was relevant for MoFAs Sector policy the Cashew Sector Strategy, which is the Ministry of Food and Agriculture (MoFA's) plan to boost production 65,000MT to 150,000 MT per year by planting 1 million improved cashew seedlings every year over the next 5 years.[11] Finally the project activities complied with the Ghana government flagship program on "Planting for Export and Rural Development (PERD).

There was coherent institutional and operational coordination between the project managers and the institutions in charge of the strategy. There were interactions with Regional Coordinating Councils in the project area, and community leaders when necessary. Adjustments were made to some activities to enable implementation during the COVID-19 pandemic era.

4.3 Project Effectiveness

The interviews verified that, the project was efficiently implemented in achieving the expected results within the duration through efficient use of resources, whiles relying on the previous experience of the stakeholders, in addition to the high-level commitment among partners throughout the project lifespan. The roles, competencies, and functions of the different governance bodies of the different projects were efficiently defined. A governance structure was put in place to coordinate the project and administer its results. There was a coherent institutional and operational coordination at three levels in place during the project implementation which ensured multi-level

[10] Coordinated Programme of Economic and Social Development Policies.

[11] Tree Crop Policy, Ministry of Food and Agriculture (2012).

process of dissemination of information, formation of capabilities, and structuring of interactions based on institutional arrangements. The day-to-day implementation of the project activities was coordinated by MoFA. A Joint Coordination Committee (JCC) for strategic directing; a management unit as a coordinating function; and an execution unit for the on-ground implementation of project activities were in place.

The committees and units were managed and spearheaded by MoFA and served as platforms for exchanges of mutual learning, experience sharing, updating partners on processes, and reviewing of project activities. Overall, the management was good as there were mutual trust and transparency.

The project proposal had a monitoring and evaluation framework which served as a reference for the monitoring the progress of the project at the outcome and output levels. The joint coordination committee met annually and was responsible for monitoring the project indicators, target results, access the achievements and challenges faced and propose adjustment to the strategy where necessary. This was done with all project partners present with the participation of external specialized institutions such as CRIG, African Cashew Alliance (ACA), Pinora, and the Association of Cashew Processors in Ghana (ACP). The stakeholders contributed their time, knowledge, expertise, and logistics in terms of communication with project management, vehicles for use when invited for meetings. On the part of the cashew farmer cooperatives, some provided land in their communities for conducting demonstrations on GAPs.

Ghana's project provides a south-south experience of an intercontinental nature (Latin America-Africa) and also a transcontinental TCr project (Brazil-Ghana-Germany). The geographical distance did not pose any challenges during the implementation of the project because of the availability of technology. Communications or meetings were mostly held virtually via zoom, skype or WhatsApp etc., although sometimes internet connectivity disruptions posed challenges. Differences in time zones were managed by scheduling meeting at a time every participant was available within working hours. The language barrier was a challenge because some of the EMBRAPA technical experts could not speak English, so translators were used during meetings to bridge the communication gap. The cultures of the countries involved in the TCr project did not pose any challenges. Some of the stakeholders who traveled to Brazil reported that the reception and the food served were good. In addition, the stakeholders were able to understand and respect each other culture thus improving their intercultural competences and acceptance. The institutional framework within the countries was generally good such that sometimes the procedures were slow, yet the project results were achieved.

The intercontinental nature of the TCr project was not complicated in terms of implementation however, Brazil's country regulations for transporting plant material from Ghana to Brazil were very complicated and this delayed the process of

transporting the five selected clones from Ghana to Brazil before the project ended. Comparatively, the gains from the exchange visits between Brazil and Ghana were more costly (had value) than the travel cost paid for the exchange visits during implementation.

4.4 Implementation Efficiency

The TCr project achieved the defined objectives of (i)improving the quality of research in the development of cashew clones that are high yielding and tolerant to major diseases and pests as well as adapted to local conditions. (ii) improving the efficiency and technologies of cashew processing and by-product processing. It also met the performance indicators set in the project proposal. This section of the report provides details of the level of achievement of each line of action and specific indicators.

Line of Action 1: The framework for the delivery of cashew clones that are high-yielding and tolerant to major diseases and well adapted to local conditions is improved.

For indicator Indicator 1.1, a 100% achievement was made as five (5) clones were received from EMBRAPA and established in Ghana which is doing very well. The CRIG Research Team are monitoring the clones and evaluating their performance at the Research Stations under the DCS of MoFA. After the evaluation and conclusion in 2024 for trials at the Bole station and in 2027 at the other locations, the team will proceed with the crossing of the clones to develop hybrids (multiplied). Five (5) clones were selected to be sent to Brazil, but this could not materialize because of change of Government in Brazil and EMBRAPA's internal processes.

In addition, the achievement of Indicator 1.2 exceeded the planned and recorded 140% achievement rate as 7 Ha of scion banks had been established using the best clonal and polyclonal grafted materials in Ghana. The scion banks are being maintained and would continue to provide high-quality scions for grafted seedling production in Ghana. Finally, with respect to indicator 1.3, a 137% achievement was also made as 410,134 cashew grafts were produced and distributed to farmers in 17 districts of Ghana to establish at least 4,000 ha of new cashew farms.

Line of Action 2: The efficiency and technologies of cashew by-product processing are improved.

An 80% achievement was made for indicator 2.1. Twenty (20) experts and 200 farmers (both from private and public sectors) have been trained in apple processing with 42.5% of the trainees being women. Representatives from the Association of Cashew Processors, Ghana (ACPG), Natu Company Limited, and Winker Investment Ltd

participated in the training. In addition, in compliance with indicator 2.2, the project recorded 200% achievement, as a feasibility study and market analysis research were conducted to develop 4 economically feasible business models for cashew apple processing in Ghana (two small scale and two large scales). Six analyzed and calculated business cases were shared with the cashew industry players during a side event at ACA 2020 Annual conference in September 2020. More than 50 persons from at least 6 countries participated in the online seminar. However, indicator 2.3 was not fully achieved as an achievement rate of 90% was observed. Discussions were held with some private companies on the linkage program with Blue Skies Ghana Ltd, Fan Milk Ghana Ltd, Pinora, OLAM Ghana Ltd. Successful business models from the study were shared with these companies. Medium-scale projects are yet to be implemented in Ghana involving OLAM Ghana Ltd, Fan Milk Ghana Ltd, and WIAD MoFA.

Line of Action 3: The progress and outcome of the project are monitored and evaluated.

Indicator 3.1was the project management structure is established and operational.
MoFA as a public sector institution steered the management structure. Although the project management efficiency was not entirely very efficient, yet it was very inclusive with partners and stakeholders well represented at the steering committee meetings. The Brazil and German Embassies in Ghana also participated in the meetings. The Steering committee fulfilled its role at a 200% achievement rate as they were supportive to address all challenges faced during the project execution. The level of coordination was good and the project challenges were discussed with partners and stakeholders and solutions were found to address a specific challenge.

In summary, 96% of the lines of action of the project were fulfilled and highly successful, with 86% of the target population being reached through the intervention. Although adequate risk management was made for the mitigation of obstacles in the project execution, only two indicators were not fully achieved. Challenges faced during the implementation of the project included the following:

- Administrative and coordination challenges caused the delay in the kick-off of the project which resulted in the cost-neutral extension of the project beyond the originally planned implementation period. This was mainly through changes in the governments of Ghana and Brazil at the time the project commenced. The Ghanaian and Brazilian administrative procedures were bureaucratic and sometimes caused delays in processes, however, the cooperation was successful.
- The COVID-19 crisis also affected the project activities implementation. For example, a cashew apple fair was expected to happen in the framework of project indicators 2.1 and 2.3 but this could not happen due to travel restrictions. Rather a virtual event had to be put in place. In addition, virtual meetings were held instead of in-person meetings. Sometimes the internet connectivity was poor thereby interrupting the meetings. The annual joint meeting was also not

organized at the right time.

- Transferring selected clones from Ghana to Brazil was not easy and there were delays because of the regulatory procedures on the part of Brazil to go through before it was approved. This emanated from the political change in Brazil at the time of which the Trilateral Cooperation was not the ruling Government's focus. This had repercussions for EMBRAPA's internal processes and permission to transport the selected five clones to Brazil was a challenge. To date, the five selected clones have not been sent. The Directorate of Crop Services would send the clones as soon as EMBRAPA is ready with the arrangement.
- Limited volume of funds for the project implementation.
- The team from Brazil did not participate in the project in person throughout the life of the project unlike the GIZ team and this was also not very good.
- The language barrier was a challenge, as some EMBRAPA technical team could not speak English whiles the Ghanaian team also could not speak Portuguese. Thus, direct communication between the team posed a significant challenge as in most cases translators were used.
- The two years duration for the project implementation was too short to make an impact hence the extension of the project.
- Due to the many artisanal processors registering for the cashew apple processing training, the allocated funds for the training were inadequate. Efforts were made to allow all registered individuals to participate in the training program.
- Some of the participating institutions had constraints. For example, CRIG had challenges with logistics such as the unavailability of sensors for collecting plant growth data and vehicles for field visits as the project did not budget for these.

The TCr made efficient use of human, financial and technological know-how of partners during the cooperation. All the three partners had limited staff working on the project, however, due to their dedication during implementation the impact made was huge. Difficulties encountered were discussed at the steering committee level and solutions were sought to address them. Cost reduction and innovative coordination strategies were employed through the use of skype, Microsoft teams for meetings, and technical discussions/exchanges. Any requests made for the implementation of project activities were released. With respect to the technological transfer of plant material from Brazil to Ghana, the TCr committee worked efficiently by going through all the required quarantine processes to ensure they were disease and pest free before field trials commenced. Deadlines for submission of reports to project management were respected by all actors. The project complied with the financial and administrative requirements of GIZ. Late release of funds from GIZ resulting from their slow administrative processes also sometimes posed a challenge. All partners exerted ownership by contributing resources to the project which was a successful way of ensuring ownership and co-responsibility.

The funds contributed by partners were exactly as planned and no other unplanned costs were incurred. The estimated budget for the project was 700,000 EUR according to the following contributions:

4.5 The south provider contributed 300,000 euros, including in-kind contributions and knowledge sharing by EMBRAPA and the financial budget provided by ABC to finance costs resulting from the allocation of the permanent staff of EMBRAPA for the development and implementation of activities, planning, monitoring, and technical training in the areas of its mandate as well as technical advisory services in the short term in Ghana and Brazil, including travel (per diem and logistics). (ii)Estimated German contribution was 300,000 EUR mostly through technical advice of experts from GIZ, external consultants, and researchers of existing ComCashew Partners Institutions. (iii)Estimated contribution of the beneficiary country, Ghana was 100,000 EUR, mostly in-kind contributions to the implementation of the project in the form of 50% of salaries of technical staff, the Director of Crop Services, Accountant, Internal Auditor, and the Cashew Desk Officer and some collaborating Research Scientists. Provision of logistics such as vehicles, electricity, some office equipment, and consumables for the implementation of the project.

EMBRAPA and ABC provided additional resources in terms of literature documents for review by partners to develop a manual for cashew apple processing, harvesting and post-harvest management of cashew apples. It is noteworthy that, individual staff from the TCr partner institutions who worked on the project had new skills in the project management of the TCr project. GIZ had its own reporting style which was different from MoFA in terms of financial reporting, procurement, etc. which staff have been exposed to. The project stakeholders valued the long-standing know-how of the Brazilian team as they had a huge comparative advantage with respect to cashew apple production and processing including its by-products. Embrapa, GIZ, and ABC, MoFA (DCS) also had an excellent team. The scientist from CRIG and Embrapa were readily available to support with their expertise.

4.6 Effects Achieved and Foreseeable Impacts

The immediate effect resulting from the TCr project intervention are that the capacities of farmers, private cashew nursery operators, processors, researchers, and MoFA staff have been strengthened with the required expertise for the Ghanaian cashew industry. There is also a boost in cashew research in Ghana with respect to new technologies for cashew breeding and grafting using scion for improved and high-yielding cashew seedlings production. As a result, MoFA is capable to multiply its production capacity of improved cashew grafts, and cashew farmers have readily available access to improved high-yielding planting materials for production. The clones received from Brazil have increased the cashew material pool in Ghana. These germplasm materials are undergoing trials at four MoFA Research Stations in Wenchi, Dawadawa, Kintampo, and Bole. Some of the cashew Breeders at the CRIG Bole sub-station have

utilized the Brazil clones as parent material to cross some of the existing Ghanaian cashew varieties to improve their qualities. Cashew farmers are using their knowledge and skills in good agricultural practices (GAP), harvest, and post-harvest handling of cashew apples and nuts. Private nursery operators have access to scion bank where they harvest scions for grafting improved cashew seedlings.

A private cashew nursery operator in Wenchi, Bono Region, Henry 86 Enterprise Cashew Seedling Nursery during an interview with him expressed that, through the technical training received from the TCr project in the area of grafting techniques and selection of good scion for raising seedlings and nursery management, grafting success have improved from 40-50% to 80%-100%. In addition, seedlings production had increased from 15,000 to 200,000 seedlings per annum. After the training, he has also trained ten women grafters.

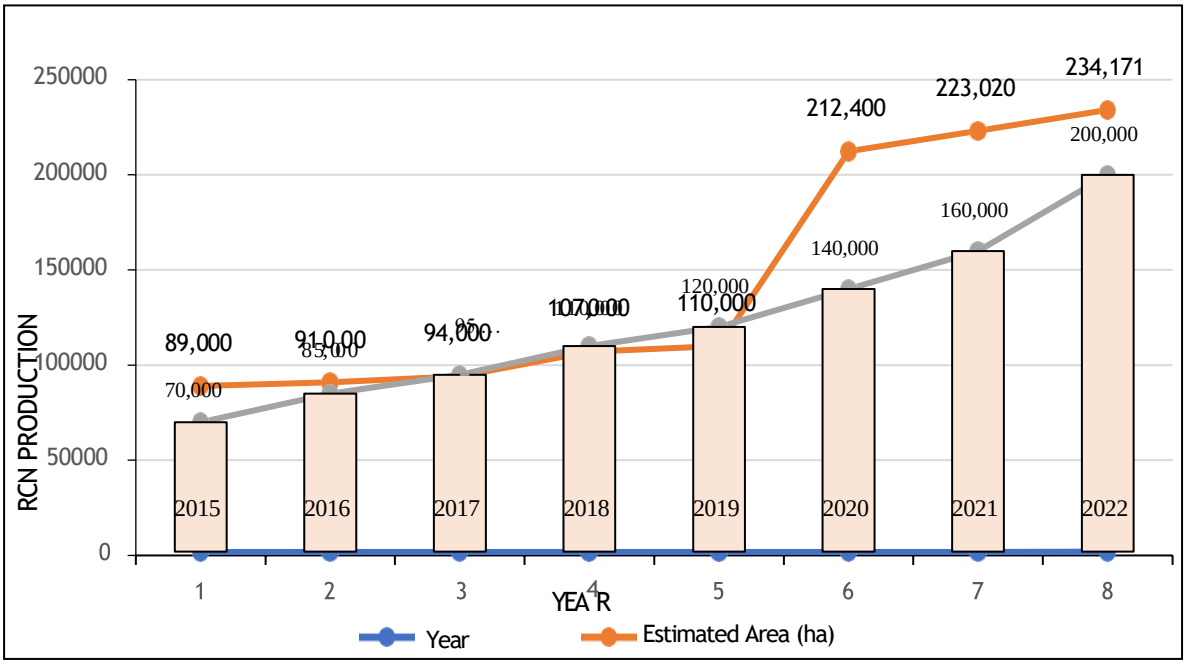
Although the project proposal did not include risk associated with over use of water through irrigation, labour conditions and rights yet, during the project implementation efforts were made to curb the potential negative impacts. Labour conditions and rights within the project was well managed. A standard way of engaging labour at the research stations were employed where the conditions of the job and wages were spelt out to the laborers before their engagement. Laborers were hired for grafting, weeding, and watering purposes to support with nursery management. They were paid daily wages commensurate to the work done per day. For example, grafters were paid based on the number of successful grafts.

During interviews conducted with some nursery operators, they reported that the good agricultural practices they acquired through the project includes water conservation practices such as how to irrigate their seedlings during the dry season and maintain soil moisture through mulching or use of shade nets which is capable of reducing the sun's intensity by 60%.

Interactions with some cashew producers and nursery operators at Wenchi, revealed that, access to labor to support with farm operations was not a challenge as labor were available throughout the year. The ability of a farmer to pay the prevailing daily labor rate guarantees access. On the other hand, grafters were scarce during the peak season as such paying higher wages than the prevailing labor rate was the strategy adopted by most nursery operators to assure access to labor.

The total land area under cashew cultivation nationally has increased and yields improved considerably from 2017 when the TCr commenced to 2022 as shown in Figure 1 below. Thus the area under cultivation increased from 94,000 ha in the year 2017 to 212,400 ha in the year 2020. There was however a sharp rise in the land area under cultivation from the year 2019 to 2022. This effect was attributed to the TCr project implemented in Ghana. The same holds for cashew nut yields.

Fig. 1: Estimated cashew production data from 2015 to 2022



Source: MoFA-DCS, 2022

The application of GAPs by cashew farmers translated into increases in yield. There was a steady rise from 94,000 Mt in 2017 to 140,000 Mt in the year 2020 when the project ended. The gains from the project were still evident from 2020 to 2022. The land area under cashew cultivation increased to 234,171ha with a corresponding yield of 200,000 Mt in the year 2022. Cashew nuts are one of the non-traditional export commodities in Ghana. The TCr project impact was observed with evidence of increases in the volume and value of cashew nuts exported from Ghana between the periods of 2017 to 2019. Table 2 below provides information on the volume and value of cashew nuts exported from Ghana for the period under discussion. During the TCr project implementation, the volume of cashew nuts exported increased from 207,479 MT in 2017 to 265,078 MT in 2019. Increases in the value (US$'000) of cashew nuts exported were observed from 262,945 in 2017 to 237,889 in 2019. As a result of the COVID-19 pandemic, both the volume and value of cashew nuts exported reduced in the year 2020 with 251,615 MT and 217,766 (US$'000) recorded respectively. Thus, Ghana had a reduction in cashew export revenue as a result of the pandemic.

Table 2: Volume and Value of Cashew Nuts Exported from Ghana.

Cashew nuts exported	2016	2017	2018	2019	2020	% change 2019/20
Volume (MT)	231,555	207,479	259,432	265,078	251,615	-134.63
Value (US$'000)	196,784	262,945	378,210	237,889	217,766	-8.46

Source: SRID, MoFA, 2021.

Before the implementation of the TCr project, cashew apple processing, and by- product processing was uncommon in Ghana. Through the intervention, farmers, and small, medium and large-scale fruit processors have access to efficient technologies for processing. Women are mostly engaged in small-scale apple processing for home consumption and for sale to community schools. After processing the cashew juice, the chaff is used as feed for pigs in some communities. In the short to medium term, new businesses in cashew apple processing are expected to emerge.

Cashew cultivation in Ghana is mostly concentrated in Bono East, Bono, Savanna, Ashanti, Volta, Oti, Northern, and Upper West Regions of Ghana. Food security studies conducted in Ghana and elsewhere such as CFSVA, 2020[12] , EFSA, 2016[13], Nyamekye, H. (2015)[14], have shown that, increased yield of farmers translates into increased income and this has implications for improved food security at the household, community and national levels. Thus, individuals with adequate financial resources (entitlements) can acquire appropriate foods for a nutritious diet. It is expected that income obtained from increased cashew yields and other cashew-related livelihoods would be spent on food and diversification of diets in the TCr project areas. Interacting with Nyame Bekyere Farmers Association at Ayibe community, Wenchi during a focus group discussion the group reported the following:

The women who participated in the focus group discussions reported that the TCr project supplied them with subsidized cashew seedlings thus empowering them to venture into cashew production. Again, through the awareness created on the uses of the cashew apple, picking cashew apples for sale has been a livelihood activity for the women, and youth (boys and girls) in the community for extra income. The extra income obtained from the sale of the apples were used for buying foodstuff thus diversifying their meals and improving their household food security levels. The incomes obtained were also used to pay children's school fees, buy shoes and clothing for their children. The apples were also processed into juice at home for consumption. Some of these artisanal processors are producing for sale to schools and the demand is very high. This has generated peace within families and reduced spousal conflicts. Thus, the TCr project empowered the men, women, and youth in communities within the project area through job creation and income generation.

[12] Comprehensive Food Security and Vulnerability Analysis, Ghana (2020).

[13] Emergency Food Security and Market Assessment, Ghana (2016).

[14] Nyamekye Hannah (2015). Doctoral thesis "Access to Agriculture Production Resources on the Household Food Security of Smallholder Maize Farmers in the Offinso North and Techiman Municipality of Ghana.

The solution implemented within the framework of the project has been institutionalized within MoFA, CRIG, small and medium processing firms, private nursery businesses etc. The scion bank established at MoFA Agriculture Research Stations, continues to serve private nursery operators and farmers with scions for grafting improved cashew seedlings. The infrastructure is used as a training ground for students, industry players, agriculture extension agents (AEAs) and farmers.

The TCr generated diverse institutional partnerships comprising of several state and non-state partners, including research institutes, co-operatives, civil society organizations, the private sector, Department of Agriculture within municipalities and Districts where cashew are under cultivation. The expected future impact of the TCr project is that new processed cashew products would emerge in the local market. Large and medium-scale processors who obtain ISO certification could enter the regional markets with their products. There will be a continuous transfer of knowledge and skills to farmers and processors in the country. New livelihood opportunities in the cashew sector would emerge to create employment for the youth such as pruners, sprayers, farm maintenance labourers, nursery grafters, and small-scale cashew processors. The cashew varieties released to farmers under the TCr project have low sugar content but high canning characteristics. In the future, Ghana could build on the varieties received from Brazil to improve the sugar content of cashew apples to increase its suitability for apple juice processing.

It is expected that after successful evaluation and conclusions made on the Brazilian clones, they would be multiplied and distributed to farmers and Ghana would increase its cashew varietal base. In addition, the clones could be further developed to get very excellent clones for Ghana. The business model that was shared with private business entrepreneurs would be taken up by small, medium, and large-scale processors to improve their businesses. Finally, Ghana could enter trilateral cooperation with other countries and share their knowledge and exchanges with them. The TCr project through its sensitization efforts has been able to quell the myth surrounding the intake of cashew juice in the cashew growing areas in Ghana. The only reported negative impact were that some individuals who received training in cashew apple processing had not commenced processing activities because of a lack of funds to acquire the required equipment and materials, storage facilities etc.

4.6 Sustainability of processes and results achieved

The project was considered highly sustainable in the long term. Economically, productivity would continue to increase. The capacities of institutions and project beneficiaries have been strengthened with lasting expertise for the cashew sub-sector. The developed business models are expected to serve the industry players with the anticipation that, new businesses in cashew apple processing would emerge in the long term. These models would be used based on their resources. Knowledge acquired

through the implementation of the TCr project is being utilized in the implementation of the ComCashew Regional project by the GIZ team. For example, the business models developed from the TCr have been shared with some processing/companies in Nigeria. Cashew apple and by- product processing would be scaled up to include the processing of cashew shells for the extraction of cashew nutshell liquid (CNSL) and to produce bioenergy.

The Ministry of Food and Agriculture has institutionalized the gains from the Triangular cooperation. The 5 acres of scion banks established in cashew- growing catchment areas in five regions of Ghana (Volta, Ashanti, Brong Ahafo and Upper West Regions) are still in use providing planting materials for farmers. MoFA is supporting the maintenance of the clones received from Brazil at the various trial locations through GoG support. The infrastructure is used to train farmers, students, extension agents etc. The cashew breeding trails resulting from the TCr have been absorbed into CRIG's breeding program for the next five years with funding from Cocoa Board and through the Government of Ghana's annual budget to the institution. TCr projects resulted in the development of two training materials, and this would be a valuable asset for the cashew sub-sector in Ghana for training cashew farmers and processors in the future. The Women in Agriculture Directorate of the Ministry of Food and Agriculture as part of their mandate are still training women groups in the processing of cashew apples into several products.

The nursery operators trained by the project were put into groups and supported to register their association at the Registrar Generals Department and Department of Cooperative. After the project ended, the private cashew nursery operators continue to supply farmers with improved cashew seedlings with request from individual farmers, NGOs and under the Government of Ghana PERD program.

Cashew farmers are imparting the training received to their children. Some cooperatives are also using community radio centers to educate other farmers on good agriculture practices for cashew production, harvesting of the apple, and post-harvest handling. Some private cashew nursery operators are also training women and the youth in cashew grafting techniques. After the end of the project, GIZ is supporting some small and medium scale cashew apple processors such as NATU and CEESASH with registration and certification at Food and Drug Authority (FDA). However, the sustainability of the small-scale cashew processor is threatened by limited financial resources for constructing descent processing infrastructure, procurement of needed processing equipment, storage facilities, freezers, etc by new entrants into the business.

4.7 Value Added

The triangular cooperation allowed for better harnessing and improvement in the learning processes and knowledge sharing among all the three partner countries. It has strengthened the ties between Ghana, Brazil, and Germany and among the partner institutions. Through the TCr project, Ghana's diplomatic relationship with Brazil and Germany has improved considerably. The project provided opportunity for the Ministers of Agriculture in Ghana, Brazil, and Germany, including the High Commissioners of the various Embassies to engage in meetings which provided opportunity to deliberate on other areas of collaboration. On the technical level, new triangular cooperation projects have been initiated with Brazil on other commodities and also research collaboration between EMBRAPA and CRIG are ongoing. Other GIZ projects are also interested in forging similar trilateral cooperation with Brazil. The German experts who worked on the project have built confidence in Ghana and keeps recommending Ghanaian experts to work on German funded projects in other countries. MoFA DCS connections with EMBRAPA and ABC have improved through the TCr. All partners exerted ownership by contributing resources and demonstrating co-responsibility leading to building up trust among the partners. A multi-stakeholder approach was employed during implementation of the project where partnerships were forged, and each actor brought on board their technical expertise to complement each other. Some partners not included during the project designed were brought on board during the implementation phase.

The Brazil partner institutions provided additional resources in the form of literature on cashew production and processing which were used to gather information to develop two training manuals for training cashew farmers and processors. Technical capacities of staff who worked on the TCr from partner institutions had improved in the area of project management. The TCr project implementation was timely and complemented the ComCashew initiative being implemented by the facilitating partner GIZ Ghana and the PERD program being implemented by the Government of Ghana. The beneficiary country had institutionalized the gains from the technical cooperation to ensure its sustainability in the long term.

New triangular cooperation is being initiated for Brazil to exchange inputs from Ghana under an umbrella of a regional project being implemented between the German government and the European Union. MoFA, EMBRAPA, and ABC have commenced the initial discussion and GIZ is yet to be approached for discussion after finalization. Ghana has made a request to Columbia on cashew development to sustain the gains from the TCr. In 2020 after the TCr ended, Colombia, Ghana, and Germany initiated a triangular cooperation of which EMBRAPA later joined. However, because of COVID-19, the process started with virtual exchanges until the COVID-19 restrictions were relaxed. GIZ through its TONINA Project in Columbia and the Regional ComCashew Initiative supported selected officials from the Government, the Ministry of Food and Agriculture, and CRIG to embark on a learning exchange in Columbia. The selected team on the Columbia side also visited Ghana for a similar learning exchange program. The exchange focuses on obtaining drought-resistant material. Other GIZ projects and national partners in West Africa are also interested in the trilateral cooperation setup.

CRIG and EMBRAPA are also collaborating in other research areas. Other GIZ projects in Ghana and national partners in West Africa are also interested in the trilateral cooperation set up to explore opportunities and if possible, conclude an agreement with EMBRAPA. MoFA and EMBRAPA are eager to continue their collaboration on cashew research and extent it to other crops. Through the TCr project, the Cashew Processors Association Ghana and Cashew Seedlings Producers Association have been formed and supported to officially register. Finally, the TCr project had contributed to achieving seven SDGs, two Agriculture development initiative in Africa, two (2) Ghana national policies, and nine (9) sector policies in Ghana.

4.8 Gender Approach and Other Transversal Issues

A baseline survey or a gender assessment was not conducted to inform the project design and as a basis for evaluation, however, an exploratory mission to the project area was undertaken by TCr project design team from GIZ, EMBRAPA and MoFA to gather information. The project proposal included a gender perspective checklist which justified efforts to be undertaken to ensure gender equality is integrated in the project implementation. Specific activities that targeted women were equal participation of women in project activities; capacity building and training for female cashew grafters; capacity building and training for women to work in cashew by-product processing and capacity building and training for women working on cashew farms on harvesting and post-harvest handling of cashew apples. The check list was not adequate as issues on human rights, socio-cultural and religious norms with implications for the project were missing. In terms of inclusivity and "leaving no one behind" approach, other vulnerable groups such as the youth, migrants, PLWD, aged and other relevant intersects were not considered. With respect to the indicators, specific quantitative and qualitative gender and inclusion indicators were not included for monitoring and reporting purposes.

The project achieved gender participation in the execution, at least targeting 50% of women cashew farmers was a challenge as men dominate in cashew production. However, the grafters and processors were mostly women (99%). Through the awareness created by the TCr project at the beginning of the project and the supply of subsidized improved cashew seedlings, more women have commenced cashew cultivation. With respect to the learning exchange, the inclusion of diverse participants comprising men and women from Government, Research Institutions and the private sector were involved in the learning exchanges abroad and learning tours. The project devised ways to address some of the religious and socio-cultural norms that had negative implications for the project implementation. For example, project beneficiaries with different cultures and religions were involved in the project. Again, in some farming communities where the socio-cultural norms do not allow women to speak during gatherings with men, efforts were made to encourage women to share their views during training programs. Sensitization were made on the socio-cultural myth prevailing in some communities about the consumption of cashew apple juice. The environment within cashew farms is now clean as cashew apples are no longer left to waste on farms. Climate change mitigation has been achieved in cashew growing communities thus improving the microclimate in these areas.

4.9 Triangular cooperation

The triangular cooperation was relevant for all the three countries involved as mobilization of technical expertise, financial resources and technological know-how were utilized to address a social problem. Without the TCr, the beneficiary country could not have mobilized the required volume of funding and resources to implement the Project. The triangular cooperation strategy employed contributed to the achievement of the purpose of the project. The management structure put in place had all the expertise, but the bureaucratic nature of public institutions sometimes slowed procedures. There was efficient use of human, financial and technological know-how by the partners during the cooperation implementation. All three partners had limited staff working on the project, however, due to their dedication during implementation the impact made was huge. Overall, the management was effective and good as there were mutual trust, transparency, and commitment among the partners.

The TCr contributed to SDG 7, 2, 5, 8, 12, and 17 and the regional CAADP and FAAP Initiatives. At the national level, it contributed to the Coordinated Program of Economic and Social Development Policies (2017 – 2024) with a direct contribution to the 7 priority areas, and the National gender policies including 9 sector policies. The TCr achieved its purpose of exchange of knowledge and experience sharing in administrative and technical areas, including technologies in the cashew sub-sector. Intercultural relationships and alliances have been built and ties between partner countries strengthened. Leveraging of resources to solve a developmental problem was possible

through cooperation and finally, cross-cutting issues such as gender, and climate change mitigation were all evident through the triangular cooperation implementation.

4.10 Assessment result rating

The overall rating of the evaluation result and brief remarks are presented in table 3 below.

Table 3: Evaluation result score

Reference to aspects of	Evaluation Criteria	Qualifications	Observations
Project	Thematic ***relevance*** and quality of Project Design	14 very successful	The project was very relevant to the target beneficiaries in the recipient country and addressed agricultural development challenges in Ghana's tree- crop cashew sub-sector. It had high relevance to the facilitating partner country as the TCr project complemented the ComCashew initiative being implemented in the country. For Brazil, it was relevant with respect to policies on collaboration with African countries. There were limitations with the project design as a baseline survey was not conducted nor a gender analysis conducted. The design complied with the GIZ project template gender and inclusion check list but was not adequate. Intercultural and human rights issues compliance were silent in the project design but during implementation, these issues including socio- cultural norms were perfectly addressed.
Triangular cooperation	***Relevance*** for triangular cooperation	15 very successful	The triangular cooperation was relevant for all three partners. There was a good fit with the choice of partners and stakeholders brought on board during the implementation of the cooperation. Knowledge and joint learning experiences were achieved in a sustainable manner.

Project	***Coherence*** of the intervention logic	13 successful	Although the internal logic of the project was clear and the indicators SMART yet, specific gender and inclusion indicators comprising of quantitative and qualitative dimensions were missing in the logical framework. The risk analysis was not adequate as political issues, over use of water by irrigation, labour conditions and rights, and unforeseen pandemics were not taken into consideration.
Triangular cooperation	***Coherence of*** the project with respect to TCr objectives and strategy	14 very successful	The triangular cooperation strategy employed contributed to the achievement of the purpose of the project. The project was consistent with SDG 7, 2, 5, 8, 12, and 17 and the regional CAADP and FAAP Initiatives. At the national level, it contributed to the Coordinated Programme of Economic and Social Development Policies (2017 – 2024).
Project	***Efficiency*** of implementation	13 successful	High efficiency in implementation was achieved with the lines of action 96% successfully fulfilled and achieved 86% rate of reaching the target population. Although adequate risk management was made for the mitigation of obstacles in execution, only two indicators were not fully achieved and scored 80% which were as a result of the COVID-19 Pandemic and political change in Brazil.
Triangular cooperation	***Efficiency*** in the handling of triangular structures	14 very successful	The management structure put in place had all the expertise but the beauracratic nature of public institutions sometimes slowed procedures. There was efficient use of human, financial and technological know-how by the partners during the cooperation implementation.

Project	***Effectiveness*** in achieving results	13 successful	The project was effectively implemented in achieving the expected results within the duration through the efficient use of resources, and reliance on the previous experience of the partners and stakeholders. The high-level commitment among partners throughout the project lifespan also contributed to the project success.
Triangular cooperation	***Effectiveness*** of TCr's contribution to the achievement of outcomes	14 very successful	Overall, the management was effective and good as there were mutual trust, transparency and commitment among the partners resulting in the achievement of the project outcome.
Project	***Sustainability*** of results and processes for their generation	14 very successful	The project results are considered highly sustainable in the long term. New triangular cooperation has being initiated. The gains from the cooperation have been institutionalized. The use of cashew processing technology by small-scale processors especially is threatened due to their inability to mobilize financial resources to enter into viable businesses.
Project	***Impact of*** the project beyond the achievement of its results.	15 very successful	In the implementation of the TCr Project, the immediate impact of the intervention is visible with new entrants in the small scale cashew apple processing. Hard evidence was observed with increases in land area under cashew cultivation, yields, volume and value of cashew exported resulting in increased export revenue for Ghana. Increased income of farmers and processors translating into improved food and nutrition security. New livelihoods have emerged and additional incomes obtained by beneficiaries. With respect to the impact on the new

			clones/germplasm material received from Brazil, it will be visible when they are evaluated in the trial locations with one due 2024 in Bole and in the year 2027 at the remaining locations for multiplication and distribution to farmers.
Results according to OECD/DAC criteria	***Overall appraisal***	14 very successful	Considering the problem the project solved, it demonstrates high relevance and contributed to global, regional, and national policies/ strategies. The cooperation was built on a previous diagnosis and fulfills the improvement in the cashew sub-sector. The design was consistent internally except that, the risk analysis was not adequate. The indicators were SMART, but lacked gender transformative qualitative and quantitative dimensions. The project demonstrated efficiency in its implementation to achieve the results on the ground with the limited volume of budget. All the indicators for the line of actions were fully achieved except only two indicators that were not fully achieved and scored 80% which resulted from the COVID-19 pandemic and political change in Brazil. The project's effectiveness was achieved through joint knowledge sharing and learning, human capacity development, the commitment of stakeholders, and reliance of the experience of the multi-stakeholders involved. The sustainability of the project is assured as it has been well institutionalized. However, the sustainability of small and medium-scale cashew processing to process into a viable business is threatened due to a lack of financial resources to inject into their start-up businesses. The immediate

			impact of the project is visible and the long-term impact are expected to be visible from eight years inwards. The infrastructural gains from the project, the human capital, and the skills attained will have an immense impact on the partner and stakeholder institutions and the beneficiary country.
Appreciation of triangular cooperation processes		14 very successful	The contribution of the TCr has been considered by those involved as very good as it achieved its purpose of exchange of knowledge and experiences in administrative and technical areas, including technologies in the cashew sub-sector.
Overall Evaluation		14 very successful	The project was overall evaluated as very successful by the partners and stakeholders. Factors contributing to the success were previous experience in the implementation of a similar project through bilateral cooperation, political buy-in in the beneficiary country, and for the fact that the facilitating partner had an already ongoing regional project on cashew (ComCashew Initiative) being implemented. Other factors include the good management of the project and the commitment of partners and stakeholders. The impact of the project is visible in the short term and more expected in the future. The cooperation evaluation has revealed new problems by the stakeholders that are worth recycling into the conception of a new project for design, planning, and implementation.

Maximum valuation: 16 points

5. LESSONS LEARNED, CONCLUSIONS AND RECOMMENDATIONS

5.1 Learned lessons

The key lessons learned through the trilateral mode and best practices for replication are:

- Critical factors for the success of a TCr project are: political buy-in of the project at the beginning of the project; commitment, and proactivity of the beneficiary country and target beneficiaries; and good communication among partners and stakeholders.
- During the implementation of TCr projects, the planned strategy could change during the execution stage. As such, partners must be flexible.
- There has been a huge learning process on new technologies of cashew breeding and by-product processing. One major takeaway in the breeding area, for example, is that Ghana has local clones resistant to anthracnose and needs to cross them with high-yielding materials from Brazil to get the best hybrids.
- The climate smart agriculture practices for cashew production were also learnt through this TCr. In addition, partners have learned that the clones from Brazil and that of Ghana have different characteristics.

Best practice for replication in other trilateral cooperation is that:

- Project funds should be committed to implement project activities that result in impact rather than spending on planning, committee meetings etc. The use of virtual means for organizing meetings was cost effective.
- Having only one focal person / focal point for scheduling meetings was very laudable.
- TCr projects have a high tendency to be successful when it is initiated to complement existing Regional or National projects. For this case, the TCr complemented GIZ Regional ComCashew initiative and GoG Flagship PERD Programme.
- Cashew farmers and processors must organize themselves into cooperatives or associations respectively to attract support from similar cooperation projects. The free supply of improved and high-yielding seedlings under the project was an entry point for empowering women to enter into cashew cultivation in the cashew-producing communities.
- To reduce cashew seedling plant mortality from drought in dry locations in Ghana, dry season irrigation and soil moisture conservation practices are beneficial.
- In the exchange of cashew planting materials between countries, the practice of exchanging cashew clones is better than seeds.

5.2 Conclusions

The TCr project implemented by Brazil, Ghana, and Germany was very relevant to the three partners. It achieved the overall project outcome of improving the efficiency and quality of cashew production and processing for developing revenue streams for the cashew sub-sector actors. The project addressed the needs of Ghana with respect to access to improved high-yielding cashew seedlings; improved cashew production efficiency and increased productivity; and efficient cashew apple and by-product processing technologies for small, medium and large-scale cashew processing businesses. Through the clones received from Brazil, Ghana has increased it varietal base.

The TCr was effectively implemented by partners and stakeholders whiles taking ownership of the project to achieve results. However, there were a few challenges during implementation but through the effective management of the project, solutions were made to address them to keep the project on track. The availability, commitment of partners, cordial relationship, and flexibility during project coordination and implementation contributed to the success of the project. The project was efficiently implemented in achieving its expected results within the duration through efficient use of human, financial, and technological resources. In terms of impact, the three partners were of the view that achievement of 98% was made for the project outcome and 85% for reaching the target beneficiaries. The capacities of farmers, private cashew nursery operators, processors, researchers, and MoFA staff have been strengthened with the required expertise to boost the Ghanaian cashew industry. Land area under cashew cultivation and yields have increased over the period. This has reflected in the volume and value of cashew exported from Ghana from 2017 to 2019.

The increase in cashew yield of farmers would translate into increased income resulting in improved food and nutrition security and dietary diversification within households in the cashew growing communities in Ghana. The cashew apple picking, and small-scale processing have emerged as a new source of livelihood for women and youth. The project is considered highly sustainable in the long– term as most of the processes have been institutionalized. There has been knowledge sharing and capacity development through the exchanges between countries. New alliances, networks and trilateral cooperation initiatives have been generated and the relationship between Brazil, Ghana, and Germany has been strengthened as a result of the trilateral cooperation. Two key outstanding activities that the project could not completely were the inability of the five selected clones from Ghana to be sent to Brazil and the inability of the cashew industry players/ private sector organization to implement the cashew business model.

5.3 Recommendations

Based on the evaluation findings the following recommendations have been

proposed to the GIZ Triangular Cooperation Fund in Latin America and the Caribbean:
The TCr project effects have generated new needs for the beneficiary country which when addressed would strengthen the cashew value chain development in Ghana. It is therefore recommended that (A) a second phase of the project be designed to address those critical needs and provide continuity of the initiative. The proposed project to be designed should (i) Have a fund that would provide small and medium-scale processors with funding to procure the needed equipment for processing to ensure that the knowledge and skills are translated into viable businesses. (ii) The proposed project should continue to engage with the industry players such as OLAM, Pinora etc in collaboration with the Women in Agriculture Directorate of MoFA to kick start the uptake of the business model that was shared with them. (iii) A marketing component should be part of the proposed project to ensure that the cashew apples, nuts, and processed products resulting from increased cashew cultivation in the country would not create marketing constraints for farmers and processors in the near future. The marketing component should support the processors to acquire Food and Drugs Authority, and International Organization for Standardization (ISO) certification. (iv) In terms of processing, the proposed TCr could explore the processing of the cashew shell, leaves, and tree back for other products.

(B) In terms of the volume of funding and duration of the project, more funding should be committed to the project and the duration extended to four or five years considering that cashew is a tree crop and takes a longer time to develop.

(C)In designing future projects, risk analysis should consider political factors, labour conditions and rights, over use of water through irrigation and other unforeseen pandemics which could derail the smooth implementation of the project.

(D)Similar TCr should be initiated in other African countries to achieve sustainable cashew productivity and processing in the African continent.

(E)For future TCr projects, additional technical capacities should be brought on board. Examples from the Universities, Council for Scientific and Industrial Research (CSIR) etc. The TCr partners should continue the dialogue with EMBRAPA to expedite action to ensure that the selected clones are sent to Brazil, As Brazilian Cooperation Agency is ready and has the possible instrument to provide the necessary support to undertake this action.

(F)For future TCr projects to include diversity, gender transformative and inclusion approach in a more intense way, funds should be allotted for conducting a baseline study with an intersectionality perspective to inform the planning and design of future projects. It should encompass the roles women play along the cashew value chain; constraints they face; practical and strategic gender needs; their level of participation in leadership within cooperatives/processors groups; their access to production and processing resources including technologies that reduce their workload and improved work efficiency; access to support services such as cash credit from financial institutions, extension, transport services, and market access; and marketing information etc. Human rights issues, cultural norms, and socio-cultural and religious restrictions in the project area should be distilled. The issues identified with implications for the TCr should be addressed through an action plan during the design phase of the

project.

(G)The TCr project logical framework must have both quantitative and qualitative gender indicators specifically rolled to be tracked during the project execution. Data collected for monitoring purposes should be disaggregated by gender thus male, female and should include vulnerable groups such as the youth, migrants, PLWD, and the aged. Gender disaggregated data should be collected for monitoring purposes and reporting.

(H)TCr activities should ensure 50% women inclusion in all project activities where possible.

(I)The proposal template for the trilateral cooperation fund should be revised to include considerations on gender transformative actions, human rights, socio-cultural and religious norms.

ANNEXES

ANNEX I. Work Plan, methodology and instruments for data collection

Conceptual Framework of the Evaluation Methodology

The evaluation used the methodology of triangulation of information based on the OECD DAC criteria, in addition to the added criterion of coherence, in two dimensions: i) project and ii) triangular cooperation, which will be addressed through different methodologies:

Triangulation: consists of the application of different methods in the same research to collect information, contrast the results, and analyze coincidences and differences. It is based on the idea that methods are instruments for investigating a problem and facilitating its understanding. The objective is to verify the validity and reliability of the secondary source information and to build a database that presents the diversity of points of view or positions from the role of each partner or participant. For this purpose, various data collection instruments will be implemented according to the defined techniques. Each finding corresponds to the "triangulation" between data collection instruments, positions, and perceptions, which are analyzed qualitatively and quantitatively.

Contribution Analysis: is a methodology designed to evaluate, and includes questions to infer the causality of processes in the life of projects. It allows reducing the uncertainty regarding the contribution that the intervention is making to the observed results, through an improved understanding of the causes by which the observed results have taken place (or not) and the roles played by the intervention, and other internal and external factors. To this end, in all field instruments, the key questions will be accompanied by the question 'To what do you attribute this achievement? Or to what do you attribute the lack of achievement? Subsequent analysis of the documentation and field information will make it possible to determine whether the achievement or otherwise was due to factors inherent to the project or to the context, as well as the role played by each actor. This will lead to plausible conclusions that will provide confidence in determining the real contribution of the project to the change or impact identified.

Outcome Harvesting: is a methodology that monitors the changes identified with the collection of retrospective evidence and analysis through those who participated in the process to understand how the project has contributed to these changes, being very useful in interventions that aim at collective changes and impacts that are achieved with the contribution of different initiatives. The findings resulting from the process contribute to the understanding of the change achieved by the project and are, at the same time, tools for prospective planning.

In this sense, both in the documentation review and in the field activities, the background, and timeline of certain processes will be investigated. The methodology combines primary and secondary sources of information, as well as qualitative and quantitative ones. In addition, it allows the systemic approach of the projects to be analyzed, since the results achieved and measured must be identified throughout the project cycle and not only in the results of the "direct actors"; that is, in the system in which all those involved participated. This provides elements to determine the

sustainability of the actions over time.

Tools and Methods for Data Collection

The following instruments were used to collect both primary and secondary data.

Evaluation instrument

Instruments	Description
Documentary review and data systematization	Review of programmatic, technical and financial follow-up documents for the project. Review of background documents on GIZ triangular cooperation, on the sector of the project at local, country or global level, etc. Review of documents produced within the framework of the projects (products). Review of methodological documentation produced by GIZ. Review of the following Global, ECOWAS Regional, National and District development Plans: The Agenda 2030 Global Sustainable Development Goals (SDGs); ECOWAS Agriculture Policy; Ghana's Coordinated Economic and Social Development Programme (2017-2024); Food and Agriculture Sector Development Policy II (2007); MoFA's Tree Crops Policy (2012) etc.
Interviews with the project partners (applicant, principal and facilitator)	Project partners at the political level (Directors, Deputy Directors of key institutions and others). Project partners at the operational level: teams from the institutions involved in project implementation.
Conduct complementary Interviews (distance or face-to-face) with	The officials involved in the project implementation would be consulted including Partners and external organizations associated with certain project activities (civil society actors, other public institutions, other cooperation agencies, consultants, etc.)
project stakeholders and partners	Virtual and face-to-face interviews would be conducted where applicable to evaluate the project with questions focused on relevance, efficiency and impacts following the OECD-DAC criteria. This approach will allow corroboration of qualitative information obtained through other techniques.

Mapping of Results

The evaluation report shall include the results achieved, as well as the expected results that were not achieved and the reasons for this. In addition, it shall document the results of conscious and planned efforts and shall document unexpected or derived effects and outcomes, positive or negative, and the level of causal linkage and attribution to the project.

Evaluation Matrix

To respond to OECD-DAC criteria, the evaluation focused on cross-cutting findings that allow for the analysis of the specificity and added value of the TCr model and the project.

Evaluation question	Criteria/Indicators
Relevance Was the triangular cooperation modality relevant to project design and implementation? Was the project relevant to responding to the challenges and needs of the target groups at the local level and national public policies?	1) The triangular cooperation modality was the appropriate mechanism to address and provide a solution to the problems identified in the project. 2) The design and execution of the project responded to an important local and/or national problem. 3) The project responded to a need prioritized by the target group. 4) The funding made it possible to develop an initiative that was not possible to support with the recurrent resources of the requesting institution.
To what extent did the consultation in the project definition and design process contribute to the relevance of the intervention?	1) The project was based on a previous diagnosis. 2) The project responded to a clear and proven need. 3) The target groups were identified. 4) The consultation process between the partners involved the main stakeholders in the design and execution of the project. 5) The project design identified the associated risks and obstacles.
To what extent does the presence of each of the actors involved generate complementarity and capabilities for the project?	1) In the requesting country, there was a relevant and suitable technical counterpart, taking into account the project's problems. 2) The "lead partner" chosen and the institutions involved for their expertise were relevant and suitable, considering the project's problems. 3) GIZ's support strengthened the project and the dynamics of cooperation.
Consistency To what extent was the project aligned with international, regional (LAC), national, local, and community development strategies? To what extent did the projects contribute to the achievement of local, national, and international goals?	1) The project was aligned with the international sustainable development framework, embodied in the 2030 Agenda. 2) The project had a specific focus on the most vulnerable groups ("leave no one behind"). 3) The project was part of the country/regional strategy. 4) There is coherent institutional and operational coordination between the project managers and the institutions in charge of the strategy. 5) There is an openness to include actors from other sectors: the private sector, civil society, academia, etc 6) There is articulation with local authorities, community leaders, and ancestral authorities (when relevant)....

To what extent was the project consistent in its design and execution? To what extent was the execution consistent with the design?	1) The project contemplates a clear, coherent, and relevant logical framework and/or theory of change. 2) The project required adjustments in its design or strategy to enable implementation. 3) The project included a human rights, intercultural, and gender equality approach. 4) The project complied with the principles of GIZ triangular cooperation.
Efficiency Did the project succeed in taking advantage of the installed capacities, experience, and competencies of the stakeholders involved? Were resources (human, natural, financial, technical, technological, networks, etc.) optimized in the implementation of the project and the achievement of its objectives?	1) The roles, competencies, and functions of the different governance bodies of the different projects were efficiently defined. 2) The projects were provided with a baseline and management monitoring and evaluation systems. 3) The articulation, coordination, and interdependence between the actors involved were permanent and with clear communication, achieving closeness and trust between the parties. 4) The stakeholders involved contributed tangible and intangible assets to the execution of the project. 5) There is proven experience in the management and administration of projects with international funds and/or joint international activities. 6) The stakeholders reciprocally valued the ideas, skills and initiatives of their counterparts.
To what extent did the project management and monitoring modalities contribute to the achievement of results?	1) Adequate financial and administrative management procedures were applied and complied with GIZ requirements (criteria only for interviews with the facilitating partner). 2) Difficulties were anticipated and reported in order to find relevant solutions. 3) A monitoring system of performance and result indicators was defined to highlight the specificity of triangular cooperation. 4) Initiatives to make efficient use of resources are observed. 5) The agreed deadlines were respected. Delays were anticipated and justified
Efficiency To what extent did the projects supported meet the goals set and generate positive impacts?	1) The project achieved the defined objectives. 2) The project met the performance and achievement indicators set. 3) Adequate risk management allowed for the mitigation of obstacles in execution. 4) There are emblematic success stories.
To what extent did the project generate a learning and knowledge management dynamic	5) Stakeholders shared their experiences and capabilities. 6) Stakeholders perceive individual and institutional learning through the project. 7) There are concrete examples of learning and

among the stakeholders involved?	exchanges of experience. 8) Stakeholders take ownership of the lessons learned and reincorporate them into their organizations beyond the project (knowledge management). 9) Changes were generated at the level of organizations. 10) or public policies based on the lessons learned and good practices of the project.
Impact Did the projects generate significant changes?	1) The project generated impacts - negative / neutral / positive / transformative / systemic at individual / collective / institutional / intended and unintended levels. (a) Individuals/families, (b) Public and private institutions/organizations and (c) Collectives. 2) The projects have generated specific impacts for the most vulnerable groups. 3) The solution implemented within the framework of the projects has been institutionalized.
Did the projects include specific activities or modalities that contributed to gender equality? What effects were noticeable?	4) Partners consider that gender equality was a primary or secondary priority of the project 5) Partners can identify concrete actions of the project with respect to gender equality 6) Projects generated positive - negative - neutral effects on target groups / participating partners contributing to gender equality.
Value added How is the added value of TCr visible or evident in the projects? (what makes the difference?)	1) The project was characterized by a greater commitment (in material and in-kind) between the project partners that transcends the contractual relationship. 2) Engagement and participation of key local and international stakeholders, including German embassies in the territory. 3) New alliances, articulations, and collaborative networks, not considered in the project design, were generated. 4) Joint, articulated and multidirectional knowledge management was achieved.
Sustainability To what extent do the results of the project have continuity and impact on the different levels of action of the partners? Did the TCr project allow for the generation of long- term cooperative relationships?	1) The results achieved have economic/financial, social, political, institutional, and environmental sustainability. 2) The institutions involved have maintained a bilateral cooperation relationship. 3) Cooperation between the countries involved has been institutionalized (with their own resources). 4) Other cooperation initiatives (bilateral or triangular) in the same or other sectors with other resources are observed. 5) Closer diplomatic relations are observed between the countries involved (state visits, co-organization of activities, international events, common communiques).

ANNEX II. Project Logical Framework

Goal Hierarchy	Indicators	Means of verification	Monitoring activity	Data collection by	Frequency
Outcome: The efficiency and quality of cashew production and processing are improved for developing revenue streams for cashew sector actors.					
Output 1: The framework for the delivery of cashew clones that are high – yielding and tolerant to major diseases and well adapted to local conditions improved.	**Indicator 1.1**: 5 high yielding and disease resistant cashew clones introduced and evaluated in Ghana by June 2019.	Written reports by MoFA on activities and indicators.	Field visits and monitoring of the protocol s from Embrapa Continuous activity.	CRIG	Every three months.
	Indicator 1.2 5 ha of scion gardens established in cashew producing districts which would be used for the multiplication of improved cashew planting materials by June 2019.	Written reports by MoFA on activities and indicators.	Field visits and monitoring of the Protocols with inputs from Embrapa when appropriate	MoFA	Every three months.

	Indicator 1.3 300,000 successfully grafted cashew seedlings are raised and purchase by farmers by June 2019.	Written progress reports by MoFA on activities and indicator.	Field visits, monitoring of number of cashew grafts and number of grafted cashew seedling s sold to farmers.	MoFA	Every three months.
Output 2: The efficiency and technologies of cashew by-product processing are improved.	**Indicator 2.1** 2 cashew by-product processing technologies introduced to I farmer group with at least 50% of farmers being women and private sector organization by June 2019.	GIZ progress reports, attendance sheets of training materials developed. Equipment purchased.	Field visits and interview s with farmers and private sector organizations.	Embrapa/ GIZ	Every three months.
	Indicator 2.2 Viable business cases for cashew by-product processing developed based on I farmer group with at least 50% of farmers being women and 1 private sector organization by June 2019.	Study and report on business models for cashew apple processing sent by GIZ.	Receiving study and report on Business Models for cashew apple processing.	ACA	January 2018 (TOR), March 2018 (progress) and June 2018 (final)/January 2019 (ToR), March 2019 (progress) and June 2019 (final)

	Indicator 2.3 Business linkages established with two private sector organizations to develop and market cashew products by June 2019.	Reports, Marketing strategy.	Field visits and interview s with farmers and private sector organizations	GIZ	Every 3 months from January 2018 onward

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ANNEX IV. Agenda of meetings and people interviewed

Annex IV.a. _ Interviews conducted

Date	Interviewee	Position, Institution in the Project	Email/phone
20/9/22	Seth Osei-Akoto	Director, Directorate of Crops Services.	oakoto2012@gmail.com +233244384493
19/9/22	Jerry Jacob Anim	Assistant Director, Directorate of Crop Services	animjjerry@gmail.com +233243757949
19/9/22	Susana N. Yohuno	Assistant Director, Directorate of Crop Services	susieyohuno@yahoo.com +233243961931
4/10/22	Paulina Addy	Director, Women in Agriculture Directorate	addypolly@yahoo.com +233244422712
12/10/22	Abena K. Osae	WIAD Officer, Women in Agriculture Directorate	kumiwa16@gmail.com +233206845700
21/9/22	Dr. Paul Adu Gyamfi	Plant Breeder, CRIG	adubee2001@yahoo.com +233245394697
20/9/22	Wofsi Yuri de Souza	Head of Coordination for Technical Cooperation and Partnership with Developed Countries. ABC	wofsi.souza@itamaraty.gov.br +55(61)20309349
14/9/22	Alice Guimarães	Director of Project - Global and Regional Initiatives, GIZ Brazil	alice.guimaraes@giz.de +55 61981028100
14/9/22	Florian Winckler,	GIZ ComCashew Coordinator, GIZ Ghana.	florian.winckler @giz.de +233540123978 /+23480523027 19
20/9/22	Salofou Issaka Mohammed	Senior Regional Advisor, GIZ Ghana	issaka.salifou@giz.de +233 552571728
19/9/22	Rodolfo Osorio de Oliveira	Analyst, Foods and Territories, Embrapa.	rodolfo.oliveira@embrapa.br +5561981932377
29/9/22	Francisco Fabio De Assis Paiva	Researcher Tropical Agroindustry, Embrapa	fabio.paiva@embrapa.br +5585999985009
23/9/22	Sylvester de Clercq Mensah	Station Manager, Cashew Research Station -Wenchi	declercq2015@gmail.com +233242540357
30/9/22	Dr. Michael Teye Barnor	Plant Breeder, Cashew Research Station- Bole.	teye.barnor@gmail.com +2330204452313
12/10/22	Ernest Mintah	Managing Director, African Cashew Alliance	eminta@africancashewalliance.com +233556615658
29/9/22	Ed-Malvin Nii Ayibontey Smith	President, Association of Cashew Processors.	niismith@winkerghana.com +233248695907

23/9/22	Daniel Amissah	Chairman, Nyame Bekyere Farmers Association, Ayigbe.	+233242229699
23/9/22	Nuama Twum	Manager, Natu Company Ltd.	+233208218897
23/9/22	Kate Obour Amaakowa	Manageress, Kate Obou Ventures.	+233249491763
23/9/22	Mary Sokua	Manager, Private Nursery Operator.	+233545268381
23/9/22	Henry Osabutey	Manager, Henry 86 Enterprise (private nursery operator)	henrybutey@gmail.com +233248222475 /+233502209292

Annex IV.b. Surveys sent via email

NAME AND SURNAME	INSTITUTION	POSITION	E-MAIL
Santosh Nair	OLAM Ghana Ltd	Business Manager	santhosh.nair@ofi.com

Annex IV.c. Survey questionnaire received

NAME AND SURNAME	INSTITUTION	POSITION	E-MAIL
Seth Osei- Akoto	Directorate of Crops Services	Director	oakoto2012@g mail.com
Jerry Jacob Anim	Directorate of Crop Services	Assistant Director	animjjerry@gmail.com
Susana N. Yohuno	Directorate of Crop Services	Assistant Director	susieyohuno@yahoo.com
Paulina Addy	Women in Agriculture Directorate	Director	addypolly@yahoo.com
Abena K. Osae	Women in Agriculture Directorate	WIAD Officer	kumiwa16@gmail.com
Dr. Paul Adu Gyamfi	CRIG	Plant Breeder	adubee2001@yahoo.com
Wofsi Yuri de Souza	ABC	Head of C. T. C and P. with Developed Countries.	wofsi.souza@itamaraty.gov.br
Alice Guimarães	GIZ Brazil	Director of Project - Global and Regional	alice.guimaraes@giz.de

		Initiatives	
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Salofou Issaka Mohammed	GIZ Ghana	Senior Regional Advisor.	issaka.salifou@gi z.de
Rodolfo Osorio de Oliveira	Embrapa	Analyst, Foods and Territories.	rodolfo.oliveira@embrapa.br
Francisco Fabio De Assis Paiva	Embrapa	Researcher Tropical Agroindustry	fabio.paiva@embrapa.br
Sylvester de Clercq Mensah	Cashew Research Station - Wenchi	Station Manager	declercq2015@gmail.com
Dr. Michael Teye Barnor	Cashew Research Station- Bole	Plant Breeder	Teye.barnor@gmail.com
Ernest Mintah	African Cashew Alliance	Managing Director	eminta@africancashewalliance.com
Ed-Malvin Nii Ayibontey Smith	Association of Cashew Processors	President	niismith@winkerghana.com
Henry Osabutey	Manager, Henry 86 Enterprise (private nursery operator)		henrybutey@gmail.com