FEED AFRICA STRATEGY 2016 - 2025

Scaling Up Climate-Smart Agriculture Adoption for Smallholder Farmers in Africa

ACSA Progress Report (2024)

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

DISCLAIMER

This synthesis report presents a situational analysis of land and natural resource governance aspects across the African continent. The assessment aimed at determining whether the Bank's due diligence processes adequately address issues of access to land and other natural resources and whether land security risks exist and need particular mitigation during the continent-wide implementation of the Bank's High 5s Initiatives. The report is also intended to feed into the review of the Bank's Integrated Safeguards System (ISS). Overall, the report demonstrates the rationale for emphasizing the inextricability of land governance and human rights in existing Bank policies and investments.

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FOREWORD

In Africa, agriculture contributes about 15% of total GDP on average, employs more than half of the total labour force, and within the rural population, provides livelihoods for multitudes of smallscale producers whose farms constitute approximately 80% of all farms in sub-Saharan Africa (SSA) (OECD-FAO, 2016). This demonstrates that agriculture has been and remains one of the most effective drivers of Africa's economic development.

African countries, especially SSA, are heavily dependent on rainfed agriculture and face a growing number of climate-related vulnerabilities. Indeed, rainfall is increasingly variable in timing, amount, and intensity. Drought, flooding, and extreme temperatures and other related weather conditions have become more frequent and severe. The risk generated by climate change to agriculture has significant implications for poverty-reducing capacity and is a major threat to agriculture productivity, food production, and food security on the continent.

In response, the Bank's Feed Africa strategy to transform African agriculture has responded to climate change challenges by addressing its Enabler 6, which focuses on inclusivity, sustainability, and nutrition. The vision of the strategy is to transform African agriculture into a competitive and inclusive agribusiness sector that creates wealth, improves lives, and secures the environment. It also aims to achieve its sustainability goal of increased use of climate-smart agriculture (CSA) by implementing the Africa Climate-Smart Agriculture (ACSA) Programme (2018–2025).

The Programme has two main components, Component 1: Enabling CSA adoption in Africa by creating the conditions for boosting adoption of CSA technologies and practices in Africa, and Component 2: Strengthening sustainability and resilience of African agriculture by scaling up the dissemination of CSA practices and technologies through pilot projects, CSA investment projects or CSA components into Feed Africa agriculture projects. The broad aim of the ACSA programme is to enhance sustainable transformation of African agriculture for food security under a changing episode of climate. The programme will help African countries to deliver: (i) a thriving and successful agriculture sector that creates jobs, and economic and livelihood benefits; (ii) a resilient sector that can successfully manage the risks of today and tomorrow's climate challenges; and (iii) a sustainable sector where the negative environmental impacts of agriculture are avoided.

The Bank has developed and implemented CSA projects that allowed to identify 10 classes of proven technologies and good agronomic practices: (i) integrated soil fertility management, sustainable land management, and integrated water resources management; (ii) improved varieties; (iii) aquaculture development; (iv) information systems and other digital platforms; (v) improved irrigation systems; (vi) crop pest control; (vii) agroforestry; (viii) local production and use of biogas; (ix) roots and tubers; and (x) small livestock (goats and sheep) and livestock products, pasture production, and livestock diseases.

Despite the high potential of these technologies and good practices for improving resilience and enhancing agricultural production and smallholder farmer livelihoods as demonstrated by the implemented projects, their adoption is still very limited by a set of barriers. The barriers faced by smallholder farmers in their farming businesses or in the adoption of improved technologies include: non-availability of information or the lack of capacity to use it for development; limited access, the high cost, and the non-availability of good quality inputs; the need for up-front investments combined with a lack of affordable long-term investment capital; insufficient land for specific technologies and practices such as aquaculture; reduced water quality and scarcity; inadequate infrastructure; low-participation of farmers in decision-making and knowledge generation; the intensity and cost of labour; the delayed return on investment; underdeveloped markets for technologies and practices such as agroforestry; and weak capacity of most extension services.

Widespread adoption of improved technologies and dissemination, and investments in the above CSA technologies and practices depends on the reduction, and preferably removal, of the mentioned systemic and technical barriers. This report analyses the enabling environment and policies, and assesses projects in order to outline policy recommendations and actions favouring the removal of these barriers while promoting the adoption of CSA practices that will contribute immensely to reaching the target defined by the New Partnership for Africa's Development (NEPAD) of 25 million smallholder households practising CSA by 2025 across Africa.

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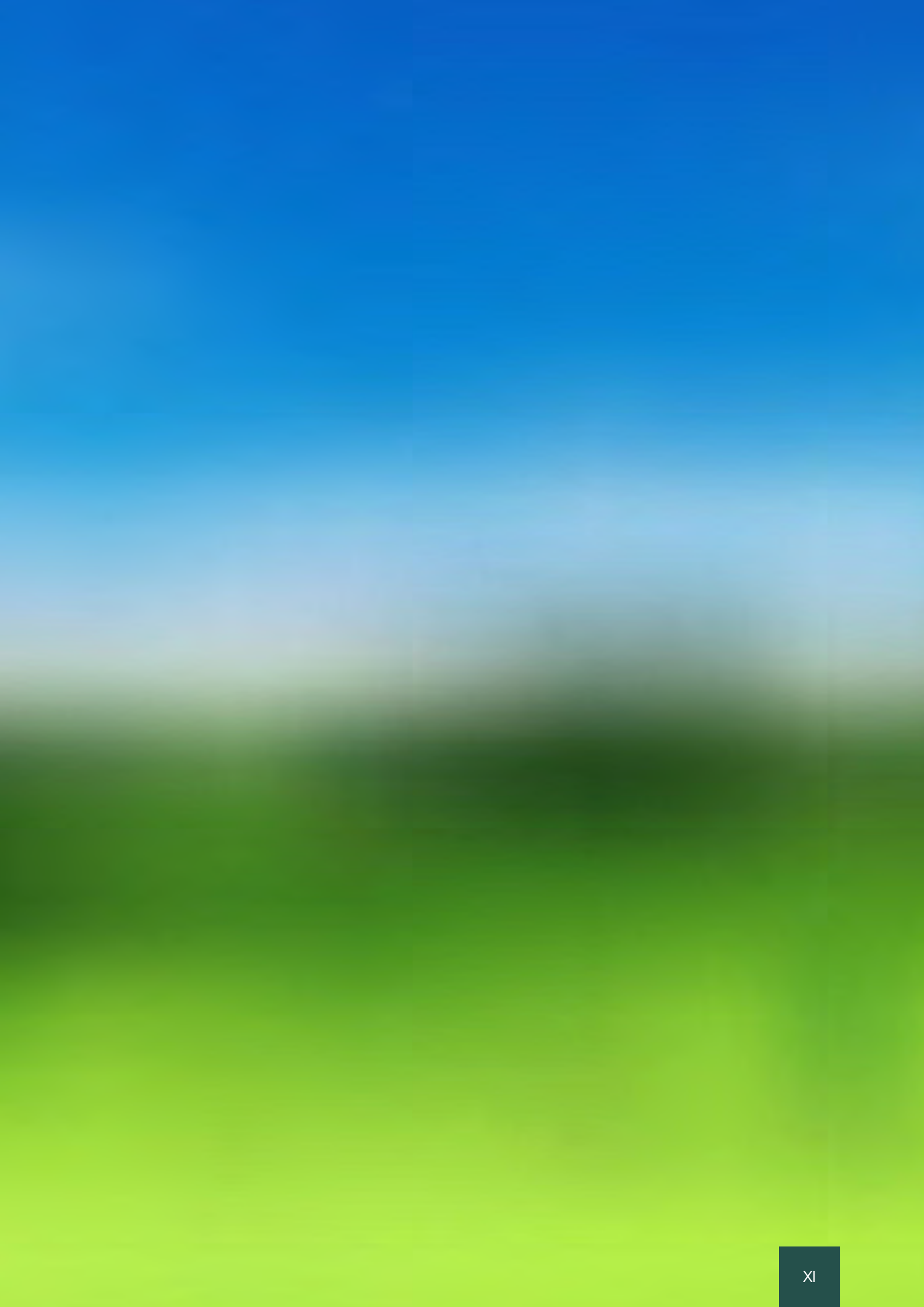


ACRONYMS AND ABBREVIATIONS

ACSA	Africa Climate-Smart Agriculture
ADF	African Development Fund
AfDB	African Development Bank
CCAFS	CGIAR Research Program on Climate Change, Agriculture and Food Security
CIAT	International Center for Tropical Agriculture
CO2-e	Carbon dioxide equivalent
CSA	Climate-smart agriculture
CSA-PoI	CSA-Policy Index
CSA-Res	CSA-Results Index
CSA-Tech	CSA-Technology Index
CV	Coefficient of variation
ECOWAS	Economic Community of West African States
FAO	Food and Agriculture Organization of the United Nations
FARA	Forum for Agricultural Research in Africa
FIP	Forest Investment Programme
GAFSP	Global Agriculture and Food Security Program
GDP	Gross domestic product
GEF	Global Environment Fund
GEO	Global Environment Objective
GHG	Greenhouse gas
ha	Hectare
ICRAF	World Agroforestry
ICT	Information and communications technology
ICRISAT	International Crop Research Institutes for the Semi-Arid Tropics
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IGA	Income-generating activity
IWRM	Integrated Water Resources Management
M&E	Monitoring and evaluation
NAIP	National Agricultural Investment Plans
NARES	National Agricultural Research and Extension Systems
NAS	
NERICA	New Rice for Africa

OECD	Organisation for Economic Co-operation and Development
PIU	Project Implementation Unit
PMERSA-MTZ	Water Mobilization Project to Enhance Food Security in the Maradi, Tahoua and Zinder Regions
PPP	Purchasing power parity
REDD+	Reducing Emissions from Deforestation and Forest Degradation
RMC	Regional Member Country
SLM	Sustainable Land Management
SSA	sub-Saharan Africa
STC	Steering Committee
TAAT	Technologies for African Agricultural Transformation
USAID	United States Agency for International Development

EXECUTIVE SUMMARY

Agriculture has a central and strategic role to play in Africa's development, and is the key to economic growth, enhanced living standards, poverty reduction, and increased food and nutrition security. Despite such an important role, total investment in African agriculture today still falls short of the levels required to address the challenges it is facing. Consequently, the continent needs a major injection of both public and private finance into all stages of the agricultural value chains, including both small- and large-scale agribusinesses, to ensure that agricultural delivers all of its potential and brings a growth that delivers fundamental change and prosperity for all. To this end, and as part of the Bank's High 5 priority areas (Feed Africa, Light up and power Africa, Industrialize Africa, Integrate Africa, and Improve the Quality of Life for the People of Africa), it developed the ten-year African Agricultural Transformation Strategy (2016–2025) called 'Feed Africa'. Its vision is to transform African agriculture into a competitive and inclusive agribusiness sector that creates wealth, improves lives, and maintains the environment. Underpinning this vision are four specific goals: (i) contribute to end poverty; (ii) end hunger and malnutrition; (iii) make Africa a net food exporter; and (iv) move Africa to the top of export-oriented value chains where it has comparative advantages. Also, one of the main goals of the transformation is to shift the development of the sector from 'agriculture as a way of life' to 'agriculture as a business'.

To realize the transformative shift, it is critical to address challenges related to climate change variability, which affect agriculture negatively through climate change-induced risks such as flooding, higher temperatures, frequent droughts, and short growing seasons; climate-smart agriculture (CSA) technology could be used to address these challenges.

The Africa Climate-Smart Agriculture (ACSA 2018–2025) programme is Feed Africa's response to climate change challenges by operationalizing its Enabler 6, which is focused on inclusivity, sustainability, and nutrition, where special attention is paid to climate-smart agriculture (CSA) and agroforestry.

CSA was mainstreamed in the Feed Africa strategy through projects whose objectives are achieving the triple win areas (Productivity, Resilience, and Mitigation) goals by rehabilitating degraded land, building resilience to climate shocks and natural resource degradation in the medium to long term, improving nutritional and food security, reducing poverty, ensuring socio-economic integration of youth (male and female) into productive rural occupations, and developing information systems. The main goal of these projects is to contribute to robust, inclusive, and sustainable economic growth, and improve the quality of life for rural communities through a sustainable increase of agricultural production, employment, and income.

In order to scale up the dissemination and adoption of CSA practices and technologies, there is a need to take stock of: (i) Regional Member Countries' (RMCs) capacities in terms of the availability and functioning of enablers and supporting services for implementing CSA, their integration into agricultural policies and in national development strategies; (ii) the achievements of the climate-smart projects mainstreamed into the Feed Africa strategy; (iii) the relevance of CSA technologies and practices within these projects together with the main barriers for their dissemination and adoption; and (iv) the Bank's resource mobilization efforts for CSA mainstreaming and implementation. An approach for the scaling up of CSA through resource mobilization, technical assistance, knowledge products, capacity building, and country profiling should also be proposed. To this end, a desk study was conducted.

The aim of this desk study is to provide insights for the selected countries and regions on: (i) the enabling environment and policy frameworks facilitating or hindering CSA activities in the portfolio; (ii) the Bank's resource mobilization strategy and efforts in CSA mainstreaming and implementation; (iii) the CSA technologies and practices deployed across the portfolio and their successes or limitations; (iv) key efforts to mainstream CSA resilience, especially in fragile contexts; and (v) opportunities for future engagements to expand the CSA portfolio through resource mobilization, technical assistance, knowledge products, strategic alliances, capacity building, country profiling, and investment planning.

Assessing the enabling environment for CSA implementation

Countries' enabling environments for CSA implementation were assessed using the three CSA indicators (Readiness Mechanism, Services and Infrastructure, Coordination Mechanism) and the CSA Policy Index (CSA-PoI Index). The CSA-PoI Index comprises 14 indicators for assessing the enabling environment for the implementation of CSA at the national level in terms of policies, legal frameworks, and the capacity of important stakeholders, especially the National Agriculture Research and Extension System (NARES). The 14 indicators are clustered in the following three

themes, and each indicator is aligned with the CSA triple win principles of productivity, resilience, and mitigation:

- Readiness Mechanism. This indicator measures how a country's support for CSA is integrated in agricultural policies, and in country's development strategies including National Adaptation Programme of Action (NAPA) and Nationally Appropriate Mitigation Actions. It also includes political stability and rule of law, which are necessary for leveraging outside investments, information and communications technology (ICT) infrastructure, education, and innovation.

- Services and Infrastructure. This indicator assesses a country's capacity in terms of the availability and functioning of enablers and supporting services for implementing CSA, and related financial investments.

- Coordination Mechanism. This indicator assesses the coordination of various stakeholders of the NAS, especially coordination, coherence, and integration among climate change, agricultural development, and food security processes.

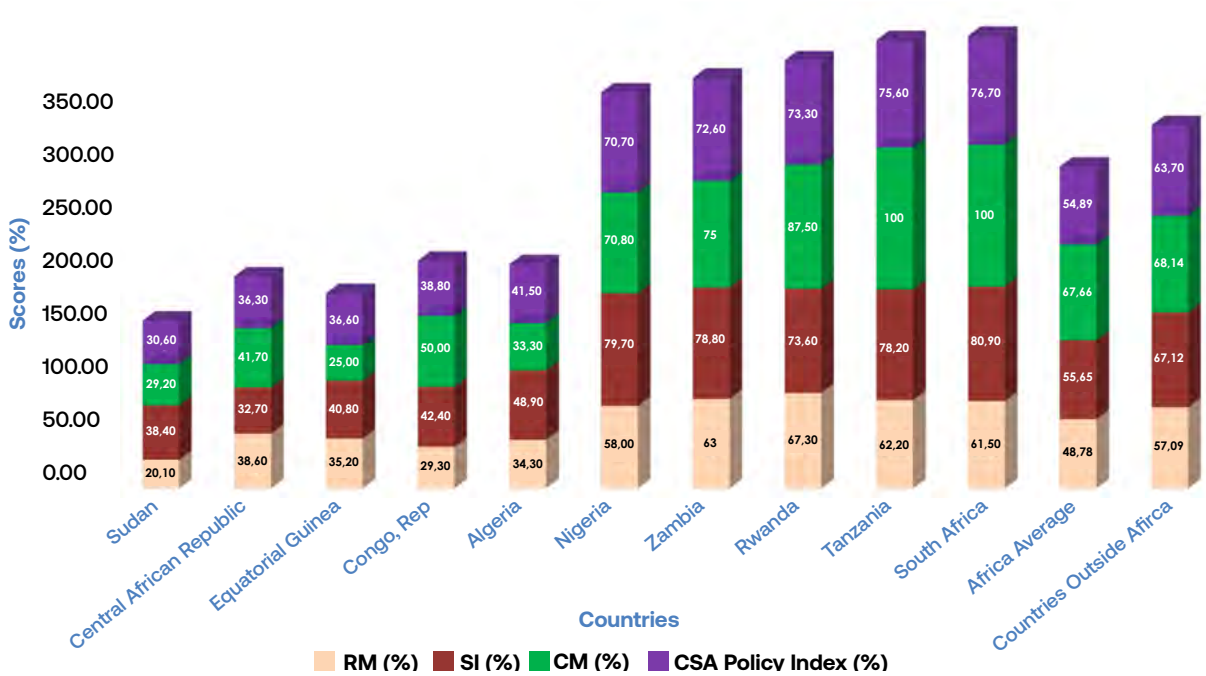
The CSA-PoI Index scores for each theme were calculated using a simple average of its indicators. A composite CSA-PoI Index was derived from a simple average of the 14 indicators.

An analysis was conducted using a data set of these indicators and comprising 37 African countries and 51 countries from other regions including Latin America and the Caribbean, Europe and Central Asia, East Asia and the Pacific, the Middle East, and South Asia.

Figure 1 presents the three indicators – Readiness Mechanism, Services and Infrastructure, Coordination Mechanism – and the CSA-PoI Index for five high- and five low-performing countries. along with the African averages and averages of 51 countries from other regions including Latin America and Caribbean, Europe, Central Asia, East Asia and Pacific, Middle East, and South Asia.

African countries showed a low performance in the Readiness Mechanism, and in Services and Infrastructure indicators, with averages of 49.29% and 55.95%, respectively, which are below the corresponding averages of other regions. The African average score for the Coordination Mechanism indicator was 66.45%, i.e. approximately the same as the corresponding average of other regions. The scores of African countries on these indicators exhibit high coefficients of variation, indicating high variations among countries for these indicators.

[1] World Bank. 2016. Climate-smart Agriculture Indicators. World Bank Group report number 105162-GLB.
[2] World Bank – Indicators for Assessing Policy and Institutional Frameworks for Climate Smart Agriculture September 2017.



Note: RM=Readiness Mechanism (RM), SI=Services and Infrastructure, CM=Coordination Mechanism.

Figure 1: CSA Indicators and CSA Policy Index of six high- and five low-performing countries

The African CSA-Pol Index average is 54.9% with a coefficient of variation (CV) of 23.5%, reflecting an important variation in countries' capacities to provide enabling environments for CSA implementation. South Africa, Tanzania, Rwanda, Zambia, and Nigeria are identified as high-performing countries, while Central African Republic, Equatorial Guinea, Republic of Congo, Algeria, and Sudan were low-performing countries. The average score of oil-producing countries such as Republic of Congo, Equatorial Guinea, Sudan, and Algeria is 38.4%, and is far below the African average. This low score reflects their lack of commitment in the development of their agricultures and their absolute dependence on oil revenues.

An empirical clustering of countries validated by a canonical linear discriminant analysis reveals that there are no 'one size fits all' interventions for improving CSA support. Table 1 presents the characteristics of the clusters and suggested interventions for improving the CSA enabling environments.

Table 1: Characteristics of clusters and suggested interventions

Cluster 1: Burundi, Central African Republic, Chad, Comoros, Côte d'Ivoire, Democratic Republic of the Congo, Djibouti, Guinea. Republic of Congo, Sudan, Togo, and Uganda. **Characteristics:** (i) The three CSA indicators 'averages, the Policy Index average, the per capita Real GDP average are below the corresponding African averages; (ii) All countries have a CSA Policy Index score below the African average CSA Policy Index; (iii) Averages of Services and Infrastructure and of per capita real GDP are the lowest of the corresponding averages of the other clusters (iv) Most countries in this cluster have big agricultural potential and some of them have strong agriculture sector especially for export. **Challenges:** (i) Improving the scores of the CSA indicators and subsequently of Policy index; (ii) Improving the coordination of the national agricultural system (NAS) in terms of agricultural policies and strategies formulation; (iii) Harness agricultural potential where it exists with a focus on CSA practices. **Suggested Interventions:** Provide support for: (i) Creating enabling environments by strengthening institutions and policies that enhance CSA;(ii) Integrating support for CSA in agricultural policies, and development strategies; (iii) Mainstreaming climate change into National Development Planning processes.	**Cluster 2:** Algeria, Equatorial Guinea. Gabon, and Tunisia. **Characteristics:** (i) The highest average of per capita real GDP, the lowest averages of Readiness Mechanism, Coordination Mechanism and CSA Policy Index; (ii) Its Services and Infrastructure average score is below the corresponding African average; (iii) With the exception of Tunisia, this cluster is also that of oil-producing countries that neglect agriculture despite their strong potential. **Challenges:** (i) Using available resources for providing CSA enablers for CSA implementation and subsequently improving the scores of the CSA indicators and of Policy index; (ii) Identifying CSA champions to facilitate the mainstreaming of CSA into national agricultural policies and strategies. **Suggested Interventions:** (i) The focus should be on advocacy of the importance of CSA and the need of having CSA enablers for a successful implementation and scaling up of CSA interventions; (ii) Dissemination of evidence-based benefits and opportunities of climate smart approaches to all stakeholders of national agricultural systems, especially the private sector and NGOs.
Cluster 3: Benin, Botswana, Burkina Faso, Cameroon, Ethiopia, Ghana, Kenya, Malawi, Mali, Morocco, Mozambique, Niger, Senegal, and Zimbabwe. **Characteristics:** (i) The per capita Real GDP average is below the corresponding African average; (ii) Averages of CSA indicators and of Policy Index are higher than the corresponding African averages; (iii) Characteristics of this cluster clearly indicate that political commitment is of paramount importance for creating an enabling environment for CSA. **Challenges:** The main challenge for countries of this cluster is to mobilize resources for maintaining and improving the present levels of their CSA policy indicators. **Suggested Interventions:** (i) Resource mobilization in addition to leveraging resources and opportunities: (ii) Continuous enhancement of capacity building should be considered.	**Cluster 4:** Egypt, Madagascar, Nigeria. Rwanda, South Africa, Tanzania, Zambia. **Characteristics:** (i) Highest averages of CSA indicators and of Policy Index and the second highest average of per capita Real GDP; (ii) Political commitments for CSA. Challenges: The same challenge as cluster 3 of maintaining and improving the present levels of their CSA policy indicators, but has more own and/or leveraged resources to address it. **Suggested Interventions:** The establishment of a mechanism for monitoring the inclusion and implementation of CSA enablers in agricultural policies and strategies may help in maintaining a high political commitment for CSA.

Assessing climate-smart agriculture projects

A review of the Feed Africa, ACSA, and GAFSP project portfolios indicate that CSA projects or projects with CSA component(s) have been undertaken in 40 countries, in addition to the Technologies for African Agricultural Transformation (TAAT) programme. A total of 36 projects from 20 countries were selected through a random selection process of a purposive selection of projects that had data for the study.

The CSA Results Index[3] was used to measure projects' performance in reaching their targets in the CSA triple win areas – Resilience, Mitigation, and Productivity – separately and jointly.

Figure 2 presents the distribution of the selected projects in the different levels of performance classes. About 33.33% of the selected projects, i.e. 12 projects (11 from ACSA/Feed Africa and one from GAFSP), had an unsatisfactory level of performance. Almost satisfactory, satisfactory, exceeding expectations, and highly exceeding expectations levels of performance were recorded for 9 (25%), 4 (11.11%), 9 (25%), and 2 (5.56%) of the selected projects, respectively.

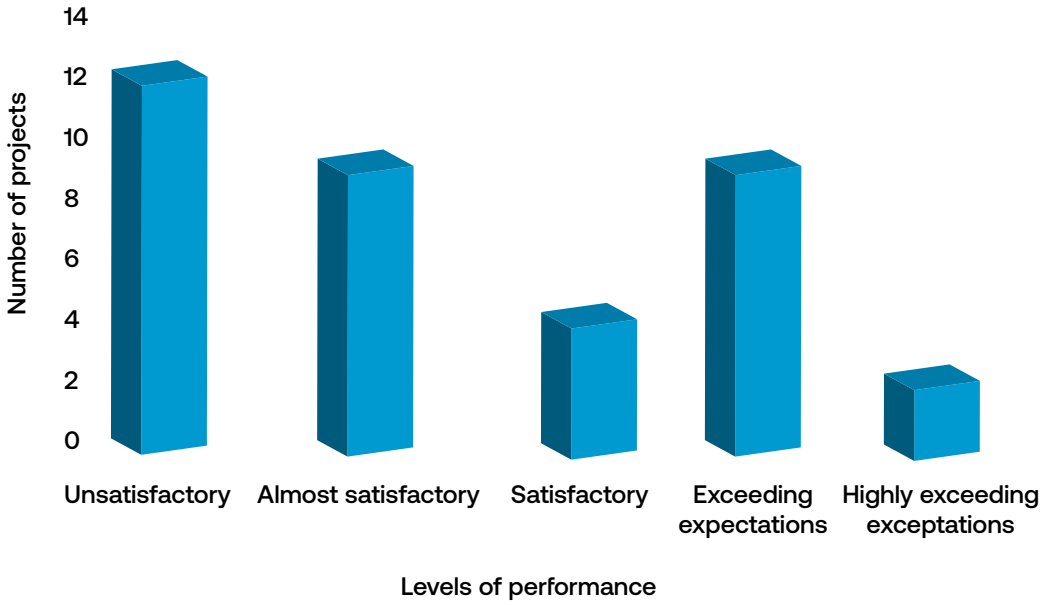


Figure 2: Distribution of selected projects according to level of performance

[3] World Bank. 2016. Climate-Smart Agriculture Indicators; World Bank Group report number 105162-GLB

The selected projects were also assessed according to their triple win area components, separately and jointly: Resilience; Productivity and Resilience; Resilience and Mitigation; and Productivity, Resilience, and Mitigation, as shown in Figure 3.

Eight projects have a Resilience component only. 'Unsatisfactory', 'almost satisfactory', 'satisfactory', 'exceeding expectations', and 'highly exceeding expectations' levels of performance were recorded for 2 (25%), 1 (12.5%), 3 (37.5%), 1 (12.5%), and 1 (12.5%) of these projects, respectively.

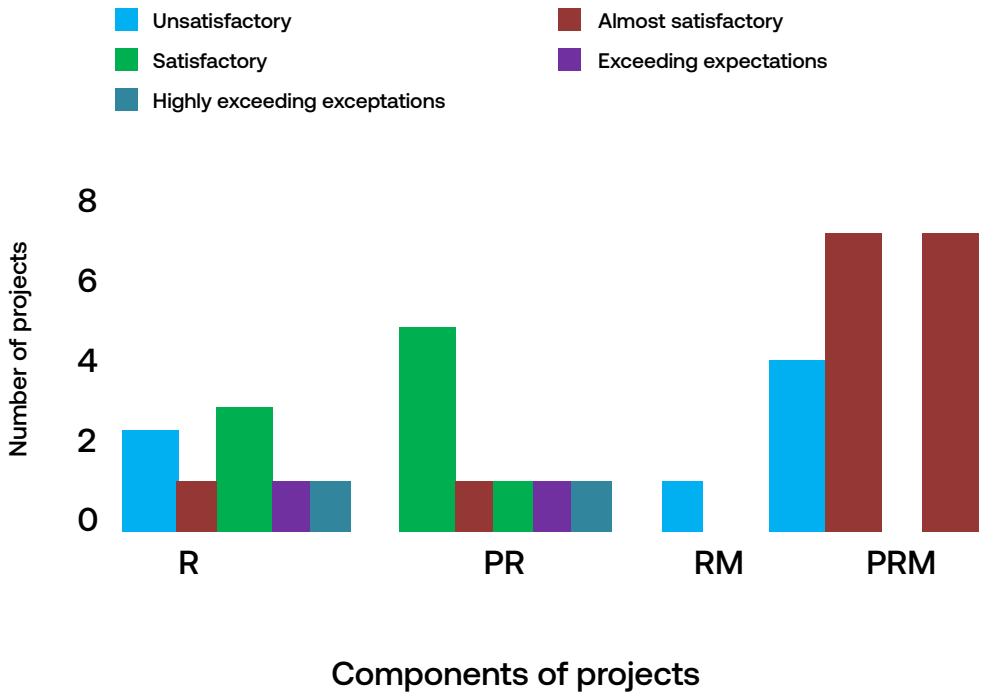


Figure 3: Distribution of triple win components of projects, according to level of performance

Note: R = Resilience; PR = Productivity and Resilience; RM = Resilience and Mitigation; PRM = Productivity, Resilience, and Mitigation.

Nine projects have a Productivity and Resilience component. Unsatisfactory, almost satisfactory, satisfactory, exceeding expectations, and highly exceeding expectations levels of performance were recorded for 5 (55.56%), 1 (11.11%), 1(11.11%), 1 (11.11%), and 1 (11.11%) of these projects, respectively.

One project has a resilience and mitigation component for which an unsatisfactory level of performance was recorded.

Eighteen projects have triple win (Productivity, Resilience, and Mitigation) components. Unsatisfactory, almost satisfactory, and exceeding expectations levels of performance were recorded for 4 (22.22%), 7 (38.89%) 7 (38.89%) of these projects, respectively.

The above levels of performance indicate a potential for achieving individual or joint triple win goals when the interventions of these projects are scaled up.

Interventions and technologies within projects

Fifty CSA technologies and practices were identified and then classified into 10 categories: (i) integrated resource management (soil fertility, sustainable land, and water); (ii) improved varieties; (iii) aquaculture development; (iv) information systems and other digital platforms; (v) improved irrigation systems; (vi) crop pest control; (vii) agroforestry; (viii) local production and use of biogas; (ix) roots and tubers; and (x) small livestock (goats and sheep) and livestock products, pasture production, and livestock diseases, They all aim at contributing to the achievements of one or more of the CSA triple win goals.

The five most prevalent technologies and practices are:

- Integrated resource management (soil fertility, sustainable land, and water), 32% of the identified technologies and practices: This technol-

ogy has helped to increase productivity and build households' resilience through increased income and sustainable jobs. The availability of information and the capacity to use it for development, and access and availability of inputs are major challenges.

- Improved varieties, 15% of the technologies and practices: Yields have been improved through the use of high-performing seeds of drought- and heat-tolerant varieties of millet, sorghum, maize, wheat, and rice, which are the major staple foods in Africa, combined with training of leading producers and supervisory agents, and close monitoring, support, and advice. The productivity gains were: for maize, 38%, with an average yield of 3.096 kg/ha; for rice, 69%, with an average yield of 5.015 kg/ha; and for millet, 80%. In addition, the productivity gains for sorghum and wheat were 64% and 100%, respectively. The availability, quality, and cost of improved varieties seeds are major challenges.

- Information systems and other digital platforms, 14% of the technologies and practices: The use of information systems and other digital platforms helped in managing climate risks and building resilience to food and nutritional insecurity. Up-front investments and capacity are the major challenges.

- Improved irrigation systems, 10% of the technologies and practices: This technology helped build resilience by enabling year-round cultivation and reducing key agricultural risks. A lack of credit facilities combined with high investment costs are major challenges.

- Small livestock (goats and sheep) and livestock products, pasture production, and livestock diseases, 8% of the technologies and practices: Small livestock and improved drought forage combined can help build the resilience of smallholder farmers. The availability of good feed is a major constraint.

The implementation and adoption of most of the above technologies and practices are challenging for smallholder farmers. The main barriers identified from the countries' profiles and other sources[4] are: the non-availability of information or the lack of capacity to use it for development; the high cost and non-availability of good quality inputs; the need for up-front investments; the lack of affordable long-term investment capital; land shortage for some technologies and practices such as aquaculture, inadequate infrastructure; the low-participation of farmers in decision-making and knowledge generation; and the weak capacity of most extension services.

The Bank's resource mobilization efforts

The assessment covered projects that started in the period from 2011 to 2022, and that are expected to end in 2020–2026.

The portfolios consisted of a total of 256 projects, of which 93 (36.33%) are CSA projects and 163 (63.67%) non-CSA projects, costing $8,040,904,738 and $10,954,709,142, respectively. The total cost of CSA projects is 42.33% of the total projects cost in the portfolios. The African Development Fund (AFD) has the largest number of projects, while the African Development Bank has the highest total project cost.

Fifteen projects with performance ranging from almost satisfactory to exceeding expectations for both mitigation and resilience have a total cost of $436,536,999, which is 32.56% of the total cost of selected projects. The share of such projects in the scaling up of CSA technologies and practices should be increased because they have the potential for helping to reduce emissions, to enhance sinks, and to provide the capacity to prepare for, respond to and recover from climate change shocks.

The Bank financing strategy relies on funding from own financing, which has the biggest share, co-financing and leveraging funds from bilateral partnerships and Trust Funds.

[3] James et al. (2015).

Pillars of scaling up of CSA technologies and derived recommendations

The CSA-Pol Index analysis and the barriers to CSA adoption suggest that a successful implementation and adoption of CSA technologies and practices should be based on the following five pillars: (i) policy engagement; (ii) knowledge generation and sharing; (iii) capacity building and extension; (iv) access to inputs, credit, and climate risk management; and (v) national resource mobilization. Possible recommendations derived from the analysis of these pillars are as follows:

1. Develop guidelines and approaches to mainstream climate change into national development planning processes, as well as country profiles and climate-smart investment plans.

2. Develop a technical guide to CSA practices as well as capitalization documents according to the continent's agro-ecological zones.

3. Increasing policy/decision makers' awareness on agricultural climate change adaptation and mitigation, and the CSA concept.

4. Lobby policy- and decision makers on the need for having CSA enablers, in particular, affordable good quality inputs, long-term investment capital, and risk management for a successful implementation and scaling up of CSA interventions.

5. Strengthen capacities of governments, extension staff, and farmers, which is a high priority for enabling the scaling up of CSA and should be a key area of focus. The capacity of extension staff officers needs to be built to enable them to improve smallholder farmers' training and skills in CSA.

6. Conduct applied research to better understand the specific nature of CSA using its multiple fronts, as defined by Barnard et al. (2015)[5] and/or other representations. The objective of the research is to understand the effects of and interactions among the different components.

7. Strengthen research and extension services at the local level to allow context-specific CSA approaches to be identified and implemented in collaboration with local farmers.

8. Build the technical capacity of CSA stakeholders to enable them to design, implement, monitor, and evaluate CSA-related projects and programmes in line with countries' nationally determined contributions (NDCs).

9. Mainstream CSA into all agricultural investment plans and in other sectorial investment plans. For example, for Economic Community of West African States (ECOWAS) countries, mainstreaming of CSA into country's National Agricultural Investment Plan (NAIP) and Regional Agricultural Investment Plan (RAIP) as well as into other sectoral plans could be an important step in ensuring improved national budget allocations to CSA practices.

10. Leverage resources from bilateral projects with an aligned focus on rural development.

11. Go beyond the tradition resource mobilization efforts by making the necessary arrangements for farmer organizations to access resources from carbon market and collaborating with non-governmental organizations (NGOs), funded by philanthropists, to mobilize philanthropic funds to support the adoption of CSA products given their public goods nature.

Implementation of the recommendations

The scaling up of CSA technologies and good practices will rely on partnerships with all regional and international CSA stakeholders in Africa. To this end, a network approach should be considered, which brings together the Bank, Regional Economic Commissions (RECs), universities/agriculture training schools, regional and international CSA stakeholders, and the African countries' national agricultural systems (NASs), comprising sectorial ministries in charge of rural development including research, NGOs, farmers ganizations, and the private sector, to jointly conduct activities for the scaling up of CSA technologies and practices in Africa. The network is composed of task forces using the same principles as the mechanism used by AfricaRice.[6]

A task force is a mini-network composed of CSA stakeholders from different institutions working in partnership with NAS on the same thematic areas of the CSA. A major thrust of the task forces is to provide synergy to CSA scaling up efforts across the continent and build CSA capacity at the regional and national levels. The proposed partnership model is fully consistent with Enabler 7 of the Feed Africa strategy.

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[5] Given the specific nature of CSA, its practice in the context of Africa can be viewed from multiple fronts. For example, smallholder agriculture comprises bio-physical and management components, each with several separate elements. The bio-physical component is composed of climate, soil, crops, pastures, and animals together with certain physical inputs and outputs. The management component consists of people, values, goals, knowledge, resources, monitoring opportunities, and decision making. Smallholder agriculture is therefore a complex combination of all the factors that influence the functioning of the household, the farm, and the rural community.

[6] The task force mechanism is the main vehicle used by AfricaRice to conduct research in partnership with the national agricultural research systems (NARSs). It is an Africa-wide systematic collaborative mechanism based on the principles of sustainability, build-up of critical mass, and ownership by the NARSs.

1. INTRODUCTION

1.1 Background and rationale

Agriculture is of fundamental importance to Africa because it has and will have for the foreseeable future a high share in the total economy of the African region. Indeed, in 2017, agriculture in sub-Saharan Africa (SSA) (excluding South Africa) employed 62% of the population and generated 27% of the GDP of these countries,[7] and is therefore the key to economic growth, increased incomes, improved living standards, poverty eradication, and enhanced food security.

Agriculture has a unique role in poverty reduction. Studies[8] demonstrate that: (i) growth in agriculture remains in general two to three times more effective at reducing poverty than an equivalent amount of growth generated in other sectors; and (ii) the effects on poverty reduction of agriculture are largest for the poorest in society and the advantage of agricultural over non-agricultural growth in reducing poverty ultimately disappears as countries become richer.

Agricultural systems and strategies are essential for addressing the nutrition and health issues that weigh down large populations globally. In Africa, the food security situation is determined by a number of key, often overlapping drivers, including conflict and climate variability and extremes, resulting in 281.6 million hungry people, over one-fifth of the population, and 30.7% of stunted children under 5 in 2020.[9]

Despite this importance, total investment in African agriculture today still falls short of the levels required to address the challenges it is facing and to induce a growth that delivers fundamental change and prosperity.

The challenges comprise internal constraints and external factors. The following internal constraints should be highlighted:

- Infrastructure deficiencies, especially in storage facilities, paved roads, and rail networks contribute to high post-harvest losses and a lack of access to markets.

- Inadequate energy supply is a major constraint to productivity, processing, and storage of produce.

- The productive capacity of smallholder farmers and women who produce the bulk of the food on the continent is seriously hindered as a result of limited access to technology and inputs due to the limited access to credit and financial markets.

The main external factors are demography and climate change. Demographic trends indicate an increase of the current population, putting pressure on the supply of natural resources such as food, water, and energy, with the latter two in competition between agriculture and human needs. As agricultural production increases to meet the increasing food demand, agriculture's share of total greenhouse gas (GHG) emissions will also increase.

The Agriculture, Forestry and Other Land Use (AFOLU) sector accounts for 23% of net global GHG emissions, and without strong policy action to lower these emissions, this share is likely to grow.[10] Nevertheless, beyond simply reducing its impact on climate change, agriculture can become a solution given its potential to offset and sequester emissions.

As indicated above, the current investment in agriculture is not at par with its importance. The continent needs a major injection of both public and private finance into all stages of the agricultural value chain, including both small- and large-scale agribusinesses, to ensure that agricultural development generates inclusive growth[11] to transform the livelihoods and incomes of millions of smallholder farmers and secure the environment. To this end, and as part of the Bank's High 5 priority areas (Feed Africa, Light up and Power Africa, Industrialize Africa, Integrate Africa, and Improve the Quality of Life for the People of Africa), the African Development Bank developed a ten-year African Agricultural transformation strategy (2016–2025) called 'Feed Africa'. Its vision is to transform African agriculture into a competitive and inclusive agribusiness sector that creates wealth, improves lives and secure the environment. Underpinning this vision are four specific goals: (i) contribute to end poverty; (ii) end hunger and malnutrition; (iii) make Africa a net food exporter; and (iv) move Africa to the top of export-oriented value chains where it has comparative advantages. Also, one of the main goals of the transformation is to shift the development of the sector from 'agriculture as a way of life' to 'agriculture as a business'.

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7 Garba (2017).
8 Christiaensen & Martin (2018).
9 FAO, ECA & AUC (2021.
10 Guerrero (2022).
11 African Development Bank (2016).

Feed Africa's vision, which requires addressing the challenge of climate change, affects agriculture negatively through induced climate risks such as flooding, higher temperatures, frequent droughts, and short growing seasons.

Achieving Feed Africa's sustainability goals will require an increased use of CSA, which has the potential to simultaneously achieve the following three goals, referred to by the Food and Agriculture Organization of the United Nations (FAO) as the 'triple win': (i) sustainably increasing agricultural productivity and incomes (Food Security); (ii) adapting and building resilience to climate change (Adaptation); and (iii) reducing and/or removing greenhouse gas emissions (Mitigation) in order to meet national food security and development goals. They may also be considered the three pillars of CSA.

1.2 Mainstreaming climate-smart agriculture into the Feed Africa strategy

The 'Feed Africa' High 5 strategy is the Bank's contribution to the African overall Agricultural Transformation Agenda (ATA). As outlined in the strategy, it has seven enablers to be put in place to create the condition for transformation. Enabler 6 focuses on increased inclusivity, sustainability, and nutrition, where special attention will be paid to CSA and agroforestry. Hence, through the operationalization of this enabler, the Africa Climate-Smart Agriculture (ACSA) programme 2018–2025 is Feed Africa's response to the challenges of climate change.

CSA was mainstreamed into the Feed Africa strategy through projects whose objectives include: the rehabilitation of degraded land; the building of resilience to climate shocks and natural resources degradation in the medium to long term; the improvement of nutritional and food security; the reduction of poverty; the socio-economic integration of young people (male and female) into productive rural occupations; and the development of information systems. The main goal of these projects is to contribute to robust, inclusive, and sustainable economic growth, and the improvement of the quality of life for rural communities through a sustainable increase of agricultural production, employment, and income.

A desk study was conducted on the mainstreaming and impact of CSA interventions across Feed Africa and the Regional Portfolio.

1.3 Rationale and objectives of the study

In order to scale up the dissemination and adop-tion of CSA practices and technologies, there is a need to take stock of: (i) Regional Member Coun-tries' (RMCs') capacities in terms of the availability and functioning of enablers and supporting services for implementing CSA and their integration in agri-cultural policies and in national development strategies; (ii) the achievements of the climate-smart projects mainstreamed into the Feed Africa strategy; (iii) the relevance of CSA technologies and practices within these projects together with the main barriers for their dissemination and adoption; and (iv) the Bank's resource mobilization efforts for CSA mainstream-ing and implementation. An approach should also be proposed for scaling up CSA through resource mobilization, technical assistance, knowledge prod-ucts, capacity building, and country profiling. To this end, a desk study was conducted.

The overall goal of this desk study is to conduct research, analyse, and prepare a report on the impact and mainstreaming of CSA activities to date across the Bank's Feed Africa and regional portfolio projects that started in the period from February 2011 to Sep-tember 2022, and that are expected to end in 2020–2026. The analysis and subsequent report should define the chosen method of analysis and deliver insights for the selected countries and regions on:

- the enabling environment and policy frameworks facilitating or hindering CSA activities in the portfolio;
- the Bank's resource mobilization strategy and efforts in CSA mainstreaming and implementation;
- the survey of the CSA technologies and practices deployed across the portfolio and their successes or limitations;
- key efforts to mainstream CSA resilience, especially in fragile contexts; and
- opportunities for future engagements to expand the CSA portfolio through resource mobilization technical assistance, knowledge products, strategic alliances, capacity building, country profiling, and investment planning.

1.4 Organization of this report

This report is organized into nine sections. Section 1 presents the background and rational information, the importance of agriculture, its challenges and intertwined links with climate change, the vision of the the Bank's strategy, Feed Africa, which is to transform African agriculture, and the requirements to address the challenges of climate change that negatively affects agriculture. Section 2 presents the methodology of data collection, assesses the enabling environment for CSA implementation and CSA selected projects in terms of achieving their 'triple win' outcomes, i.e. Productivity, Resilience, and Mitigation. Section 3 presents the results of these assessments and CSA technologies and interventions within projects. These technologies and interventions are classified and described in terms of their features, relevance, and adoption barriers. Success stories are presented in Section 4. Section 5 presents the Bank's resource mobilization efforts for CSA implementation. Recommendations are presented in Section 6, and a conclusion in Section 7. A reference of documents used or cited in this report is found in Section 8, and annexes are presented in Section 9.

2. METHODOLOGY

2.1 Data collection

Desk research was carried out on CSA interventions and projects in selected countries and regions in Africa. The data and information used in this study were obtained from different secondary sources. These include CSA project appraisals, implementation and completion reports from the the Bank's data portal, climate change and environment policies, strategies, and investment frameworks of the RMCs, country profiles, peer-reviewed publications and unpublished grey literature.

Countries' enabling environments for CSA implementation were assessed using CSA indicators and the CSA Policy Index (CSA-Pol Index) with a data set[12] of these indicators, and an index for 37 Africa countries as well as 51 countries from other regions including Latin America and the Caribbean, Europe and Central Asia, East Asia and the Pacific, the Middle East, and South Asia.

Projects were chosen following the selection of countries. Once the countries were selected, all of their respective projects including multinational projects were reviewed and analysed. A review of the Feed Africa and ACSA project portfolios indicates that CSA projects have been undertaken in 40 countries in addition to the Technologies for African Agricultural Transformation (TAAT) programme, which deploys productivity-increasing technologies in the following eight priority intervention areas (self-sufficiency in rice, cassava intensification, transforming the savanna zone into Africa's breadbasket, achieving food security in the Sahel, restoring tree plantations, expanding horticulture in Africa, expanding wheat production in Africa, expanding fish production in Africa).

The TAAT programme was selected due to its continental nature. In addition, it was proposed were selected through the selection of 12 countries from the 40 countries where a CSA project or project with CSA component(s) has been carried out. The 40 countries are in four groups – Feed Africa, ACSA, GAFSP and the Forest

Investment Programme (FIP) – with some overlaps. When a country appears in all groups, which is the case of Zambia and Côte d'Ivoire, it will automatically be part of the sample. In addition to Côte d'Ivoire and Zambia, 10 more countries were selected from the 40 countries where a CSA project or project with CSA component(s) was carried out. Countries appearing in more than one group were assigned among the groups so as to have groups without countries in common. The disjoint groups were then considered strata (non-overlapping groups covering the entire population of interest). Table 2 presents the strata with their rural population.[13]

A stratified sampling with proportional allocation and with probability proportional to size (PPS) was used for the selection of the 10 countries. For a given stratum, the number of countries selected is proportional to the number of countries in that stratum, and the probability of selecting a country is proportional to its size (rural population).

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[12] World Bank – Indicators for Assessing Policy and Institutional Frameworks for Climate Smart Agriculture September 2017.

[13] List of African countries by population. Worldomètres and the World Bank.

The number nj of countries to sample from stratum j is given by the allocation equation

$$\frac{n_j}{N_j} = \frac{10}{38}$$

Where:
Nj is the number of countries of stratum j.
For a given stratum, the PPS selection equation is given by:

$$P_i = \alpha \frac{m_i}{\sum_i m_i}$$

Where:
α is the number of countries to be selected in the stratum, Pi is the probability of selecting country i, mi is the size (rural population) of country i, and ∑_iαm_i is the sum of the countries' sizes in the given stratum.

In addition to Zambia and Côte d'Ivoire, the 10 selected countries were: Kenya, Morocco, Nigeria, Uganda, Cameroon, Ethiopia, Senegal, Niger, Burkina Faso, and Ghana. Some selected projects were just starting or undergoing restructuring and lack data for the study. Other projects were purposely selected to replace them. At the end of the selection process, **there were 36 projects from 20 countries** for the study. The list of selected projects is presented in Annex I.

The selected projects are completed or ongoing projects, and can further be classified into categories. While all projects have a Resilience component, six categories have been identified. The value chain is cross-cutting and therefore can be found in all of the identified categories:

Value Chain Development: This category covers projects where identified actors and activities bring agricultural products from production in the field to final consumption, where at each stage, value is added to the product.

Resilience: This category covers resilience to climatic shocks (floods, drought, high temperatures, etc.) and socio-ecological systems in the Lake Chad Basin, and the resilience of rural communities to food and nutrition insecurity

Infrastructure, Irrigation, and Productivity: This category covers the realization of infrastructures for irrigation, breeding, marketing, agro-industry, rural roads, etc., and the development of irrigation and agricultural productivity.

Forestry/Mitigation: This category covers projects aimed at promoting sustainable forest management, thus contributing to the reduction of GHG emissions, the maintenance of forest carbon stocks and the fight against poverty (e.g. Reducing Emissions from Deforestation and Forest Degradation, REDD+).

Information Systems: This category covers projects aimed at set ting up information systems relating to climate, markets, and other digital platforms.

The TAAT programme: This programme deployed productivity-increasing technologies in the eight Priority Intervention Areas.

Table 2: Strata (S) – Country rural populations (in 100,000)

STRATA							
S1: Feed Africa		**S2: ACSA**		**S3: GAFSP**		**S4: FIP**	
Country	**Rural Pop.**	**Country**	**Rural Pop.**	**Country**	**Rural Pop.**	**Country**	**Rural Pop.**
Chad	125	Equatorial Guinea	4	Liberia	23	Democratic Republic of Congo	481
Eritrea	21	South Sudan	88	Malawi	157	Burkina Faso	143
Eswatini	8	Somalia	85	Gambia	8	Republic of Congo	17
Guinea	82	Madagascar	168	Senegal	99	Rwanda	106
Guinea Bissau	10	Tunisia	35	Tanzania	382	Mozam-bique	194
Libya	13	Uganda	340	Niger	201	Ghana	130
Mauritius	7	Zimbabwe	100	Central African Republic	27		
Sudan	281	Mali	112				
Mauritania	20	Djibouti	2				
Morocco	132	Benin	61				
Nigeria	974	Ethiopia	894				
Kenya	384	Gabon	4				
		Cameroon	111				

2.2 Analytical framework

In addition to agricultural practices and technologies, making CSA a practical and operational activity requires includes enabling policies, and institutional environment and financing mechanisms. The climate-smart enabling environment is measured by the capacity of national institutions to jointly implement national agricultural and development policies. This requires a good integration and coordination of the national agricultural systems (NASs), which comprise all institutions responsible for rural development – government ministries, farmers organizations, research institutions, extension services, public and private financial institutions, and non-governmental organizations (NGOs).

If enabling policies for addressing climate change, agricultural development, and food security, and synergy among public and private institutions responsible for implementing them are drivers of an enabling environment for the implementation of CSA, then an enabling CSA implementation measure could be obtained as a function of variables measuring the effects of these drivers.

The general formula of the model is as follows,

Where:

$$EE = f(A_gP, E_nP, ES, RD, FI, C)$$

EE is a measure quantifying the favourability of the environment;

AgP is a vector of agricultural policies indicators aligned with the CSA 'triple win';

AnP is a vector of environment policies aligned with 'triple win';

ES is a vector of extension policy indicators aligned with the CSA 'triple win';

RD is a vector of research and development indicators aligned with the CSA 'triple win';

FI is a vector of financial institutions indicators aligned with the CSA 'triple win'; and

C is a vector of coordination of the NAS indicators aligned with the CSA 'triple win'.

However, since CSA is context-specific, it will be difficult to identify a single function over several environments, and estimations of its parameters would not be feasible. Instead, a measure of an enabling environment can be obtained by compiling indicators of these drivers into a single index on the basis of an underlying model. These indicators should ideally measure multiple dimensional aspects of these drivers.

There are several indicators/indices informing about agriculture, climate change, food security and nutrition. These indicators and indices typically fail to capture the interdependencies between food security and productivity, environment and natural resources management, or capture agriculture's impact on climate change or the need for increasing resilience toward climate-induced risks.[14]

The World Bank Group has developed the following three Climate-Smart Agriculture Indices after a thorough review of existing indices relating to agriculture and climate change: the CSA-Pol Index (CSA-Pol Index), the CSA Results Index (CSA-Res Index), and the CSA Technology Index (CSA-Tech Index). The CSA-Pol Index and the CSA-Res Index are used to assess countries' enabling environment and policy frameworks for CSA implementation, and CSA projects' successes in achieving their goals in the CSA triple win areas, respectively.

The CSA Policy Index

The CSA-Pol Index comprises 14 indicators for assessing the enabling environment for the implementation of CSA at the national level in terms of policies, legal frameworks, and the capacity of important stakeholders, especially NARES. The 14 indicators are presented in Table 3.

Table 3: Indicators of the CSA-Pol Index

THEME	INDICATOR	DETAIL	RATIONALE
	Agricultural adaptation policy	Three sub-indicators measuring the integration of adaptation in national agriculture policy and strategies to support implementation and monitoring of programming.	
Readiness Mechanism	Agricultural mitigation policy	Three sub-indicators measuring the integration of mitigation in national agriculture policy and strategies to support implementation and monitoring of programming.	To assess how the enabling environment is supporting CSA implementation.
	Economic readiness	Calculated from the Ease of Doing Business Index.	
	Governance readiness	Calculated from World Governance Indicators.	To measure a country's capacity to leverage investments for climate action, and incentivize the adoption of new technologies.
	Extension services	Two sub-indicators that assess the capacity of national extension services to provide producers with relevant information for dealing with the impacts of climate change and evidence of national programmes to disseminate such information.	
	Agricultural research and development (R&D)	Two sub-indicators measuring integration in CSA- focused research in national agricultural research and development and evidence of allocation in agriculture research budget focused on climate change.	
	Rural Access Index	Proportion of the rural population that has adequate access to a transport system.	To measure institutional capacity to operationalize and mainstream CSA.

[14] Climate-Smart Agriculture Indicators World Bank Group Report number 105162-GLB.

Services and Infrastructure	Social safety nets	Identified in agriculture policies and national strategies as a resilience mechanism.	
	National greenhouse gas inventory system	Two sub-indicators that assess the evidence from a national GHG inventory system, which include emissions from the agricultural sector.	
	National agricultural risk management systems	Six sub-indicators that identify policies and guidelines for agricultural risk management systems, including grain stock reserves, standards for warehouse receipts, agricultural insurance, and crop and livestock prices.	
	Adaptive capacity	Calculated from the vulnerability indicator from the University of Notre Dame Global Adaptation Index.	To measure country's exposure, sensitivity and ability to adapt to negative impacts of climate change.
	Disaster risk management coordination	Three sub-indicators that assess integration of disaster risk management planning in national agricultural policies, or conversely, how the policies integrate measures to address disaster risk in the agriculture sector.	
Coordination Mechanism			To assess country's ability to mobilize and coordinate across various ministries and stakeholders to support CSA implementation.
	Multi-sectoral coordination	Four sub-indicators that measure the extent that national agriculture policies promote or enable multi-sectoral coordination across sectors.	

Source: Braimoh et al. (2017).

Each of the 14 indicators, which are clustered in the following three themes, is aligned with the CSA 'triple win' areas of Productivity, Resilience, and Mitigation:

- Readiness Mechanism. It measures how a country's support for CSA is integrated in agricultural policies, and in a country's development strategies including National Adaptation Programme of Action (NAPA) and Nationally Appropriate Mitigation Actions. It also includes political stability and rule of law, which are necessary for leveraging outside investments, ICT infrastructure, education, and innovation.

- Services and Infrastructure. It assesses a country's capacity in terms of the availability of, financial investments for, and functioning of enablers and supporting services for implementing and mainstreaming CSA.

- Coordination Mechanism. It assesses the coordination of various stakeholders of the NAS, especially the coordination, coherence, and integration among climate change, agricultural development, and food security processes.

The CSA-Pol Index Scores for each theme were calculated using a simple average of its indicators. A composite CSA-Pol Index was derived from a simple average of the 14 indicators.

The CSA-Result Index

The CSA Results Index (CSA-Res Index) can be used to measure how a project performed in reaching its targets in the CSA triple win areas – Resilience, Mitigation, and Productivity – separately and jointly, during projects implementation and/or after the projects has been completed and is computed in five steps:

1. Indicators are selected from the project's Result-based Framework. When applicable, CSA result indicators are used, which measure: (i) the direct outputs of a CSA intervention (beneficiaries, land areas, livestock); (ii) the CSA enabling environment, which may not a consequence of an intervention; and (iii) the medium- to long-term consequences of CSA interventions (in terms of resources, emissions, yield, and benefits). Otherwise, similar rural development, agricultural, or climate change-related indicators that reflect

CSA activities are used. Each indicator is aligned with one or more of the triple win areas to measure Productivity, Resilience, or Mitigation;

2. Target and actual (observed) values for each indicator are identified.

3. The indicator's observed values are scored against the proposed target, according to the indications contained in Table 4.

4. For each triple win area, the scores assigned to it in step 3 are averaged to obtain the triple win area scores, which can be used to assess the project in that area.

5. The scores of each of the triple win areas are averaged to obtain an estimate of the project's performance in achieving the CSA goals.

Table 4: Indicator scores

Score	Level of performance	Interpretation
1	Very unsatisfactory	The indicator's observed value falls short of the target value by more than 20%
2	Rather unsatisfactory	The indicator's observed value falls short of the target value by 1% to 20%
3	Satisfactory	The indicator's observed value is equal to the indicator's target value.
4	Exceeding expectations	The indicator's observed value exceeds the target value by 1% to 20%
5	Highly exceeding expectations	The indicator's observed value exceeds the target value by more than 20%

The scoring of indicators and determining their level of performance in step 3 used an ordinal scale of measurement. The project score is obtained through an averaging of averages. It is more likely that it will fall in an interval containing the numbers used in the ordinal scale rather than on the numbers themselves. Thus, the labelling of project performance can better be achieved in using an interval scale, as indicated in Table 5.

Table 5: Scoring of projects' levels of performance

Groups	Criteria	Level of performance
1	Score < 2	Unsatisfactory
2	2 ≤ score < 2.8	Almost satisfactory
3	2.8 ≤ Score ≤ 3	Satisfactory
4	3 < Score ≤4	Exceeding expectations
5	Score > 4	Highly exceeding expectations

3. RESULTS AND DISCUSSION

3.1 Assessing countries' enabling environments for CSA implementation

Countries' enabling environments for CSA implementation were assessed using CSA indicators and CSA-PoI Index with a dataset[15] of these indicators and index for 37 Africa countries and for 51 countries from other regions including Latin America and the Caribbean, Europe and Central Asia, East Asia and the Pacific, the Middle East, and South Asia.

Figure 4 presents the three indicators, Readiness Mechanism (RM), Services and Infrastructure (SI), Coordination Mechanism (CM), and the CSA-PoI Index for all countries together with the African averages and averages of 51 countries from other regions including Latin America and Caribbean, Europe, Central Asia, East Asia and Pacific, Middle East, and South Asia.

3.1.1 Assessing countries' capacities using the Readiness Mechanism

Figure 4 presents the scores and countries ranking on the Readiness Mechanism indicator.

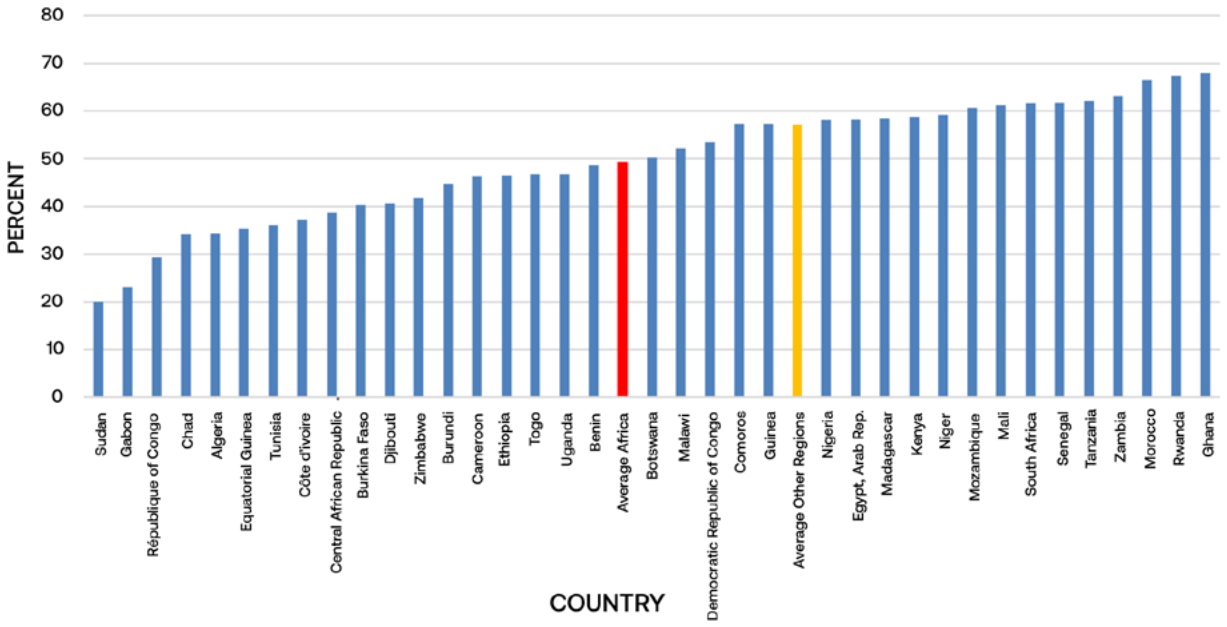

Figure 4: Level of CSA Readiness Mechanism indicator by country

Ghana has the highest score, at 67.9%, and Sudan, the lowest score, at 20.10%. The African average score is 49.29%, with a CV of 25.68%, indicating a large variation of the Readiness Mechanism indicator among countries.

Rwanda, Morocco, Zambia, and Tanzania are the leading countries together with Ghana. In these countries, agricultural policies, country's development strategies, and economic and social structures are more conducive to supporting CSA implementation than in Equatorial Guinea, Algeria, Chad, Republic of Congo, Gabon, and Sudan, which are low-performing countries.

The Readiness Mechanism of Ghana for CSA interventions is fully translated in its National Climate-Smart Agriculture and Food Security Action Plan,[16] and in the Ghana Shared Growth and Development Agenda (GSGDA), which is its national development framework. The former states: "The overall goal of the Action Plan is to facilitate and operationalize the National Climate Change Policy (NCCP) for effective integration of Climate Change into Food and Agriculture sector development policies and programmes." The latter explicitly states the centrality of climate change in development planning, and defines the development agenda around climate change issues with respect to agriculture and food security.

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[15] World Bank (2017). Indicators for Assessing Policy and Institutional Frameworks for Climate Smart Agriculture September 2017.
[16] National Climate-Smart Agriculture and Food Security Action Plan of Ghana (2016–2020).

In Rwanda, national policies and strategies have been directed towards mainstreaming climate change adaptation and mitigation, and a proactive approach has been taken in mainstreaming climate change into development policies and strategies. In addition to this public interest, there is also private interest in mainstreaming CSA activities.

Morocco has incorporated the climate change issue into its development strategies. This in turn will plan and implement adaptation and mitigation programmes that are fully integrated with national development priorities.

In Zambia, a number of government ministries and departments play a key role in CSA promotion, mainstreaming and implementation. The country's focal point to the United Nations Framework Convention on Climate Change (UNFCCC), hosted by the Ministry of Water Development, Sanitation and Environmental Protection (MWDSEP), leads the formulation and implementation of climate change-related policies, strategies, and programmes in compliance with national policies and programmes. Zambia was one of the three initial pilot countries for the Africa Climate-Smart Agriculture Alliance (ACSAA), a platform that fosters collaboration between CSA stakeholders (government, research organizations, international organizations, and NGOs).

Many public and private institutions are involved in promoting CSA in Tanzania, and the Government has put in place numerous policies, strategies, and programmes for increasing farmers' resilience and productivity and promoting CSA adoption. The President's Office, Regional Administration and Local Government (PO-RALG) acts as a policy implementation bridge between sector ministries, government institutions and local government authorities.

The low-performing countries, Equatorial Guinea, Algeria, Chad, Republic of Congo, Gabon, and Sudan, are all oil producing countries, most of which with high agricultural potential. This indicates that agriculture is neglected in favour of an absolute dependence on oil revenues.

The African average of the CSA Readiness Mechanism indicator is below the average of other regions, which indicates the low performance of African countries compared to those of other regions.

3.1.2 Assessing countries 'capacities according to the Services and Infrastructure indicator

Figure 5 shows the scores and the rankings for countries on the Services and Infrastructure Indicator.

South Africa and Guinea have the highest and lowest score, respectively. Other high-performing countries are Egypt, Nigeria, Zambia, Tanzania, and Rwanda.

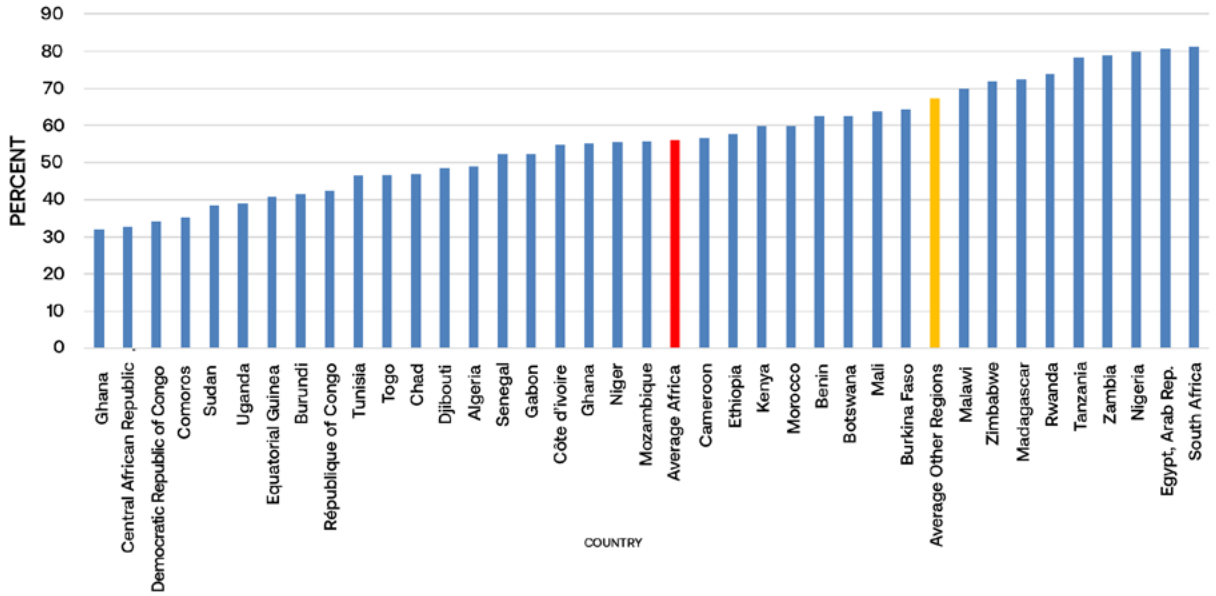

Figure 5: Level of Services and Infrastructure indicator by country

The African average score for the Services and Infrastructure theme is 55.95%, which is below the average of other regions. African countries' scores on this indicator show an important variation, as indicated by a CV of 26.20%. South Africa agricultural sector is supported by an enabling environment[17] including climate information services and infrastructure, as indicated in Box 1.

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[17] SWITCH Africa Green Programme (2020).

Box 1: The enabling environment for climate-smart agriculture in South Africa

In South Africa, the enabling environment for climate-smart agriculture (CSA) is characterized by:

- the availability of climate information services to inform farmers' decision-making, improve management of climate-related agricultural risk and help adapt to climate change;
- weather index-based agricultural insurance to buffer weather-related shocks;
- increased investment by governments in CSA research and adaptive conservation agriculture specific to the different agro-ecological zones in a country;
- capacity building for training and education institutions that teach agriculture at different levels to include CSA in teaching curricula and institutional research strategies;
- a national awareness and education campaign on the impact of climate change on agriculture and the benefits of adopting climate-smart farming methods; and
- the availability of product incentives' consisting of market-based mechanisms, such as payment for ecosystem services and the carbon market.

Nigeria's commitment to providing CSA enabler services and infrastructure is reflected in its National Adaptation Strategy and Plan of Action, consisting of:

- establishing an agricultural extension for the climate change adaptation programme, which may comprise training at state agricultural colleges of extension workers on climate change adaptation, direct outreach to engage farmers/land users, and the use of the state radio, FM radios, and community radios for extension and information services;
- strengthening agricultural research: State universities and research institutions should expand agricultural research programmes relating to climate change impacts and adaptation in the agricultural sector;
- developing and rolling out a programme to improve availability and farmer access to short- and long-range weather forecasts;
- identifying and transferring technologies that can contribute to climate change adaptation in Nigerian agriculture;
- ensuring accessibility of microfinance for climate change adaptation by farming families, particularly female-headed households and rural agricultural communities.

The Government of Zambia has been supported by FAO and the United Nations Development Programme (UNDP) in building the necessary policy, technical, and financial enabling environments for CSA implementation. The support include capacity building through national workshops and exchange visits on CSA, and leveraging resources for CSA through the identification of possible financing sources, the formulation of CSA investment proposals, and country-owned strategic frameworks for CSA.

The strong political will of the Government of Tanzania to promote CSA is demonstrated by the number of institutions and policies focusing on improving productivity and enhancing the adaptation and resilience of small-scale farmers. This, together with the strong support of NGOs and international organizations, have created enabling services and infrastructure for CSA. The commitment to adaptation is so strong that most actors view mitigation as a co-benefit of adaptation interventions rather than a stand-alone objective of their work. The enabling services include: promoting the use of climate and weather data and forecasts, developing early warning systems, and promoting the use of cell phones to facilitate farmers' access to information on CSA.

In Rwanda, the CSA interventions are supported by a set of services and infrastructure:

- Policies and strategies of line ministries are supportive of mitigation and adaptation efforts in the agricultural sector, as evidenced by the five-year Strategic Plan for the Environment and Natural Resources Sector and in the National Environment Policy.

- Several public-private partnerships (PPPs) have been established to develop CSA support services and infrastructure such as crop insurance, and credit to farmers at a lower rate than commercial banks.

- Knowledge generation on topics related to agriculture and climate change is carried out by national and international research institutions and NGOs.

- The funding of CSA activities is provided by national, bilateral, and multilateral sources and the private sector.

3.1.3 Assessing countries 'capacities according to the Coordination Mechanism indicator

The ranked scores of the Coordination Mechanism theme are presented in Figure 6. Four countries, Tanzania, South Africa, Ghana, and Benin, have a perfect Coordination Mechanism score of 100%. Low-performing countries are Algeria, Sudan, Côte d'Ivoire, and Equatorial Guinea, which are above the African average economic development level. Despite the strong agricultural potential of these countries and their above African average or high economic development level, there is a lack of a good coordination among CSA stakeholders, which is a strong determinant for the integration between climate change and agricultural development.

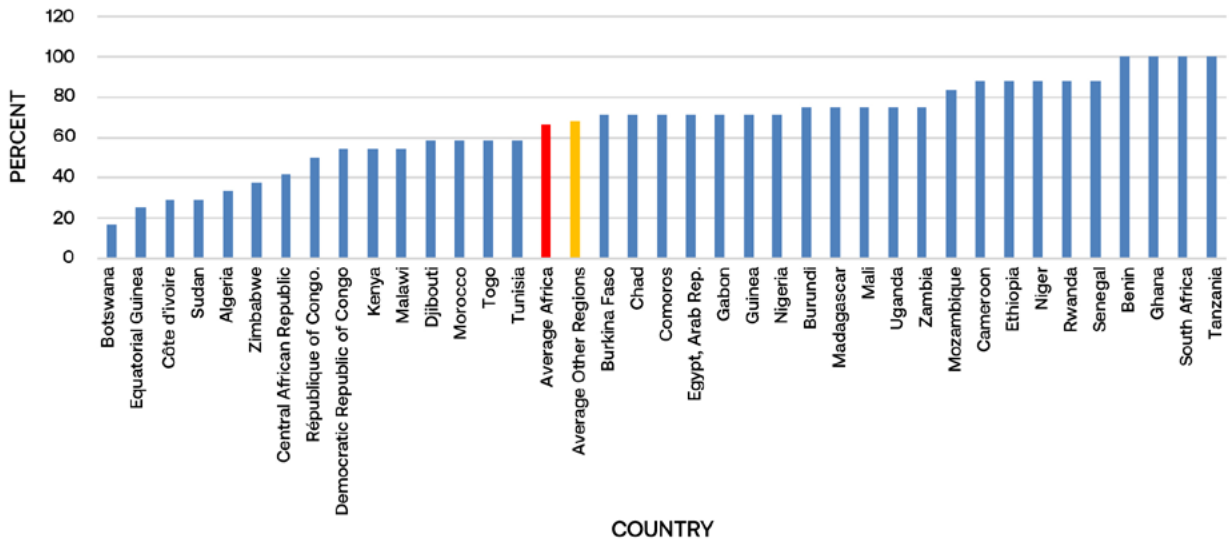

Figure 6: Level of the Coordination Mechanism indicator by country

The African' average score for the Coordination Mechanism theme is 66.45%, which is similar to the average of other regions. It has a CV of 33.80, which reflects a large variation among countries.

Benin recognizes that coordination of actors both within the agriculture sector and across sectors is important for ensuring the sustainability of CSA-related interventions. To this end, the mission of the Directorate-General of the Environment and Climate is focused on the monitoring and evaluation of policies and strategies for managing the effects of climate change, while the National Committee on Climate Change, a platform of all stakeholders in Benin, addresses national concerns related to climate change and aims to improve Benin's institutional framework for climate change. These two institutions, through their missions, ensure the coordination of the CSA stakeholders and the integration of climate change, agricultural development, and food security processes.

One of the most important recommendations in the National Climate Change Policy of Ghana is the

setting up of a body, the National Climate Change Committee, to ensure the effective coordination of initiatives implemented in the country to address climate change challenges. Indeed, with the compelling need to address these challenges, different initiatives are being formulated at the national, regional and international levels. It is therefore of utmost importance for Ghana to have a national coordination body.

The perfect Coordination Mechanism indicator score of Tanzania is explained by a set of implementation arrangements stated in the Tanzania CSA Country Profile and in its NAPA, as presented in Box 2.

Box 2: Tanzania climate-smart agriculture projects' implementation arrangements

The President's Office, Regional Administration and Local Government (PO-RALG) acts as a policy implementation bridge between sector ministries, government institutions and local government authorities. It is mandated to implement policies, build capacity, monitor, evaluate, and provide technical backstopping of CSA activities at local levels.

The National Adaptation Programme of Action- (NAPA)-proposed project profiles are implemented and managed by relevant sectors. However, the coordination role is vested in the Vice President's Office Environment Division, which is the country's focal point regarding environmental issues. Furthermore, monitoring and evaluation of the projects will be carried out by the Vice President's Office in collaboration with other relevant stakeholders.

The arrangements made in South Africa's National Climate Change Adaptation Strategy (NCCSA)[18] explain its perfect Coordination Mechanism indicator score. Indeed, the NCCSA, italicize this: (i) sets out a common vision of climate change adaptation and climate resilience for the country; (ii) defines South Africa's national climate change adaptation goals to provide overarching guidance to all sectors of the economy; and (iii) guides a robust, coherent, and coordinated approach to climate change adaptation and resilience-building activities across different institutions and levels of government, sectors, and stakeholders affected by climate variability and change.

3.1.4 Assessing countries 'capacities using the CSA-Pol Index

Figure 7 provides a global view of the CSA-Pol Index values, while Figure 8 presents the scores and rankings on the CSA-Pol Index of 37 African countries. As expected from the three indicators (Readiness Mechanism, Services and Infrastructure, and Coordination Mechanism) of the CSA-Pol Index, South Africa, Tanzania, Rwanda, Zambia, and Nigeria are the high-performing countries, and Central African Republic, Equatorial Guinea, Republic of Congo, Algeria, and Sudan are the low-performing countries.

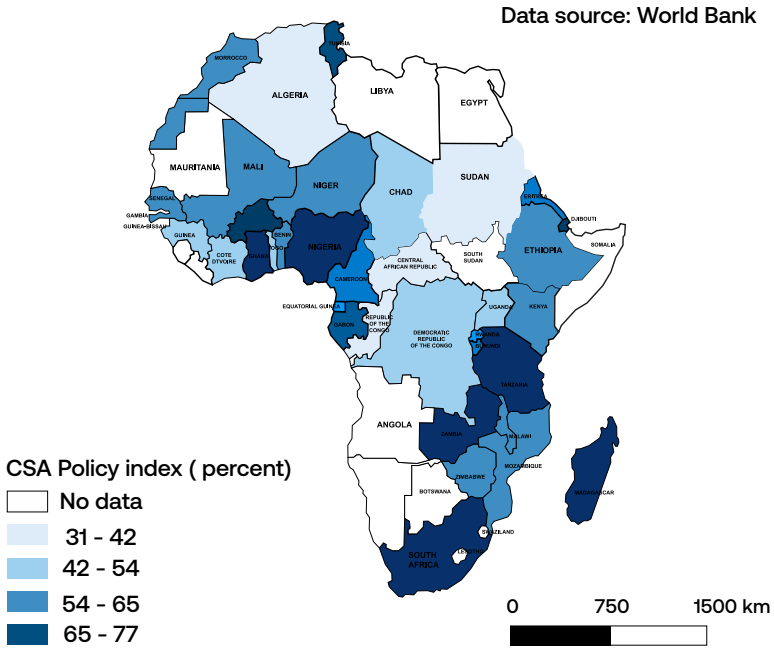

Figure 7: Global overview of the CSA Policy Index

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[18] Republic of South Africa (2019).

This map is for use exclusively in this report. The names used and the borders shown do not imply on the part of the AfDB Group and its members any judgement concerning the legal status of a territory nor any approval or acceptance of these borders.

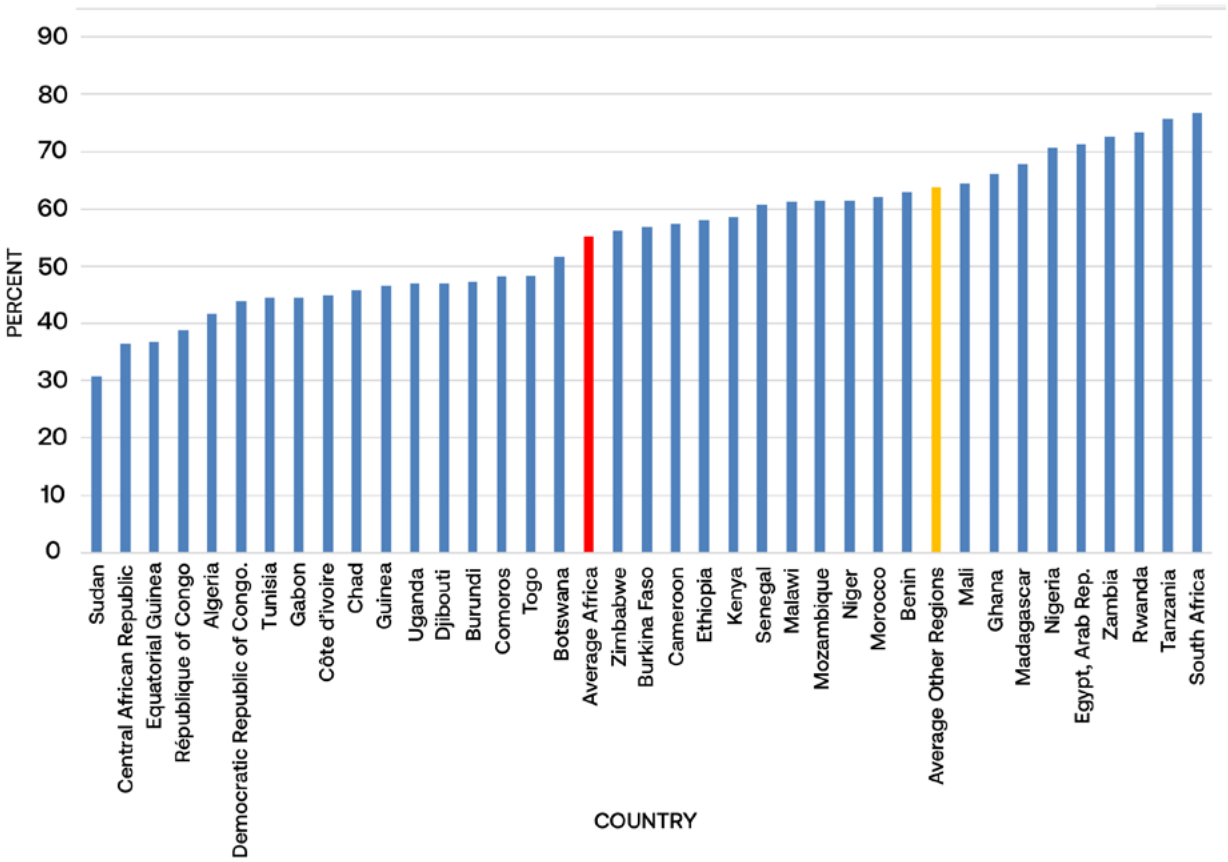

Figure 8: Levels of the CSA Policy Index by country

South Africa, which scored the highest in Services and Infrastructure, and in Coordination, also scoared the highest in the composite CSA-Pol Index. Sudan, which scored the lowest in the Readiness theme, and being in the low-performing countries in the other two indicators, scored the lowest as expected.

The average score of oil-producing countries such as Republic of Congo, Equatorial Guinea, Sudan, and Algeria is 38.4 and is far below the African average (55.06%). All their scores are below that average. These low scores reflect their lack of commitment in the development of their agricultures and their absolute dependence on oil revenues. Twenty out of 37 countries (54%) scored above the African average of 55.06% on the CSA-Pol Index. The CV is 22.12, which reflects an important variation in countries' capacities to providing enabling environment for CSA implementation.

While maintaining and improving the level of coordination, emphasis should be placed on the improvement of the Readiness Mechanism and Services and Infrastructure indicators.

The availability, financial investments, and functioning of enablers and supporting services are barely acceptable on average, and need to be improved in many countries in order for them to meet the need of mainstreaming CSA activities across the Bank's Feed Africa and regional portfolios.

3.2 Improving the enabling environment

3.2.1 Clustering countries for defining future interventions

The averages of CSA indicator themes of the CSA-Pol Index and the African Real GDP per capita are presented in Table 6. It shows that the mean of the Readiness Mechanism, Services and Infrastructure, and Coordination Mechanism are: 49.29%, 55.95%, and 66.45%, respectively. The average African Real GDP per capita is $4,980.63, with a CV of 103.44.

Table 6: Summary statistics of CSA indicators and of real GDP per capita

	Readiness Mechanism	Services and Infrastructure	Coordination Mechanism	Real GDP per capita*
Mean	49.29%	55.95%	66.45%	$4,980.63
Standard deviation	12.66%	14.66%	22.46%	$5,151.98
CV	25.68%	26.20%	33.80%	103.44%

Table 6 highlights the following: (i) the average scores of Readiness Mechanism, Services and Infrastructure, and Coordination Mechanism indicators indicate that, in some countries, support for CSA is not fully integrated into agricultural policies, and their capacities to conduct programmes aligned with the CSA triple win components of Productivity, Resilience, and Mitigation is weak; (ii) the coordination of the NAS, which comprises research and extension, and other line ministries and stakeholders responsible for rural development and climate varies between acceptable to satisfactory; and (iii) the important variations of countries scores for the CSA indicators of the three themes reveal that African countries' differ in their abilities and/or commitments to providing enabling environment for CSA. This disparity, which indicates that countries are at varying stages of the adoption of policies and mechanisms to support CSA, should be taken into account in the development of capacity-building programmes and in scaling up CSA interventions. The very large variability of the real GDP per capita is the result of a huge difference of wealth of African countries.

Real GDP (GDP in purchasing power parity) per capita is one of the most appropriate measures to compare countries' economic well-being, and is typically used as a measure of wealth to distinguish rich and poor countries. Figure 6 presents the real GDP per capita for 37 African countries.

Equatorial Guinea has the largest GDP per capita of $2,2771.61, and Burundi, the lowest, at $784.51. The African average score is $4,980.63, with a CV of 103.44, indicating a large variation of wealth among countries.

Botswana, Egypt, South Africa, Gabon and Equatorial Guinea are the leading countries

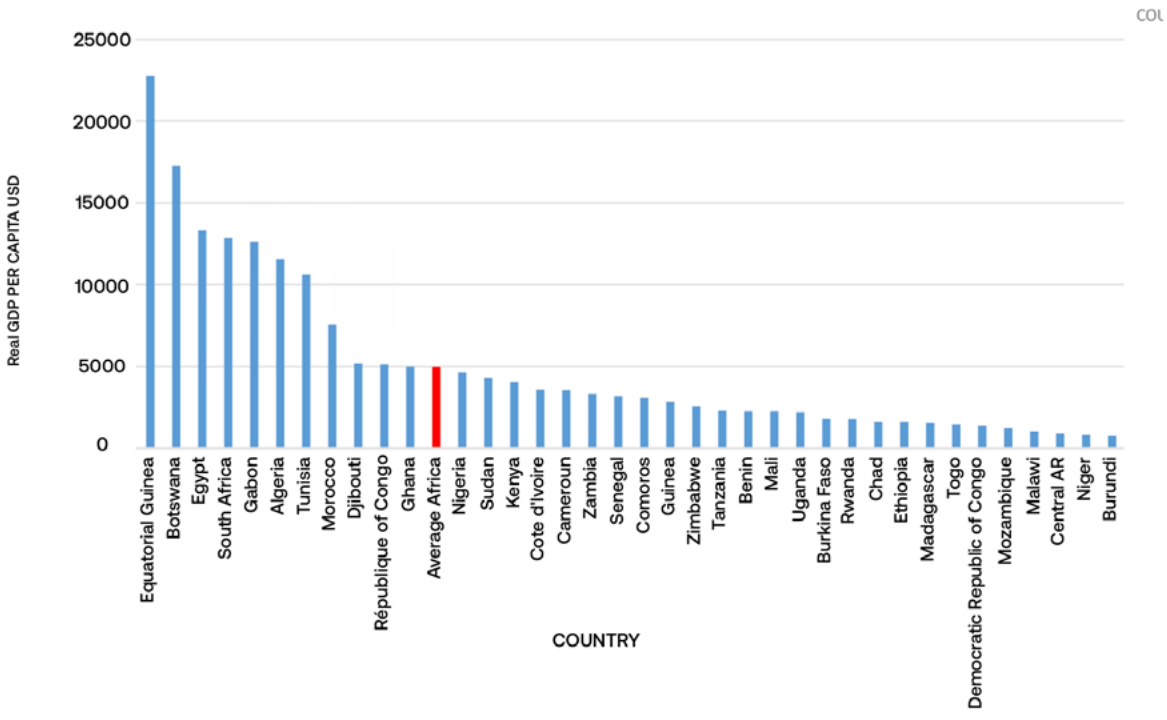

Figure 9: Real GDP per capita in US dollars (PPP)

A rich country is expected to have a high level of economic development, which is a strong determinant of its capability to provide an enabling environment for CSA implementation. Some African oil producing countries do not enjoy the expected high level of economic development, but some do, such as South Africa and Nigeria. What is the situation with regards to other African countries? Are poor African countries less committed to providing support services and infrastructure for implementing CSA, and coordinating and integrating climate change, agricultural development, and food security in national development policies and strategies? To answer this question, it is necessary to scrutinize the CSA indicators together with a wealth indicator such as the real GDP per capita, and to group countries on the basis of similarities of CSA indicators and real GDP per capita.

To this end, countries were clustered by comparing the values of the CSA indicators to the corresponding African average. The result was four clusters based on whether the countries had 0,1,2, or 3 indicators with values less than the corresponding African averages. These clusters were further adjusted by considering how far the indicator values were from the corresponding African averages, with a maximum value of 100% per indicator, and the real GDP per capita. After each adjustment, a canonical discriminant analysis is run, and the misclassification results examined.

The following four clusters were obtained after several trials:

Cluster 1: Burundi, Central African Republic, Chad, Comoros, Côte d'Ivoire, Democratic Republic of Congo, Djibouti, Guinea. Republic of Congo, Sudan, Togo, and Uganda,

Cluster 2: Algeria, Equatorial Guinea. Gabon, and Tunisia.

Cluster 3: Burkina Faso, Malawi, Ethiopia, Mozambique, Niger, Senegal, Benin, Cameroon, Zimbabwe, Kenya, Mali, Ghana, Botswana, and Morocco.

Cluster 4: Egypt, Madagascar, Nigeria. Rwanda, South Africa, Tanzania, and Zambia,

Table 7 presents the results of assessing the above empirical classification with a canonical linear discriminant analysis using the Readiness Mechanism, Services and Infrastructure, and Coordination Mechanism scores, the CSA-Pol Index, and the percentage of the countries' total GDP per capita as discriminating variables for the groups. It indicates that the first two canonical correlations of the functions relating the discriminating variables and the grouping variables are significant (p-values far less than 0.0001). Also, as the two functions account for almost all of the discriminating power of the discriminating variables (with 91.22% and 0.0869% for the first and second functions, respectively), it is expected that they provide a very good classification of countries.

Table 7: Results of the canonical linear discriminant analysis

Canonical correlation	Eigen-value	Variance		Likelihood Ratio	F	D F1	D F2	Prob > F (p-value)
		Prop	Cumul					
0.9653	13.66	0.912	0.912	0.03	13.91	15	80.46	0.00
0.7521	1.30	0.087	0.99	0.43	3.95	8	60	0.00
0.1109	0.01	0.00	1.	0.98	0.13	3	31	0. 94

Results of the classification summary are presented in Table 8. The predicted number of countries in any group is the same as the number of countries belonging that group; hence, each country has correctly been classified in its group and confirms the empirical classification.

Table 8: Results of the classification of empirical clusters' elements following the analysis

	Classified				
True cluster	1	2	3	4	Total
1	12	0	0	0	12
	100%	0%	0%	0%	100%
2	0	4	0	0	4
	0%	100%	0%	0%	100%
3	0	0	14	0	14
	0%	0%	100%	0%	100%
4	0	0	0	7	7
	0%	0%	0%	100%	100%
Total	12	4	14	7	37
	32.43%	**10.76%**	**37.84%**	**18.92%**	**100%**

Table 9 presents the canonical structure, which represents the correlations between observed variables and the unobserved discriminant functions. Critical values corresponding to p = 0.01 are about -0.42 and 0.42 for 35 degrees of freedom. Therefore, the first discriminant function is negatively correlated with the Services and Infrastructure indicator and with the CSA-Pol Index, while the second discriminant function is negatively correlated with real GDP per capita. (%). Countries with high and low values of the first discriminant function have low and high values according to the Services and Infrastructure indicator and the CSA-Pol Index, respectively. Countries with high and low values of the second discriminant function have low and high values of the real GDP per capita (%), respectively.

Table 9: Correlations between observed variables and the discriminant functions

	Discriminant functions	
Observed variables	**Function 1**	**Function 2**
Readiness Mechanism	-0.28	0.33
Services and Infrastructure	-0.65	-0.2
Coordination Mechanism	-0.15	0.11
CSA-Pol Index	-0.74	0.14
Real GDP per capita (%)	-0.16	-0.81

A scatter plot of countries in the plane of the first two discriminant functions is presented in Figure 7. The first two letters are the country two-letter ISO codes, and the digit is the cluster number. On the basis of the canonical structure presented in Table 8, it can be concluded that: (i) from left to right, the plot shows countries with high values of Services and Infrastructure, and the CSA-Pol Index to countries with low values of Services and Infrastructure, and the CSA-Pol Index; and (ii) from top to down, it presents countries with low or average real GDP per capita to countries with high real GDP per capita. Clusters are well-defined without any overlap.

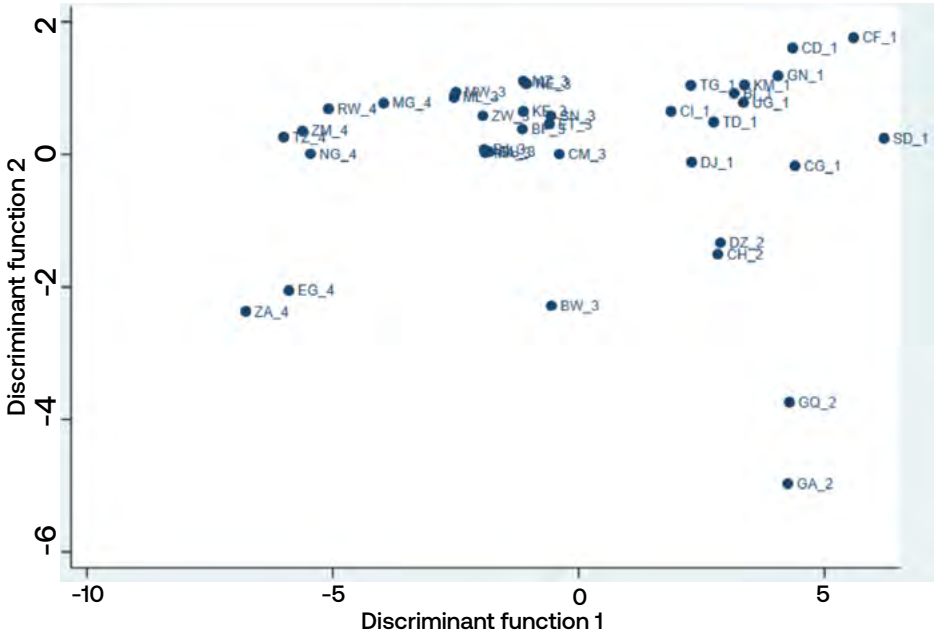

Figure 10: Country clusters in the plan of the discriminant functions 1 and 2

3.2.1 Challenges and suggested interventions

Countries have been grouped into four clusters for defining future interventions to improve CSA support. For each cluster, challenges to be addressed for the improvement of CSA support were defined and subsequent interventions were proposed. Table 10 presents an overview of the four clusters together with these challenges and the suggested interventions, which include:

- creating enabling environments by strengthening institutions and policies that enhance CSA;
- integrating support for CSA in agricultural policies and in development strategies;
- mainstreaming climate change into National Development Planning processes;
- mobilizing resources and continuously enhancing capacity building;
- disseminating evidence-based benefits and opportunities of climate-smart approaches to all stakeholders of NASs, especially the private sector and NGOs; and
- establishing a mechanism for monitoring the inclusion and implementation of CSA enablers in agricultural policies and strategies.

Table 10: Overview of cluster characteristics, challenges and suggested interventions

Cluster	Countries	Characteristics	Challenges	Suggested Interventions
Cluster 1	Burundi, Central African Republic, Chad, Comoros, Côte d'Ivoire, Democratic Republic of Congo, Djibouti, Guinea. Republic of Congo, Sudan, Togo, and Uganda.	The three CSA indicators' averages, the CSA Policy Index (CSA-Pol Index) average, and the real GDP per capita average are below the corresponding African averages. All countries have a CSA-Pol Index score below the African average on the CSA-Pol Index. Averages of Services and Infrastructure and of real GDP per capita are the lowest of the corresponding averages of the other clusters. Most countries in this cluster have strong agricultural potential, and some have a strong agriculture sector, especially for export.	Improving the scores of the CSA indicators and subsequently of the CSA-Pol Index. Improving the coordination of the national agricultural system (NAS) in terms of agricultural policies and strategies formulation. Harnessing agricultural potential when present, with a focus on CSA practices.	Provide support for: - creating enabling environments by strengthening institutions and policies that enhance CSA; - integrating support for CSA in agricultural policies, and development strategies; and - mainstreaming climate change into National Development Planning processes.
Cluster 2	Algeria, Equatorial Guinea. Gabon, and Tunisia.	The highest average of real GDP per capita and the lowest averages of the Readiness Mechanism, and the Coordination Mechanisms, and in the CSA-Pol Index. Its Services and Infrastructure average score is below the corresponding African average. With the exception of Tunisia, this cluster is also that of oil-producing countries that neglect agriculture despite their strong potential.	Using available resources for providing CSA enablers for CSA implementation and subsequently improving the scores of the CSA indicators and of the CSA-Pol Index. Identifying CSA champions to facilitate the mainstreaming of CSA into national agricultural policies and strategies.	Raise awareness on the importance of CSA and the need for having CSA enablers for a successful implementation and scaling up of CSA interventions. Disseminate evidence-based benefits and opportunities of climate-smart approaches to all stakeholders of NASs, especially the private sector and NGOs.

Cluster	Countries	Characteristics	Challenges	Suggested Interventions
Cluster 3	Benin, Botswana, Burkina Faso, Cameroon, Ethiopia, Ghana, Kenya, Malawi, Mali, Morocco, Mozambique, Niger, Senegal, and Zimbabwe.	The real GDP per capita average is below the corresponding African average. Averages of CSA indicators and of the CSA-PoI Index are higher than the corresponding African averages. Characteristics of this cluster clearly indicate that political commitment is of paramount importance for creating an enabling environment for CSA.	Mobilizing resources for maintaining and improving the present levels of their CSA policy indicators.	Mobilize and leverage resources and opportunities, and continuously enhance capacity building.
Cluster 4	Egypt, Madagascar, Nigeria. Rwanda, South Africa, Tanzania, and Zambia,	Highest averages of CSA indicators and of the CSA-PoI Index, and the second highest average of per capita real GDP Political commitments for CSA.	The same challenge as in cluster 3 above, i.e. maintaining and improving the present levels of their CSA policy indicators, but with more own and/or leveraged resources to address it.	Establish a mechanism for monitoring the inclusion and implementation of CSA enablers in agricultural policies and strategies may help in maintaining a high political commitment for CSA.

3.3 Assessing CSA projects

3.3.1 Assessing projects' effectiveness

The 36 selected projects are composed of 12 completed projects with Project Completion Reports, and 24 ongoing projects with Mid-term Reviews (MTRs) and/or Implementation Progress Reports (IPRs), and have been assessed by the above categories within the different portfolios using the CSA-Res Index aimed at determined whether they have achieved their goals in the triple win areas (Productivity, Resilience, and Mitigation). To this end, data were collected from available project reports to inform indicators' target values and values at project completion for completed projects, or actual values for ongoing projects. Data and results of the analysis are presented in Annex V. Table 11 presents the global results using the projects scores and labelling of Table 5. Twelve projects (11 from ACSA/Feed Africa and one from GAFSP), i.e. around 33% of the selected projects had an unsatisfactory level of performance. Almost Satisfactory, Satisfactory, Exceeding Expectations, and Highly Exceeding Expectations levels of performance were recorded for 9 (25%), 4 (11.11%), 9 (25%), and 2 (5.56%) of the selected projects.

Table 11: Breakdown of project levels of performance by status and portfolios

		Unsatisfactory	Almost satisfactory	Satisfactory	Exceeding expectations	Highly exceeding exceptations	Total
Completed	**ACSA/FEED AFRICA**	**1**	**6**	**1**	**2**	**1**	**11**
	GAFSP	0	0	0	1	0	1
On going	**ACSA/FEED AFRICA**	10	2	3	3	1	19
	FIP	0	1	0	0	0	1
	GAFSP	1	0	0	3	0	4
Total		12	9	4	9	2	36

The selected projects have also been assessed by their triple win areas, and results are presented in Table 12. As indicated earlier, all projects have a Resilience component. Also, as expected, the total number of projects in the different level of performance categories is the same as in Table 11. From the selected 36 projects, 8 (22.22%) have a Resilience component only, of which 1 (12.50%), 3 (37.50%), 1 (12.50%), and 1 (12.50%) have an almost satisfactory, satisfactory, exceeding expectations and highly exceeding expectations, level of performance, respectively.

Twenty-seven projects have components that include Productivity and Resilience. The levels of performance were almost satisfactory, satisfactory, exceeding expectations, and highly exceeding expectations for 8 (29.63%), 1 (3.70%), 8 (29.63%), and 1 (3.70%), respectively.

Nineteen projects have components that include Mitigation and Resilience. An almost satisfactory and exceeding expectations levels of performance were achieved by 7 (36.84%) and 7 (36.84%) of these projects, respectively.

Eighteen projects have a triple win area component, whose levels of performance were unsatisfactory almost satisfactory, and exceeding expectations for 4 (22.22%), 7 (38.89%) and 7 (38.89%), respectively.

The above levels of performance indicate the potential for achieving individual or joint triple win goals if interventions of these projects are scaled up.

Table 12: Breakdown of the levels of performance of projects by 'triple win' area

		Performance levels						
Triple Win Components	Unsatisfactory	Triple Win Components	Unsatisfactory	Almost satisfactory	Satisfactory	Exceeding expectations	Highly exceeding exceptations	Total
R	**2**	R	2	1	3	1	1	8
PR	**5**	PR	5	1	1	1	1	9
RM	**1**	RM	1	0	0	0	0	1
PRM	**4**	PRM	4	7	0	7	0	18
Total	**12**	Total	12	9	4	9	2	36

Note: R = Resilience, PR = Productivity and Resilience, RM =Resilience and Mitigation, PRM = Productivity, Resilience, and Mitigation.

3.3.2 Feed Africa/ACSA projects' levels of performance per category

A sample of projects carried out within the framework of the implementation of Feed Africa and the ACSA programme was assessed by category to determine whether they have achieved their goals in the triple win areas (Productivity, Resilience, and Mitigation). The summary results are presented in Table 13, and the detailed results in Annex II. The Resilience category has the highest number of projects, at 19 (63.33% of the selected projects); this high percentage reflects the efforts made to mainstream resilience.

In the Value Chain Development, Forest/Mitigation, Infrastructure/Irrigation/Productivity, and Resilience categories, 50%, 100%, 66.7% and 26.31% of projects, respectively, have an unsatisfactory level of performance. Sixteen projects, around 63.33% of the selected ACSA/Feed Africa projects, have a satisfactory level of performance or better.

Table 13: ACSA/Feed Africa projects' levels of performance per category

	Unsatisfactory	Almost satisfactory	Satisfactory	Exceeding expectations	Highly exceeding exceptations	Total
Value Chain Development	2	0	1	0	1	4
Forest/Mitigation	2	0	0	0	0	2
Infrast/Irrig/Productivity	2	1	0	0	0	3
Resilience	5	7	3	4	0	19
Information System	0	0	0	0	1	1
Technologies for African Agricultural Transformation (TAAT)	0	0	0	1	0	1
Total	**11**	**8**	**4**	**5**	**2**	**30**

3.3.3 Global Agriculture and Food Security Program projects

The Global Agriculture Food and Security Program (GAFSP) was created in response to a call by G20 leaders in Pittsburgh in September 2009 for the World Bank Group to work with interested donors to set up a multi-donor trust fund to help implement some of the $22 billion in pledges made by the G8 at their meeting in L'Aquila in July 2009. The inaugural donors – Bill & Melinda Gates Foundation, Canada, the Republic of Korea, Spain, and the United States of America – were later joined by Australia, Germany, Ireland, Japan, the Netherlands, Norway, and the United Kingdom.

GAFSP's focus is on the long-term agenda to improve the income and food security of poor people in developing countries through more and better country-led public and private sector investment in raising agricultural productivity, linking smallholder farmers to markets, reducing risk and vulnerability, and improving non-farm rural livelihoods through technical assistance, institution-building, and capacity development.

GAFSP is implemented as a Financial Intermediary Fund to address the underfunding of country and regional agriculture and food security strategic investment plans already being developed by countries. The Program is contributing to the achievement of the Sustainable Development Goals (SDGs) to end poverty and hunger by 2030.

GAFSP has two financing windows: (i) the public sector window, which, through grants, finances public investment, and technical assistance to support implementation of country-led initiatives, giving priority to those with evidence of stakeholder participation, including producer organizations and relevant civil society organizations (CSOs), from project design to implementation; and (ii) the private sector window, which provides long- and short-term loans, credit guarantees, equity investment, and technical assistance to the private sector for activities in agricultural development and food security.

The World Bank is the supervising entity for around one-half of the GAFSP project portfolio ($615.2 million); the African Development Bank manages around one-quarter ($320.8 million) as at December 2019; and the International Fund for Agricultural Development (IFAD) manages 11 percent ($124 million).

The Bank is currently supervising 10 projects across its regional member countries, namely Gambia, Mali, Benin, Senegal, Kenya, Malawi, Zambia, Niger, Liberia and Tanzania with a total portfolio value of $320.8 million. Following the 5th call for proposals, additional projects have been added to the portfolio – Central African Republic, Côte d'Ivoire, Gambia and Liberia – with a value of $51.6 million, bringing the total portfolio value to $372.4 million.

The selected GAFSP projects are in the Infrastructure/Irrigation/Productivity and Resilience categories only. The Resilience category has the highest number of projects. Their levels of performance are presented in Table 14. Four projects (two from the Resilience category and two from the Infrastructure/Irrigation/Productivity category), making up 80% of the GAFSP selected projects, have an exceeding expectations level of performance, and one project from the Resilience category (20% of the GAFSP-selected projects) has an unsatisfactory level of performance.

The detailed results of the assessment by category of the five GAFSP selected projects are presented in Annex III.

Table 14: GAFSP projects' levels of performance per category

	Unsatisfactory	Almost satisfactory	Satisfactory	Exceeding expectations	Highly exceeding exceptations	Total
Value Chain Development	0	0	0	0	0	0
Forest/Mitigation	0	0	0	0	0	0
Infrast/Irrig/ Productivity	0	0	0	2	0	2
Resilience	1	0	0	2	0	3
Information System	0	0	0	0	0	0
Total	**1**	**0**	**0**	**4**	**0**	**5**

3.3.4 The Forest Investment Program

The Forest Investment Program (FIP) is a targeted programme of the Strategic Climate Fund within the Climate Investment Funds (CIF). It aims at reducing deforestation and forest degradation (REDD), and promoting sustainable forest management in developing countries through scaled-up financing for readiness reforms and public and private investments, identified through national REDD readiness or equivalent strategies.

The FIP is active in the following African countries: Burkina Faso, Cameroon, Republic of Congo, Côte d'Ivoire, Democratic Republic of the Congo, Ghana, Mozambique, Rwanda, Tunisia, Uganda, and Zambia.

The activities supported by the FIP include:

- investments that build institutional capacity, forest governance and information;
- investments in forest/mitigation efforts, including forest ecosystem services;
- investments outside the forest sector necessary to reduce the pressure on forests such as alternative livelihood and poverty reduction opportunities.

The level of performance of the only selected FIP project of the forest mitigation category is presented in Table 15. The project has an almost satisfactory level of performance. Detailed results of the assessment are presented in Annex IV.

Table 15: FIP projects' levels of performance per category

	Unsatisfactory	Almost satisfactory	Satisfactory	Exceeding expectations	Highly exceeding exceptations	Total
Value Chain Development	0	0	0	0	0	0
Forest/ Mitigation	0	1	0	0	0	1
Infrast/Irrig/ Productivity	0	0	0	0	0	0
Resilience	0	0	0	0	0	0
Information System	0	0	0	0	0	0
Total	**0**	**1**	**0**	**0**	**0**	**1**

3.4 CSA interventions and technologies in projects

3.4.1 Types of technologies and good practices

CSA technologies and practices were determined using projects descriptions, objectives, and results-based logical frameworks. There are 50 CSA technologies and practices from 36 projects implemented in 20 selected countries from the Feed Africa/ACSA, GAFSP portfolios, the FIP, and TAAT. These technologies and practices were also classified into 10 classes and are presented in Annex VI. A class comprises technologies and practices addressing the same or similar themes. The ten classes are: (i) integrated soil fertility management, sustainable land management, and integrated water resources management; (ii) improved varieties; (iii) aquaculture development; (iv) information systems and other digital platforms; (v) improved irrigation systems; (vi) crop pest control; (vii) agroforestry; (viii) local production and use of biogas; (ix) roots and tubers; and (x) small livestock (goats and sheep) and livestock products, pasture production, and livestock diseases, they all aim at contributing to the achievements of one or more of the CSA triple win goals.

3.4.2 Relevance of technologies and good practices

The above technologies and interventions are suited for smallholder farmers in the Sahel and the Horn of Africa because they address the main production challenges they are facing. Agriculture (crops and livestock) production in these regions is uncertain because of the soil poverty, high temperatures, floods, and the severe and cyclical droughts. These technologies can assist smallholder farmers in the Sahel and the Horn of Africa in achieving food security and can tackle environmental challenges posed by drought, land degradation, and climate change. This can be accomplished by combining improved crop varieties, more effective water conservation practices and proven approaches for soil fertility management.

The five classes comprising most (80%) of the technologies and practices are: integrated soil fertility; sustainable land, and integrated water resources managements, improved varieties, information systems and other digital platforms, improved irrigation systems, and small livestock (goats and sheep) and livestock products, pasture production, and livestock diseases, which accounts for 32%, 15%, 14%, 10%, and 8% of the total number of identified technologies and practices, respectively.

Integrated resource management (soil fertility, sustainable land and water)

This has helped to increase productivity and build households' resilience through increased income and sustainable jobs. The availability of information and the capacity to use it for development, and access and availability of inputs are major challenges.

Improved varieties

High--performing seeds of drought- and heat-tolerant varieties of millet, sorghum, maize, wheat, and rice, which are the major staple foods in Africa, were used, combined with training of leading producers and supervisory agents, and close monitoring, support, and advice. The productivity gains were: for maize, 38%, with an average yield of 3.096 kg/ha; for rice, 69%, with an average rice yield of 5.015 kg/ha; and for millet, around 0.8T–1.2T/ha, 80%. In

addition, the productivity gains for sorghum and wheat were 64% and 100%, respectively. The availability, quality, and cost of improved varieties seeds are major challenges.

Information systems and other digital platforms

Information systems and other digital platforms contributed to managing climate risks and building resilience to food and nutritional insecurity. The dissemination of climate information and sharing good agricultural practices help decision-making in undertaking resilience actions to cope with climate shocks. Up-front investments, lack of support from vendors, and inadequate software training tools are the major challenges.

Improved irrigation systems

These systems have helped build resilience by enabling year-round cultivation and reducing key agricultural risks. A lack of credit facilities combined with high investment costs are major challenges.

Small livestock (goats and sheep) and livestock products, pasture production, and livestock diseases,

These livestock need less pasture, feed, and water than cattle but will still provide families with meat, milk, and fibre. They are also easier to handle and transport than full-size farm animals. Improved livestock breeds are more tolerant to heat and drought, and when also fed with improved drought forage, this can help build the resilience of smallholder farmers.

3.4.3 Barriers to the adoption of the technologies and good practices

The implementation and adoption of most of the above technologies and practices are challenges for smallholder farmers. The main barriers identified from countries' profiles and from other sources[19] are: the non-availability of information (current and future projected effects of climate change, available technologies, and inputs); the lack of capacity (for using weather equipment, internet, cell phones, and computers) to use it for development purposes; the high cost and non-availability of good quality inputs; the need of up-front investments combined with the lack of affordable, long-term investment capital; land shortage for some technologies and practices such as aquaculture; water quality and scarcity; inadequate infrastructure; the non-participation of farmers in decision-making and knowledge generation; the intensity and cost of labour; delayed return on investment; underdeveloped markets for some technologies and practices such as agroforestry; and the weak capacity of most extension services.

The above list of barriers and the CSA enabling analysis carried out above indicate that, with the exception of a few practices such intercropping and mixed cropping, which do not require a heavy up-front investment, it is crucial to create enabling environments. This is achieved by strengthening institutions and policies that enhance CSA adoption, especially by providing smallholder farmers with low-cost inputs and farm equipment, and smoothing their access to finance and credit.

[19] Barnard James, et al. (2015).

4. SUCCESS STORIES

The promotion of CSA success stories is one of the practical actions to consider for removing the identified CSA adoption barriers while promoting the adoption of CSA. It is of a paramount importance to raise awareness at all levels, especially among policymakers and smallholder farmers, about climate change and what CSA can achieve through an advocacy campaign. The promotion of CSA success stories is one of the tools used. These success stories presented below show that when promoting CSA, it should be compatible with production and profit.

Zambia – Strengthening Climate Resilience in the Kafue sub-basin project

The Strengthening Climate Resilience in the Kafue sub-basin (SCRIKA) project is financed under the Strategic Climate Funds within the Climate Investment Fund (CIF) for $38 million ($17.50 million loan; $20.50 million grant). The project is implemented in 11 districts of Zambia in the Kafue sub-basin with the objective of strengthening the adaptive capacity of rural communities to better respond to climate variability and the long-term consequences of climate change. The project piloted adaptive agricultural and natural resources management practices, climate-resilient rural infrastructure, and institutional capacity for planning against climate change. It aimed to strengthen the adaptive capacity of 800,000 farmers.

The project implemented over 1,100 community micro-projects valued at over $6.0 million, each valued at $10,000 – $30,000. They include structures for solar powered boreholes and water systems, small dams, bridges and crossing points, aquaculture, small ruminants, piggery, poultry, agroforestry, and orchards. A Matching Grant Facility funded 21 private sector enterprises worthy over $230,000 to link production to private investors in the value chains. In order to strengthen the climate resilience of rural roads that link farmers to markets, SCRIKA invested $20 million to open 247.5 km of climate-resilient roads traversing the Kafue.

In response to a call for submission of the 'Water Change Maker Journey' issued by the Global Water Partnerships in 2019, the SCRIKA project made a submission. Through a selection process, SCRIKA was shortlisted together with projects from Malawi and South Africa. These projects were subjected to People's Choice voting and then requested to submit a 60-second video pitch. The results were announced during the opening ceremony of the Climate Adaptation Summit held on 25 January 2021. SCRIKA was awarded the Water Change Maker award based on its water-related microprojects, which have improved the livelihoods and climate resilience of beneficiaries.

The climate-resilient road

A successful crop harvest irrigated from solar-powered boreholes

Harvest sessions

Niger - Water Mobilization Project to Enhance Food Security in the Maradi, Tahoua, and Zinder Regions

The objective of the **Water Mobilization Project to Enhance Food Security in the Maradi, Tahoua and Zinder Regions** (PMERSA-MTZ) was to strengthen food security by sustainably increasing agricultural output and productivity through the mobilization of surface and groundwater resources. It focused on water resource mobilization and development to increase and consolidate agricultural output as a means of enhancing food security.

The project was fully consistent with Niger's development policies and strategies including the Accelerated Development and Poverty Reduction Strategy 2008–2012, the Rural Development Strategy (RDS), and the National Irrigation Development and Surface Water Collection Strategy.

The project obtained significant outcomes through all planned activities, as follows: (i) 47 spreading sills and 11 mini dams; (ii) 4,036 mini market gardening boreholes, 1,040 concreted market gardening wells, 5,076 motor pumps, and 253,800 ml of Californian network; (iii) 273.4 km of new and rehabilitated service roads; (iv) the development of 475 ha of small irrigated areas; (v) the development of 11 ponds; (vi) the construction of a dyke to protect the town of Kantché against flooding; (vii) 11.12 km of mechanically treated protected banks; and (viii) 124 storage infrastructures, including 43 warehouses of 200 tonnes each as part of the farmer's house (Initiative 3N).

The project introduced significant innovations and good agricultural practices:

- The project has spread the use of solar-powered pumpts for irrigation schemes. The adoption of the use of the solar energy has considerably reduced production costs.
- The construction of weirs, mini agricultural dams, and mini agricultural boreholes, and mini agricultural drillings allowed to increase the irrigated areas and double the number of beneficiary farmers.
- The introduction of simple and easily reproducible irrigation techniques allowed to save irrigation water and therefore irrigation costs (Californian Network Boreholes).
- The extension of fodder crops has greatly improved the quality of animal feeding.

Bargouma, Gagaoua and Dan Koyla thresholds

Goulbi flooding Goumar threshold

A video on the success of the project is available at: https://vimeo.com/464192729
In addition to introducing significant innovations and good agricultural practice, the success of the project can also be measured by the different testimonials of beneficiaries, as provided below.

Box 3: Water Mobilization Project to Enhance Food Security in the Maradi, Tahoua and Zinder Regions - Testimonials of Beneficiaries

Zouera Bademassi, a livestock farmer from the Zinder region in south-central Niger, no longer lives in fear of tomorrow. "A few years ago, it was impossible for me to keep my goats for long. But, by chance, I was targeted by the PMERSA project as a beneficiary of the small ruminant distribution operation as part of income-generating activities. I now own a herd of 17 goats and kids," she says proudly. The forthcoming sale of a few heads will allow her to continue to support her family.

In the Maradi region, 236 km away, Hadjia Larba Mahaman also congratulates herself: "I received a kit made up of three female and a male goat. After rearing them for three years, I now have a herd of 27 goats."

Zouera and Hadjia are among more than 200,000 beneficiaries of the Water Mobilization Project to Strengthen Food Security in the Maradi, Tahoua and Zinder Regions (PMERSA-MTZ). This project is considered a driving force in its areas of intervention, particularly for the promotion of income-generating activities for women. PMERSA also contributed to water control and the development of irrigated agriculture.

"The numerous concreted market garden wells and mini agricultural boreholes installed by the project have had a positive impact on the practice of irrigated agriculture in our territory," explains the Sultan of Katsina, in the Maradi region. "We have seen an intensification of irrigated crops and a better supply of fruits and vegetables to the Maradi market."

"The project has stimulated the development of our villages: it has drilled several boreholes equipped with motor pumps and submerged pumps for irrigation, it has provided agricultural inputs, goat kits for vulnerable women and a track to take produce to markets. This has contributed to increasing agricultural production in our region," said Sabara Tahoua, president of the Zouraré cooperative, a town located 329 km from Maradi.

At least 51% of women, direct beneficiaries of the project, received 1,500 carts, 105 maintenance kits for structures, 15,150 sheep and goats, and 598 miscellaneous equipment (mills, hullers, oil press, and cassava processing units), which facilitated their empowerment.

"The PMERSA-MTZ has been a guiding vector for agricultural development in the regions of Maradi, Tahoua, and Zinder," summarizes Moussa Amadou, Director General of Rural Engineering at the Nigerien Ministry of Agriculture and Livestock. "The project actively participated in the national drive to seek greater food security initiated by the highest authorities in Niger. The fruitful partnership developed by Niger with GAFSP, the African Development Bank and the Spanish Agency for International Cooperation and Development (AECID) has left an indelible mark and many lessons have been learned."

Senegal - Food Security Support Project in the Louga, Matam, and Kaffrine Regions

The Food Security Support Project in the Louga, Matam, and Kaffrine Regions (PASA-Lou-Ma-Kaf PASA) aims to: (i) strengthen food security; and (ii) reduce poverty by increasing agricultural productivity and household income of small producers, especially vulnerable groups (women and youth) through their agricultural production activities.

The specific objectives are to facilitate: (i) the control of access to water through the systemic exploitation of water resources; (ii) the implementation of a community approach to sustainable land management; (iii) access to production factors (inputs, small equipment); (iv) the strengthening of the technical and organizational capacities of the actors and the integration of the gender approach (women and young people) into its intervention strategies; and (v) ecological and socio-economic sustainability. PASA-Lou-Ma-Kaf covers three regions, Louga, Matam, and Kaffrine, with a total population of 1,960,000.

Food Security Support Project in Louga, Matam, and Kaffrine Regions

The 2020/2021 agricultural season was marked by significant sowing of 1,825 ha of rainfed rice and 365 ha of market gardening. The support to revive post-COVID19 agricultural activities, granted by GAFSP 1 and the Bank, combined with good rainfall allowed to obtain satisfactory agricultural production results. The rice yield increased from 2.9 tonnes to 3.9 tonnes per ha, with peaks of 4 to 5 tonnes. In terms of off-season lowland market gardening, 365 ha were sown with tomato, eggplant, and carrots.

The planned technical and organizational capacity building was not intense due to COVID-19 and the delay in the availability of the revolving fund. The fish production harvest from the fish culture experiment has started.

A lowland and 12 ha of secondary developments were finalized to complete the 2,000 ha of rice-cultivable land planned. In addition, two farms were provided with boreholes in Louga and Kaffrine. Around 1.5 km of tracks roads and three livestock feed stores were built; six pastoral boreholes were completed.

Rice plots in the Taiba valley in the commune of Kathiote

Information, education and communication (IEC) activities in the lowlands were undertaken to fight against water-borne diseases common in water storage areas. Awareness-raising activities were conducted at sheepfolds, henhouses, slaughterhouses, and dairies on the barrier measures against COVID-19.

The progress of the project has been greatly slowed down by COVID-19. Nevertheless, the physical implementation rate of the outputs reached or exceeded 100%, with a budget commitment rate of almost 99%. The first effects of the outputs are already being felt as revealed by the independent impact study reports, as follows:

- Education and health costs are financed by the agricultural income from income-generating activities (IGAs) (farms, sheepfolds, poultry houses, dairies, stables, lowland market gardening, etc.).

- Inter-zonal travel is facilitated by the 125 km of rural tracks and bypasses, and food products such as “Ndoucoumane” rice, vegetables, dairy products, and poultry are more available on the market.

- Social cohesion and solidarity within and between villages and zones among beneficiaries are strengthened through the IGAs promoted by the project as shown by the incomes of lowland producers have increased from XOF240,000 ($398.56) to XOF250,000 ($417.17) per year (for a target of XOF240,000 ($398.56) to XOF1,000,000 ($1,660.69) at the end of the project). The income of women market gar-

deners reached XOF100,000 ($166.06) (target XOF80,000 (132.85) to XOF240,000 ($398.56)).[20]

- Agro-pastoralist conflicts in the forest-pastoral zone have significantly decreased; beneficiaries participated better in the socio-economic activities of the zone because of the ease of movement made with the construction of roads.

- Access to water (15 boreholes and 7 ponds developed, 22 lowlands developed) is easier in the "thirst triangle" as a result of the boreholes and ponds.

- The incidence of bush fires has decreased, so the biomass is preserved for grazing. In addition, the 24 partnerships are continuing in various fields of activity.

In addition, the 24 partnerships contributed to the implementation of the project in various areas including natural resource management, agricultural and livestock advisory support, communication, land management, food security and nutrition, soil management, renewable energy, and resilience building of natural ecosystems.

Gambia – The Food and Agriculture Sector Development Project

The project provided funds for school feeding programmes and horticulture gardens. In addition, small ruminant and poultry schemes were established, supported through a matching grant, which contribute to the supply of high nutritious foods. Nutrition education materials were produced/printed and supplied to schools as part of the curriculum in lower basic schools nationwide. Multivitamin supplements supplied to the central medical store through the National Nutrition Agency (NaNA) were used for the treatment of malnourished children. The project supported 112 agro-enterprises and 14 youth agriculture service centres through the matching grant.

Testimonials of beneficiaries

" Before the project, we were only able to cultivate 10 ha out of the 15 ha, but with the coming of the project we can cultivate all of the land. Our crops are also safe from animal pests due to the good fencing material compared to before when we used to suffer. In fact, we used to collect animal blood from the central abattoir at Abuko and sprinkle it on our beds as a means to scare them."

- Jokunda Bojang and Amie Colley, members of Sukuta Women's Garden, West Coast Region

"We used to find it very difficult to travel to work on the swamps and also transport our produce. Sometimes our donkey would get stuck in the mud and potholes, and sometimes our rice produce would get wet, or the donkey would get hurt. But now it is not happening anymore. The road is good. But we still need another one leading to our deep swampy fields."

- Isata Cham, farmer in Chamen Nianija, Central River Region North

"We had been growing maize and sesame for three years before FASDEP [Food and Agriculture Sector Development Project], and our income had been limited by poor harvest. But now we have a broiler production scheme, so we can sell every six weeks and have a little income. Also, with the poultry waste, we can improve our backyard garden located within the broiler farm."

- Mam Jawara, Secretary of Group Juboo Poultry Farm, Sinch Madado, Central River Region South.

"The project is helping us to motivate other youth to stay in the country and not take the 'back way' to Europe. Because of the support from the project (GMD 2 million), which we used to purchase 15,000 birds and equipment, we are able to construct additional layers [to the] house and procure quality feeds from our previous sales. Today, we are the biggest commercial poultry farm in the country, thanks to the project; we supply the biggest hotels and supermarkets in the country."

- Muhammed Sanyang, President of Youth Farmers Association in Sambouya, West Coast Region

Multinational - Technologies for African Agricultural Transformation

The vision of Feed Africa, the Bank's TAAT programme (2016-2015), is to transform African agriculture into a competitive and inclusive agribusiness sector that creates wealth, improves lives and secures the environment. To this end, its objectives are: (i) to significantly raise agricultural productivity; and (ii) to shift African production much higher on the value chain, with agribusinesses producing and selling processed goods, not simply basic commodities, while providing markets for African farmers. The TAAT initiative in support of Feed Africa aims at achieving the first goal, and hence is the bedrock of Feed Africa. Other initiatives, including the development of agropoles and well-functioning markets, focus on the second objective.

In order to achieve the first goal of Feed Africa, TAAT must increase crop, livestock, and fish productivity by expanding access to productivity-increasing agricul-

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[20] A rate of $1 equals to 602.167804 was used

tural technologies to more than 40 million smallholder farmers, most of whom are women, in low-income RMCs across Africa, by 2025. TAAT takes a regional approach to deploying suitable food production technologies as well as to combating pests, crop diseases, and other threats that may have a negative impact on agricultural productivity at a regional level. The food production technologies include maize and rice crops adapted to climate change, whose implementation gave rise to success stories.[21]

Water-Efficient Maize for Africa

Frequent droughts are a major element of climate change and a persistent challenge to sub-Saharan African (SSA) agriculture, making farming risky for millions of smallholder farmers who rely on rainfed crop production such as maize, a major staple food crop for over 300 million people in SSA. The impact of drought resulting from climate change is threatening food security in most parts of Africa. Various approaches have been identified to mitigate the impact of climate change, including developing crops, such as maize, with enhanced adaptation to drought stress, and pest outbreak. The adoption at scale using a value-chain approach for these climate-smart crops by smallholder farmers can stabilize yields in the face of climate change, and encourage the use of best agronomic practices, thus contributing to the urgent need to transform SSA agriculture from subsistence to agri-business. TAAT focused on one of the four different climate-smart technologies developed through the Water Efficient Maize for Africa (WEMA) partnership led by the African Agricultural Technology Foundation in collaboration with other public and private sector organizations including the International Maize and Wheat Improvement Center, Monsanto Company, and the National Agricultural Research Systems of Kenya, Mozambique, South Africa, Tanzania, and Uganda. Results from on-farm demonstrations showed that some of the conventional climate-smart technologies are increasing farm productivity by up to 75%. An average yield of 4 tonnes per ha has been reported from these on-farm demonstrations, with an impressive adoption rate of 26% within only three years of deployment. The projected future adoption rate was estimated at 89%, with about 65% of adopters being new farmers. This will help Kenya produce 74,000 tonnes per year, enough to reduce maize import by 15% annually. Further investments of $25 million will be catalysed through TAAT to take the conventional Drought TEGO™ hybrid technology to scale across six countries in SSA, i.e. Malawi, Nigeria, Rwanda, Ethiopia, Tanzania, and Zambia. It is estimated that these technologies will benefit 6.2 million people from the availability of 4,130 metric tonnes of certified seed targeted to be produced and sold within five years, based on the experience described above.

New Rice for Africa

Every year, Africa imports one-third of the world's rice, nearly 10 million MT; West Africa alone accounts for more than one-half of rice imports, 5.2 million tonnes. Many million tonnes of milled rice will be required if domestic production continues to lag behind the ever-increasing demand. Improved rice cultivars suitable for a wide range of growing areas in Africa have been developed by the West Africa Rice Development Association (WARDA, now Africa Rice) by crossing Oryza glaberima, landraces from the continent, with Oryza sativa, high-yielding Asian varieties. These cultivars have greater yield potential and are more resistant to pests and diseases. Of these superior rice varieties, the most widely grown are the New Rice for Africa (NERICA) lines, which include both upland and lowland rice types.

In 2003, the Bank approved a five-year $34 million project to finance NERICA rice deployment in seven West African countries: Nigeria, Mali, Sierra Leone, Benin, Ghana, Guinea, and the Gambia. By the end of the project, NERICA rice farmers in each of the participating countries achieved significantly higher yields than those of their traditional rice varieties. The average yield in project areas was 2.80 MT/ha, with some farmers achieving up to 4.7 MT/ha, up from 1 MT/ha average yields on farmers' fields before the project. At the closing of the project, a survey suggested that over half a million hectares of NERICA rice varieties were grown in the seven target countries alone. NERICA won the U.S. Treasury's annual Development Impact Honors (DIH) in 2014 as one of the six winning high-impact and noteworthy projects out of a pool of 29 strong submissions. The DIH ceremony publicly recognizes outstanding projects undertaken by the multilateral development banks, and showcases these effective success stories.

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[21] Technologies for African Agricultural Transformation - Framework Program in Support of Feed Africa.

5. BANK RESOURCE MOBILIZATION EFFORTS FOR CSA MAINSTREAMING AND IMPLEMENTATION

The portfolios have a total of 256 projects, of which 93 are CSA projects and 163 non-CSA projects, costing $8,040,904,738 and $10,954,709,142, respectively. The total cost of CSA projects is 42.33% of total project costs in the portfolios. Table 16 presents the CSA project by source of funding in terms of cost and number. The African Development Fund (ADF) has the biggest number of projects while African Development Bank has the highest total of projects cost.

Table 16: Number and cost of projects by funding source

Sources of funding	Number of projects	Percentage of CSA projects out of total projects (%)	Project cost ($)	Percentage of the total cost of CSA projects (%)
African Development Bank (AfDB)	12	13	6,211,080,096	77.24
African Development Fund (ADF)	61	66	1,441,103,424	17.92
Africa Private Sector Assistance Fund	1	1	1,257,624	0.02
International Fund for Agricultural Development (IFAD)	1	1	51,500,096	0.64
Global Environment Facility (GEF)	1	1	6,516,262	0.08
Global Environment Facility (GEF)/Green Climate Fund	1	1	18,736,034	0.23
Middle-Income Countries Fund	3	3	1,924,935	0.02
Nigeria Trust Fund	1	1	4,619,844	0.06
Fragile States Facility	5	5	89,880,348	1.12
Global Environment Facility (GEF)	1	1	3,308,037	0.04
Global Agriculture and Food Security Program (GAFSP)	5	5	161,289,047	2.01
Strategic Climate Fund	1	1	49,688,990	0.62
Total	**93**	**100**	**8,040,904,738**	**100.00**

Note: The Bank's November 2022 exchange rate of 1.28329 per unit of account (UA) was used to convert UA amounts in US dollars.

Fifteen projects with performance ranging from almost satisfactory to exceeding expectations for both Mitigation and Resilience have a total cost of $436,536,999, which is 32.56% of the total cost of selected projects. The share of such projects in the scaling up of CSA technologies and practices should be increased because they have the potential to help reduce emissions, enhance sinks, and to provide the capacity to prepare for, respond to, and recover from, climate change shocks.

The Bank financing strategy relies on funding from own financing, which has the biggest share, co-financing and complementing its traditional sources – ADF, ADB, and the Nigeria Trust Fund – by leveraging funds from bilateral partnerships and trust funds.

Resources from the Bank's initiatives[22] to support ACSA Implementation, which include the Multi-donor Trust Fund created in 2017, the ClimDev-Africa Special Fund, and the African Water Facility, will be used for the scaling up of CSA technologies and practices. The objectives of the Multi-donor Trust Fund and the areas covered by the ClimDev Africa and the African Water Facility perfectly align with the needs of scaling up CSA activities and practices.

In addition, it is desirable to go beyond the tradition resource mobilization efforts by: (i) making the necessary arrangements for farmer organizations to access resources from carbon market; and (ii) collaborating with NGOs, funded by philanthropists. Given the public goods nature of CSA products, there is an opportunity to mobilize philanthropic funds directly or through these NGOs to support the adoption of CSA.

[22] Garba (2017).

6. RECOMMENDATIONS

6.1 Pillars and derived recommendations

The CSA-PoI Index analysis conducted earlier indicates that integration of climate change into national development planning, countries' CSA supporting services, infrastructure, and coordination of various CSA stakeholders of NAS vary across countries, with some countries performing poorly. However, the successful implementation and adoption of CSA technologies and practices relies on enabling environments, which, among other things, include policies, institutional arrangements, stakeholders' involvement, gender considerations, and infrastructure. To this end, recommendations for scaling up CSA interventions should be anchored on the following five pillars:

1) Policy engagement: Policy engagement may involve providing incentives and removing barriers to adoption and coordination among institutions engaged in agriculture, climate change, social protection, and food security; integration of climate change into development strategies and commitment to global and continental agreements; and mechanisms to support climate change adaptation and mitigation. The challenge is to ensure that the various policies, strategies, and plans, as well as international stakeholders' financial and technical support are well coordinated across sectors, and appropriately integrated into national plans.

Recommendations

- Increase awareness of policy- and decision-makers on agricultural climate change adaptation and mitigation, and the CSA concept.

- Conduct advocacy with policy- and decision-makers for the need to have CSA enablers for a successful implementation and scaling up of CSA interventions.

2) Knowledge generation and sharing: There is a need to identify knowledge gaps that must be addressed for an evidence-based CSA scaling up. CSA country profiles help in bridging some knowledge gaps by providing clarity on CSA terminology, components, and an overview of agricultural challenges in different countries, and on how CSA could help to adapt to climate change. More insights could be obtained through a careful study of the site-specific achievement nature of CSA interventions.

Recommendations

- Develop guidelines and approaches for mainstreaming climate change into national development planning processes, developing country profiles, and climate-smart investment plans.

- Conduct research to better understand the specific nature of CSA using its multiple front representation defined by Barnard et al. (2015),[23] and/or other representations. The objective of the research is to understand the effects and interactions among the different components.

3) Capacity building and extension: Capacity building and technology transfer are core activities in scaling up CSA. Farmers' limited technical knowledge may bring low adoption rate of CSA practices and technologies. As CSA approaches are highly context-specific, ongoing research is needed to identify the most appropriate approaches for agro-ecological zones, and extension staff should be trained to provide farmers with the most appropriate advice for the implementation of CSA practices in their immediate context.

Recommendations

- Strengthen capacities of governments, extension staff, and farmers. This is a high priority for enabling the scaling up of CSA and should be a key area of focus. The capacity of extension staff officers needs to be built to enable them to improve smallholder farmers' training and skills in CSA.

- Strengthen research and extension services at the local level to allow context-specific CSA approaches to be identified and implemented in collaboration with local farmers. Knowledge transmission should take into account levels of literacy and numeracy of farmers.

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[23] Given the specific nature of CSA, its practice in the context of Africa can be viewed from multiple fronts. For example, smallholder agriculture comprises bio-physical and management components, each with several separate elements. The bio-physical component comprises climate, soil, crops, pastures, and animals together with certain physical inputs and outputs. The management component consists of people, values, goals, knowledge, resources, monitoring opportunities, and decision making. Smallholder agriculture is therefore a complex combination of all the factors that influence the functioning of the household, the farm, and the community.

- Build the technical capacity of CSA stakeholders to enable them to design, implement, monitor, and evaluate CSA-related projects and programmes in line with countries' nationally determined contributions (NDCs).

4) Access to inputs, credit, and climate risk management: African smallholder farmers face many challenges in CSA adoption, such as little or no access to credit, technologies, and climate information services, and lack of technical knowledge required for the use of ICT technologies. Smallholder farmers, particularly those who practise rainfed farming, are especially vulnerable to weather variability, which can occur both between seasons and within a season; most of them do not benefit from climate information services and are trapped in poverty because they are unable to make investments in improved agricultural practices such as CSA options.

Recommendations

- Build partnerships between smallholder farmers, and the private and public sectors to support them with improved access to weather services, inputs, risk management through agricultural insurance (e,g, index insurance), and to credit.

- Mainstream CSA into all agricultural investment plans and other sectorial investment plans. For example, for Economic Community of West African States (ECOWAS) countries, mainstreaming of CSA into National Agricultural Investment Plans (NAIPs) and Regional Agricultural Investment Plans (RAIPs), as well as into other sectoral plans could be an important step in ensuring national budget allocation to CSA practices.

- Leverage resources from bilateral projects with an aligned focus on rural development.

5) National resource mobilization: Many African countries recognized the potential advantages of adopting CSA as a comprehensive approach to jointly address objectives pertaining to food production, adaptation, and mitigation. Some countries have taken steps to integrate climate change and agriculture into national development planning, and ensuring that CSA is part of the country's national adaptation and mitigation goals and commitments.

Recommendations

- Mainstream CSA into all agricultural investment plans and in other sectorial investment plans. For example, for ECOWAS countries, mainstreaming of CSA into NAIPs and Regional Agricultural Investment Plans (RAIPs) as well as into other sectoral plans could be an important step in ensuring national budget allocation to CSA practices.

- Leverage resources from bilateral projects with an aligned focus on rural development.

6.2 Implementation of the Recommendations

The scaling up of CSA technologies and interventions requires the collaboration of all stakeholders. It is also clear that the long-term needs of scaling up and its sustainability can only be ensured with greater and stronger capacity and cooperation among cooperation among NASs that are mainly responsible for these technologies and interventions. The collaboration should also be extended to other institutions. For reason, the Bank's approach for scaling up CSA is built on partnerships with all regional and international CSA stakeholders in Africa. The Bank considers that partnership is a core value for agriculture capacity building, and that the strengthening of NASs is one of its primary objectives.

6.2.1 The climate-smart agriculture scaling up partnership model

A network approach that brings together the Bank, Regional Economic Commissions (RECs), CSA stakeholders, and African NASs comprising sectoral ministries who are responsible for rural development including research, NGOs, farmers organizations, and the private sector in order to jointly conduct activities for the scaling up of CSA in Africa is considered

(Figure 8). The network is composed of Task Forces similar to the mechanism used by AfricaRice.[24]

A task force is a mini-network composed of CSA stakeholders from different institutions working in partnership with NASs on the same thematic areas of the CSA, and is based on the principles of sustainability, the building up of critical mass, and ownership by the NAS. A major thrust of the task forces is to provide synergy to CSA scaling-up efforts across the continent and build the CSA capacity at the regional and national levels.

The focus of the network will be on the three themes, i.e. Knowledge generation and sharing; Capacity building; and Scaling up of CSA. It is composed of the following three tasks forces; other task forces; other task forces can be created on an as needed basis:

- The Knowledge Generation and Sharing Task Force (NAS AfDB, International Centre for Tropical Agriculture [CIAT], the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), agriculture training schools/ universities);
- The Capacity Building Task Force: (AfDB, NAS, CCAFS, FAO, CIAT, agriculture training schools/ universities);
- The Scaling up CSA in Africa Task Force (AfDB, New Partnership for Africa's Development, NAS, World Agroforestry [ICRAF], CCAFS, FAO).

In order for the task forces to successfully deliver, the CSA scaling up partnership model should be based on the following premises:

- The entire regional agricultural system in Africa, i.e. regional and subregional organizations, universities/agriculture training schools, regional and international CSA stakeholders, and African NARES, should be considered an integrated and interdependent system, in which each member has a specific and determinant role to play.
- The nature of the CSA interventions as well as the magnitude of the resources needed for scaling up CSA in Africa are such that no single institution, including the Bank, can address them alone and effectively.

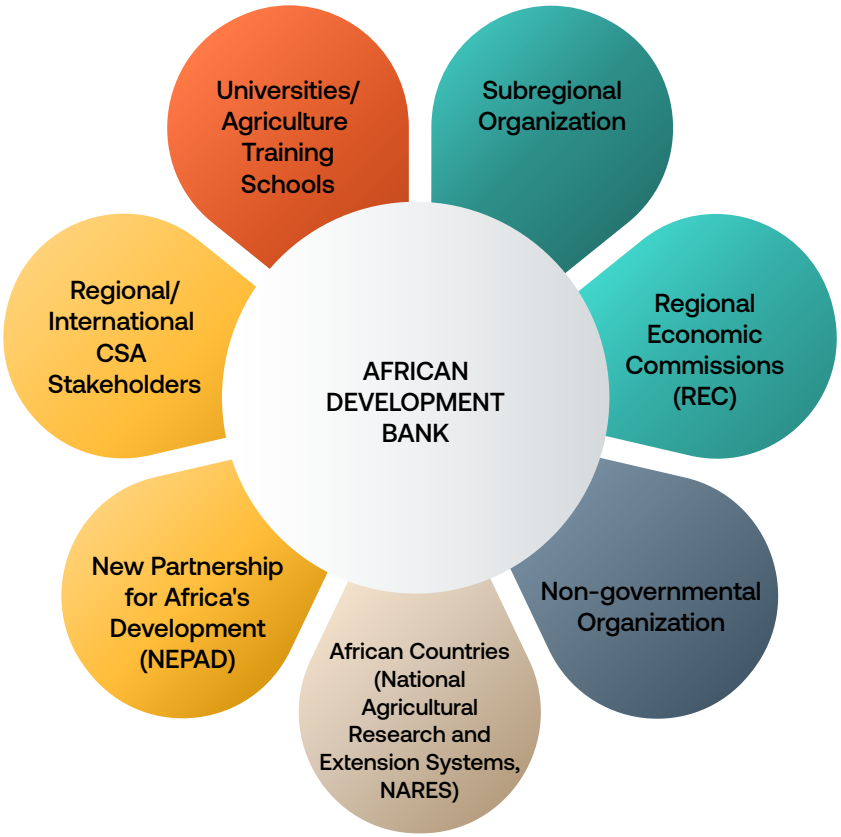

Figure 11: The climate-smart agriculture scaling up partnership model

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[24] The task force mechanism is the main vehicle used by AfricaRice to conduct research in partnership with the national agricultural research systems ((NARSs). It is an Africa-wide systematic collaborative mechanism based on the principles of sustainability, the building up of a critical mass, and ownership by the NARSs.

- An effective partnership requires the full participation of all parties in the planning of the collaborative activities. Although the Bank initiated and coordinated the planning process, the full participation of and endorsement by officials of NASs and subregional organizations are crucial for success. This should be obtained through consultation among partners.

- In addition to the implementation of the programme, the partnership model's objective is to contribute to the enhancement of smallholder farmers' CSA capacity through a system linking CSA development stakeholders in the region. The overall goal is to facilitate the transfer and adoption of CSA technologies and practices to smallholder farmers.

6.2.2 Governance

The governance structure of the network is defined as simply as possible and comprises a steering committee (STC), the institution in charge of continental, regional, and national coordination, and task forces. Figure 9 presents the governance mechanism and the reporting arrangements.

Steering Committee

The Regional STC is the decision-making body of the network. It includes both donors, African regional institutions, and African and International CSA stakeholders. The Committee would come under the high-level stewardship of the Bank's Director of Agriculture and Agro-Industry.

Responsibilities

The responsibilities of the STC will include:

- providing policy oversight and guidance on the implementation of the network activities;

- ensuring overall coordination and accountability of network activities;

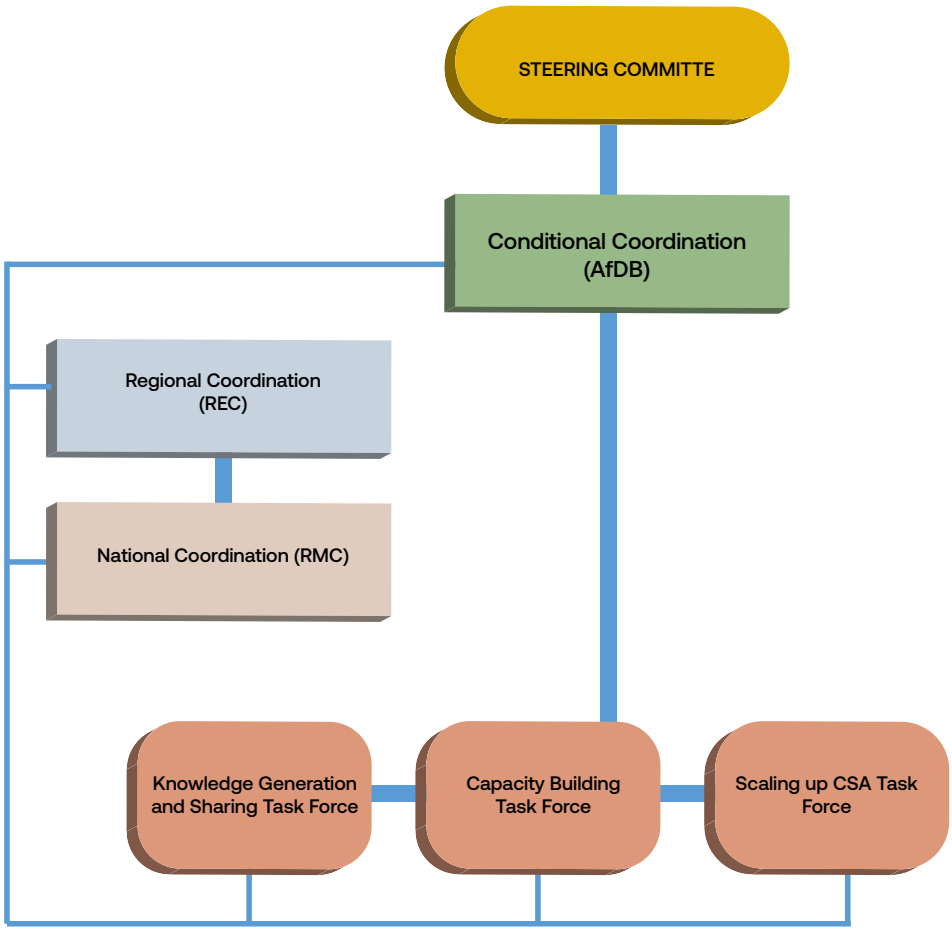
- approving the overall work plan and budget;

- providing overall management of the network;

- mobilizing resources; and

- reporting to donors, international and regional institutions responsible for agriculture and climate change.

Figure 12: Governance structure of the network



Membership

The Chairperson of the STC will be the Bank's Director of Agriculture and Agro-Industry. Membership of the STC will include:

- one representative each from the New Partnership for Africa's Development (NEPAD), FAO, the Climate Smart Agriculture Youth Network, the Forum for Agricultural Research in Africa (FARA), and the Morocco Adaptation of African Agriculture;

- CGIAR Centers working in Africa such as CIAT, World Agroforestry (ICRAF), International Crop Research Institutes for the Semi-Arid Tropics (ICRISAT), International Institute of Tropical Agriculture, International Livestock Research Institute (ILRI), and AfricaRice;

- African agriculture schools (two representatives);

- four representatives from NARES (two countries representing all countries, with two representatives per country); and

- donors such as World Bank, Department for International Development UK (DFID), United States Agency for International Development (USAID), and the Bill & Melinda Gates Foundation.

Meetings

The STC will hold one regular meeting each year, and extraordinary meetings when needed. Meetings will be convened by the Committee Chairperson.

Reporting

Reporting to donors and all members through a multi-reporting mechanism that will allow different institutions to receive reports and act accordingly.

Implementation and coordination arrangements

Using existing mechanisms, the programme will be implemented and coordinated at the national, regional, and continental levels.

National level

The Ministries of Agriculture will be responsible for country-level activities, especially the coordination of national CSA stakeholders' activities. They will report to RECs and put the Bank in copy.

Regional level

The RECs will assume responsibility at the regional level among their member countries and will report to the Bank.

Continental level

The Department of Agriculture and Agro-Industry of the Bank will be responsible for overseeing activities at the continental level through various task forces. To this end, each task force will have a coordinator, and an Implementation Secretariat will be established at the Bank. The responsibilities of the task force coordinator will include leading the work of his/her respective task force together with the other task forces and the Implementation Secretariat, which will provide administrative support to the task forces.

Under the leadership of the STC Chairperson, the responsibilities of the Continental Coordination will include, italicize this, mobilization and allocation of resources, monitoring, evaluating, and reporting on scaling CSA in Africa. Within the Bank, the implementation arrangements will be as described in Scaling up Climate-Smart Agriculture in Africa (ACSA), a programme for food security, adaptation, and mitigation in the Africa Feed Africa Flagship (2017–2025) Concept Note, and will involve:

- the Climate Change and Green Growth Department for resource mobilization and monitoring of activities (Climate Change and Green Growth Department);

- The Water and Sanitation Department and the Rural Development Department for project implementation;

- The Bank's Regional Directorates for dialogue with countries for the development and implementation of projects;

- The other Feed Africa flagships (TAAT, Enable youth, Agropole, etc.) and other initiatives of the Bank (ACCF, ClimDev-Africa Special Fund, the African Water Facility, '10.000 communities in 1.000 days', Infrastructure Consortium for Africa, Desert to Power, Say No to Famine, etc.) for synergies and complementarities, and resource mobilization.

The continental coordination will report to all African and international stakeholders' institutions and to donors.

6.2.3 Observing the fundamental principles of partnership

The proposed network approach for upscaling CSA technologies and practices brings together several CSA stakeholders from different institutions through knowledge generation and sharing, capacity building and other activities. The success of the network depends on the quality of these partnerships. Effective partnerships can be very difficult to achieve and

rely on adherence to some fundamental principles for creating synergy among the collaborative institutions, thereby ensuring the sustainability of the whole partnership process. These principles have been underlined by Spink and Merrill-Sands (1999) and include:

- Power equity: A partnership process may break down if its members feel that they are not given credit for their contribution or are devalued. Power equity can be created through an active and full participation of all partners, information sharing among partners, negotiated and transparent priority setting, and a clear assignment of roles and responsibilities.

- Interdependency and complementarity: Because of the specificity of the CSA, no single country or institution can implement the programme alone; this requires the collaboration of all stakeholders. The upscaling of CSA requires a broad knowledge base, innovative tools, and diverse expertise. This need for complementarity and interdependency must be recognized by all partners early in the formation of the partnership. Members need to appreciate that collectively, the partnership will achieve what they cannot achieve individual; i.e. the whole being greater than the sum of its parts.

- Mutual accountability: The success of the partnership depends on each member fulfilling their responsibilities and commitments in a timely fashion. This can be achieved through the development of a shared ownership of the programme, making the partners aware that their reputation is at stake, and vesting the group with authority to exercise agreed sanctions.

- Communication: It is essential to have effective communication channels among partners at the managerial and operational levels, as well as a good information flow and capacity to delegate within the institutions forming the partnership. Special emphasis should be placed on ensuring the continuity of the activities and personnel, and on setting up regular contacts through meetings, video-conferences and by phone and email.

- Assessment of the process: The whole process needs to be reviewed after 2–3 years in order to identify any shortcomings and take any necessary corrective measures. A self-assessment should also be undertaken after some time by all members to provide feedback on the partnership's strengths and weaknesses. The results of the self-assessment will be used to explore ways of improving weak areas. The findings of both the review and the self-assessment should be properly documented as lessons learned and used to increase the effectiveness of future partnerships, multi-partners, and multi-donors' initiatives.

7. CONCLUSION

This report examines the results of mainstreaming CSA technologies and interventions across Feed Africa and regional portfolios through projects whose objectives include achieving the CSA triple win goals (Productivity, Resilience, and Mitigation). It assesses the enabling environments and policy frameworks for a successful implementation and scaling up of CSA interventions, assesses the projects by categories within the different portfolios, identifies technologies and interventions deployed across the portfolios together with their successes and implementation barriers, defines pillars and the resulting recommendations, and proposes a partnership model for the scaling up of CSA activities.

Results of the analysis show that integration of climate change into national development planning, countries' CSA supporting services, and infrastructure and coordination of various CSA stakeholders of NASs vary across countries, with some countries performing poorly. In these countries, the availability, financial investments, and functioning of enablers and supporting services need to be improved so as to globally bring them at par with the need for scaling up CSA activities across Africa. An empirical clustering of countries validated by a canonical linear discriminant analysis reveals that there is no one size fits all interventions for improving CSA support. Specific interventions have been identified and proposed for each cluster of countries on the basis of its characteristics.

Political commitment is of paramount importance for creating an enabling environment for CSA. This is illustrated by some relatively powerful countries, which have a real GDP per capita far below the African average but a CSA-PoI Index far above the African average. They have achieved an above average CSA enabling environment through actions or by putting in place policies including: building strong institutional frameworks through regional arrangements; implementing a policy and institutional framework that offers opportunities for CSA scale-out; providing significant international support to realize commitments and implementation capacity; and adjusting financial infrastructure to meet the demands of the rural population. In addition to other advocacy actions, the experiences of these countries should be documented and shared with all non-performing countries.

Around 30.5% of the selected projects have an unsatisfactory level of performance. Satisfactory, Exceeding Expectations, and Highly Exceeding Expectations levels of performance were recorded by 16.67%, 33.33% and 5.55% of the selected projects, respectively.

The selected projects have also been assessed by their triple win areas components:

1. Twenty-seven projects have components that include productivity and resilience. The levels of

performance, almost satisfactory, satisfactory, exceeding expectations, and highly exceeding expectations were recorded for 14.81%, 11.11%, 40.74%, and 3.70% of these projects, respectively.

2. Nineteen projects have components that include Mitigation and Resilience. An almost satisfactory or better levels of performance were achieved by 78.94% of these projects.

3. Eighteen projects have triple win area components. Almost satisfactory, satisfactory, exceeding expectations levels of performance were recorded for 16.67%, 11.11%, and 55.56% of these projects, respectively.

The above levels of performance indicate a potential for achieving individual or joint triple win goals if interventions of these projects are scaled up.

The identified CSA technologies and interventions have the potential to increase productivity and climate change mitigation, and build the resilience of smallholder farmers to climate change. However, their implementation and adoption thereafter are challenges for smallholder farmers due to many factors, including the non-availability of information or the lack of capacity to use it for development purposes, thehigh cost and non-availability of good quality inputs, the need for up-front investments, the lack of affordable long-term investment capital, land shortage for some technologies and practices such as aquaculture, inadequate infrastructure, the non-participation of farmers in decision-making and knowledge generation, and the weak capacity of most extension services.

From the above list of barriers, it appears that: (i) appropriate policies and an enabling environment are essential for achieving the widespread adoption of CSA; and (ii) policy engagement, knowledge generation and sharing, capacity building, resource mobilization, access to inputs and credit, and risk management are the pillars for the scaling up and adoption of these technologies and practices. Recommendations have been derived from these pillars and will be implemented using a partnership approach in accordance with Enabler 7 of the Feed Africa strategy. The proposed partnership approach is a network composed of Task Forces based on the principles of sustainability, building up of critical mass, and ownership by the national CSA stakeholders. The scaling up of CSA technologies and interventions will bolster the CSA adoption by addressing some of the barriers it faces.

Resource mobilization for CSA activities should go beyond the tradition resource mobilization efforts by: (i) making the necessary arrangements for farmer organizations to access resources from carbon market; and (ii) collaborating with NGOs, funded by philanthropists. Given the public goods nature of CSA products, there is an opportunity to mobilize philanthropic funds directly or through these NGOs to support the adoption of CSA.

Finally, African leaders' political will is of paramount importance to the continental success of CSA, especially regarding national resource mobilization and the needed compliance with national and continental commitments such as the Malabo Declaration on agriculture.

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9. ANNEXES

Annex I. List of selected projects

Country	Project name	Portfolio	Category	Status	Appraisal	Starting Date	Finishing Date	Project cost (UA)
Benin	Project to Support Food Production and Build Resilience in Alibori, Borgou and Collines Departments	GAFSP	Resilience	Ongoing	06/06/2015	30/01/2014	31/12/2022	27,500,000
Burkina Faso	Leraba Plain Management and Development Project (PAVAL)	ACSA/Feed Africa	Infrastructure/ Irrigation/ Productivity	Ongoing	02/02/2019	01/10/2019	30/09/2026	40,131,300
	Multinational - Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	ACSA/Feed Africa	Resilience	Achieved	15/02/2014	13/12/2014	30/09/2022	11,760,000
	Multinational - Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	ACSA/Feed Africa	Resilience	Achieved	31/07/2014	30/06/2014	30/06/2022	25,450,000
	Cashew Development Support Project in Comoé Basin for REDD+	Forest Investment Programme (FIP)	Forest/ Mitigation	Ongoing	15/05/2016	15/01/2013	31/12/2025	5,857,000
Cameroon	Multinational - Programme to Rehabilitate and Strengthen the Resilience of Lake Chad Basin Systems	ACSA/Feed Africa	Resilience	Ongoing	01/09/2014	01/01/2014	31/12/2022	12,500,000
Chad	Multinational - Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	ACSA/Feed Africa	Resilience	Achieved	31/07/2014	30/06/2014	01/02/2023	9,770,000
Djibouti	Multinational - Drought Resilience and Sustainable Livelihoods Programme in the Horn of Africa - Phase I	ACSA/Feed Africa	Resilience	Achieved	19/12/2012	17/02/2013	31/12/2020	11,869,737
	Multinational - Drought Resilience and Sustainable Livelihoods Programme in the Horn of Africa - Phase I	ACSA/Feed Africa	Resilience	Ongoing	15/07/2012	23/02/2013	31/12/2022	5,000,000

Country	Project name	Portfolio	Category	Status	Appraisal	Starting Date	Finishing Date	Project cost (UA)
Eritrea	Drought Resilience and Sustainable Livelihoods Programme	ACSA/Feed Africa	Resilience	Ongoing	16/10/2016	30/06/2017	31/03/2024	5,310,000
Ethiopia	Multinational - Drought Resilience and Sustainable Livelihoods Programme in the Horn of Africa - Phase I	ACSA/Feed Africa	Resilience	Ongoing	15/07/2012	01/02/2011	31/12/2022	33,000,000
Gambia	Multinational - Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	ACSA/Feed Africa	Resilience	Achieved	31/07/2014	12/12/2014	30/09/2022	11,500,000
Guinea Bissau	Rice Value Chain Development Project in the Bafata and Oio Regions	ACSA/Feed Africa	Value Chain Development	Ongoing	01/03/2016	01/01/2016	31/12/2022	4,560,000
Kenya	Green Zones Development Support Project - Phase 2	ACSA/Feed Africa	Forest/ Mitigation	Ongoing	19/03/2018	01/12/2017	30/12/2025	37,500,000
	Multinational - Drought Resilience and Sustainable Livelihoods Programme in the Horn of Africa - Phase I	ACSA/Feed Africa	Resilience	Ongoing	15/07/2012	19/12/2012	31/12/2023	41,799,000
	Small-scale Irrigation and Value Addition Project	GAFSP	Resilience	Ongoing	15/06/2015	01/06/2016	30/06/2023	90,000
Malawi	Sustainable Fisheries Aquaculture Development and Watershed Management	ACSA/Feed Africa	Value Chain Development	Ongoing	15/03/2019	01/09/2018	30/06/2025	11,000,000
Mali	Multinational - Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	ACSA/Feed Africa	Resilience	Achieved	31/07/2014	12/12/2014	30/06/2022	36,390,000
Mauritania	Multinational - Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	ACSA/Feed Africa	Resilience	Achieved	31/07/2014	30/06/2014	31/12/2022	11,500,000
Morocco	National Irrigation Water Saving Programme Support Programme – Phase II	ACSA/Feed Africa	Infrastructure/ Irrigation/ Productivity	Ongoing	15/06/2016	15/01/2016	31/12/2024	96,934,000

Country	Project name	Portfolio	Category	Status	Appraisal	Starting Date	Finishing Date	Project cost (UA)
Mozambique	Baixo Limpopo Irrigation and Climate Resilience Project (BLICRP)	ACSA/Feed Africa	Infrastructure/ Irrigation/ Productivity	Ongoing	23/01/2012	19/10/2011	31/12/2022	28,260,000
	Drought Recovery and Agriculture Resilience Project (DRARP)	ACSA/Feed Africa	Resilience	Ongoing	17/08/2017	31/05/2016	30/06/2023	11,000,000
Niger	Climate Information Development and Forecasting Project (PDIPC)	ACSA/Feed Africa	Information System	Achieved	24/09/2012	22/11/2012	30/06/2021	10,043,261
	Multinational - Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	ACSA/Feed Africa	Resilience	Achieved	05/10/2014	30/06/2014	31/12/2022	28,960,000
	Project to Strengthen Resilience of Rural Communities to Food and Nutrition Insecurity in Niger (PRECIS)	ACSA/Feed Africa	Resilience	Ongoing	03/07/2020	01/11/2019	31/12/2025	25,859,000
	Multinational - Programme to Rehabilitate and Strengthen the Resilience of Lake Chad Basin Systems	ACSA/Feed Africa	Resilience	Ongoing	01/09/2014	01/01/2014	31/12/2022	13,330,000
	Africa Disaster Risks Financing Programme (ADRiFi)	ACSA/Feed Africa	Resilience	Ongoing	15/03/2020	17/01/2019	31/12/2023	4,000,000
	Water Mobilization Project to Enhance Food Security in Maradi, Tahoua and Zinder Regions (PMERSA-MTZ)	GAFSP	Infrastructure/ Irrigation/ Productivity	Achieved	20/09/2011	29/11/2011	31/07/2021	32,918,333
Nigeria	Multinational - Technologies for African Agricultural Transformation - Framework Program in Support of "Feed Africa"	ACSA/Feed Africa	Technologies for African Agricultural Transformation (TAAT)	Achieved	28/11/2017	02/02/2018	30/09/2022	29,000,000
Senegal	Multinational - Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	ACSA/Feed Africa	Resilience	Achieved	16/03/2015	21/05/2015	30/06/2020	22,241,096
	Water Valorisation for Value Chains Development Project (PROVALE-CV)	ACSA/Feed Africa	Value Chain Development	Ongoing	25/06/2019	01/01/2019	30/06/2025	121,980,000
	Food Security Support Project in Louga, Matam and Kaffrine Regions (PASA/ LOU-MA-KAF)	GAFSP	Resilience	Ongoing	15/11/2012	01/09/2012	31/03/2023	45,044,021

Country	Project name	Portfolio	Category	Status	Appraisal	Starting Date	Finishing Date	Project cost (UA)
Uganda	Farm Income Enhancement and Forestry Conservation Programme - Project 2	ACSA/Feed Africa	Forest/ Mitigation	Ongoing	05/09/2015	01/06/2015	30/06/2023	91,430,000
Zambia	Strengthening Climate Resilience in the Kafue Basin	ACSA/Feed Africa	Resilience	Ongoing	18/03/2013	01/03/2010	31/03/2023	38,720,001
	Sustainable Livestock Infrastructure Management Project (SLIMP)	ACSA/Feed Africa	Value Chain Development	Ongoing	21/06/2019	01/04/2019	30/07/2024	9,100,000
	Agriculture Productivity and Market Enhancement Project	GAFSP	Infrastructure/ Irrigation/ Productivity	Ongoing	31/01/2014	01/05/2013	30/06/2023	34,870,000

Annex II. ACSA/Feed Africa projects' assessment results per category

Category	Project name	Status	Country	Project cost (UAC)	Objectives	Beneficiaries	Assessment results	Observations
Value Chain Development	Rice Value Chain Development Project in the Bafata and Oio Regions	Ongoing	Guinea Bissau	4,560,000	The overall goal of PDCV-Rice is to help improve nutritional and food security, and reduce poverty across the country. Its specific objective is to ensure the sustainable recovery of the rice value chain in the Bafata and Oio regions by improving productivity, strengthening infrastructure, ensuring resilience to climate change, sustainably managing natural agricultural resources, and reducing gender inequality.	720 farmers will directly benefit, 55% of whom women, i.e. about 12,000 members of agricultural households; it will indirectly impact approximately 60,000 people.	The Productivity indicators highly exceeded expectations, and the Resilience indicators had an average score of 3.33, indicating that most of them scored above the target values. The CSA results score of the project is 4.17, indicating a highly exceeding expectations level of performance.	
	Water Valorisation for Value Chains Development Project (PROVALE-CV)	Ongoing	Senegal	121,980,000	PROVALE-CV's sector objective is to contribute to robust, inclusive, and sustainable economic growth, and to improve the quality of life for rural communities. The project specifically aims to sustainably increase agricultural production, employment and income in rural areas.	Various rural producers (farmers, stockbreeders, aquaculturalists, craftspersons, etc.), who would thus have easier access to inputs and equipment and could more easily sell their products at lower costs. More specifically, the project's interventions will focus on these target categories, particularly the vulnerable in rural areas, including rural women and youth.	All indicators received a score of 1, indicating that all three triple win areas, and the project had a score of 1, indicating an unsatisfactory level of performance.	There were delays in the start of the project due to COVID-19, which slowed down the pace of processing of acquisition files, the drafting of agreements, and the deployment of companies in the field were the main reasons for the poor performance of the project.

Category	Project name	Status	Country	Project cost (UAC)	Objectives	Beneficiaries	Assessment results	Observations
	Sustainable Fisheries Aquaculture Development and Watershed Management	Ongoing	Malawi	11,000,000	The objectives of the project are to contribute towards poverty reduction through improved fish commodity value addition, increased consumption, and strengthened nutritional security, and to build climate resilience in Malawi.	Direct beneficiaries are 20,000 fishers, fish farmers, students, and value chain entrepreneurs, of whom 50% women, in the targeted regions. The estimated number of indirect beneficiaries is 250,000, for which the 40:60 gender policy ratio of either sex is applied, indicating a greater involvement of women where necessary.	Most indicators had a score of 1, a very unsatisfactory performance, resulting in average scores of 1 and 1.33 for Productivity and Resilience, respectively. The overall score of the project was 1.17, which is an unsatisfactory level of performance.	Issues affecting project implementation: (i) slow procurement of consultancies, works, and goods; (ii) Environment and Social Management Plan (ESMP) completion and implementation; (iii) slow recruitment of project staff (especially the project coordinator, the fisheries planning officer and the accountant); and (iv) inadequate programmes in gender and HIV/AIDS mainstreaming, nutrition and workplace safety/sexual harassment; and (v) a COVID-19 outbreak.
	Sustainable Livestock Infrastructure Management Project (SLIMP)	Ongoing	Zambia	9,100,000	The project's goal is to contribute to poverty reduction through the enhanced sustainable use of livestock infrastructure for improved livestock production and productivity, commercialization, and institutional capacity building.	248 registered livestock-keeping groups with more than 100,000 households (HHs) with fully paid membership status (33,600 female headed HH). In addition, 90,000 livestock keeping HHs, within participating districts, will indirectly benefit from improved livestock infrastructure and services. About 800,000 people, including 400,000 women and 70,000 youth, will indirectly benefit from an increase in the supply of quality livestock products.	All indicators were aligned to resilience; the average score of these indicators is 2.88. This indicates that the project performance in reaching the CSA goal of resilience is at the almost satisfactory level of performance.	

Category	Project name	Status	Country	Project cost (UAC)	Objectives	Beneficiaries	Assessment results	Observations
Forest/Mitigation	Farm Income Enhancement and Forestry Conservation Programme – Project 2	Ongoing	Uganda	91,430,000	The overall goal of the Project is to contribute to poverty reduction and economic growth in Uganda through enhanced productivity and the commercialization of agriculture. The project specific objective is to improve household incomes, food security, and climate resilience through sustainable natural resources management and agricultural enterprise development.	Main target beMain target beneficiaries are farmers cultivating rice, cotton, and horticultural crops. About 31,000 households from the irrigation schemes will benefit directly, of whom about 51% are women. The Natural Resources Management component will provide direct benefits to 300,000 households. Beneficiaries will include communities living in degraded lands, farmers adopting agro-forestry practices, conservation farming, and agribusiness development, as well as service providers and Ministry staff who will be trained on sustainable conservation and tree planting practices. The Agribusiness component will create about 1,000 alternative livelihood opportunities in addition to the 1,400 participants in business skills development programme.	Indicators were only aligned with productivity and Resilience. Average scores of productivities and resilience were 1 and 1.8 respectively. The CSA results score of the project is 1.4, which is an unsatisfactory level of performance.	The poor performance of the project could be explained by a delayed procurement process for recruiting the supervision consultant and contractors, which has resulted in slow disbursement rate at the beginning of the project.
	Green Zones Development Support Project-Phase 2	Ongoing	Kenya	37,500,000	The objective of the project is to improve forest conservation and livelihoods for sustainable forest management in 15 counties in Kenya. The specific objectives are to: enhance forest conservation and livelihood support for climate change resilience; and (ii) develop timber, bamboo, potato, cereals and pulses value chains for improved household incomes.	Direct beneficiaries are estimated at 167,083 households, of which 40% women (66,833). The number of indirect beneficiaries within the project area is 501,249.	All indicators used to assess the project's achievement were aligned with resilience and mitigation. The CSA results score of the project was 1.17, which is an unsatisfactory level of performance.	The COVID-19pandemic adversely affected the project implementation. Project offices burned down, thereby slowing down the project implementation. Changing weather patterns due to climate change impacted weather-dependent project activities.

Category	Project name	Status	Country	Project cost (UAC)	Objectives	Beneficiaries	Assessment results	Observations
Infrastructure /Irrigation/ Productivity	Leraba Plain Management and Development Project (PAVAL)	Ongoing	Burkina Faso	40,131,300	The project's sector objective is to contribute towards achieving food and nutrition security in Cascades Region. Its specific objective is to contribute towards sustainably increasing productivity, production and income for farmers, including women and youth.	9,000 beneficiaries in several categories (irrigation scheme farmers, women rice parboilers, young entrepreneurs, rural youth, etc.).	All indicators used to assess the project achievement received a score of 1; This resulted in a score of 1 for the project, indicating that the project level of performance is unsatisfactory.	The poor performance of the project might be related to challenges faced by the project at its beginnings. More than 16 months after the signing of the various PAVAL financing agreements, the state of execution of the project was still very insufficient. The excessive number of first disbursement conditions, combined with the Project Implementation Unit's (PIU) insufficient capacity and the repeated failures observed in procurement by the national party, generated significant start-up delays, reflected in very low disbursement rates (ADF grant 0.54%, ADB loan 0.09%, IFAD loan 0%). These start-up delays might have contributed to the poor performance of the project.
	Baixo Limpopo Irrigation and Climate Resilience Project (BLICRP)	Ongoing	Mozambique	28,260,000	The objective of the project is to contribute to poverty reduction through increased value addition and the creation of a climate-resilient (CR) infrastructure to increase agricultural productivity by supporting the development of 3,050 ha for cash crops and the creation of commercial and agro-industrial infrastructures.	8,000 families of smallholder farmers and 210 emerging farmers in the East Block of Magula (approximately 40,000 individual beneficiaries in total). In addition, the total population of Xai District, estimated at 115,752, will benefit from the jobs that will be created during the construction and operation phases.	All indicators used to assess the project were aligned with Resilience indicators. The CSA results score of the project was 2.78, which is an almost satisfactory level of performance.	

Category	Project name	Status	Country	Project cost (UAC)	Objectives	Beneficiaries	Assessment results	Observations
Infrastructure /Irrigation/ Productivity	National Irrigation Water Saving Programme Support Programme – Phase II	Ongoing	Morocco	96,934,000	The project objective is to ensure the judicious and positive utilization of irrigation water resources against a backdrop of increasing scarcity of these resources and the rising cost of energy used in irrigation.	The beneficiary population is estimated at 61 500, most of whom small-scale farmers. Very small-scale farmers (with less than 2 ha) represent 70.19% of the beneficiary population and occupy less than one third of the total land area concerned (31.45%), whereas small-scale farmers (with less than 5 ha) account for 87.88% of the total number of farmers.	The CSA results score of the project was 1.14, which is an almost satisfactory level of performance.	
Resilience	Project to Strengthen Resilience of Rural Communities to Food and Nutrition Insecurity in Niger (PRECIS)	Ongoing	Niger	25,859,000	The overall goal of PRECIS is to sustainably improve the food and nutrition security of rural households and strengthen their resilience to climate shocks and natural resource degradation. The specific development objectives of the project are to increase rural household incomes, improve livelihoods and lives, and ensure the socio-economic integration of young people (men and women) into productive rural occupations.	PRECIS covers 186 municipalities located in the regions of Tahoua, Maradi and Zinder, and will directly affect nearly 210,000 households, or approximately 1,470,000 people. The population of the neighbouring areas should also benefit indirectly from the momentum created by the Economic Development Pole (PDE) approach.	The indicators used to assess the project were aligned with Productivity and Resilience. The average scores of Productivity and Resilience were 1.3 and 1.0, respectively, giving a CSA results score of the project of 1.15, which is an unsatisfactory level of performance.	
	Drought Resilience and Sustainable Livelihoods Program	Ongoing	Eritrea	5,310,000	The project aims to contribute to improving the national goal of food and nutrition security, increasing the employment rate and eradicating poverty. The specific objective is to enhance drought resilience and improve sustainable livelihoods of the smallholder farmers in Eritrea.	The total number beneficiaries are about 120,000 individuals, out of whom around 65,000 will be women. About 1,500 jobs for youth (male and female) will be created.	Productivity, Resilience, and Mitigation received scores of 2.33, 3.3 and 5, respectively. This resulted in a CSA results score of 3.54, an exceeding expectations level of performance.	

Category	Project name	Status	Country	Project cost (UAC)	Objectives	Beneficiaries	Assessment results	Observations
Resilience	Multinational – Programme to Rehabilitate and Strengthen the Resilience of Lake Chad Basin Systems	Ongoing	Niger	13,330,000	PRESIBALT's overall goal is to improve the resilience of the populations who depend on Lake Chad Basin's resources for their livelihood. More specifically, the project will: (i) strengthen the resilience of socio-ecological systems, (ii) develop key products in a context of climate change adaptation; and (iii) strengthen social peace through sound governance of shared resources.	Direct and indirect beneficiaries are 15.3 million people living on the banks of Lake Chad and its immediate hinterland.	All indicators used to assess the project were aligned with the Resilience component. The CSA results score of the project was 1.25, which is an unsatisfactory level of performance.	There were delays in the start of the project due to administrative and financial challenges, but corrective measures have been taken.
	Drought Recovery and Agriculture Resilience Project (DRARP)	Ongoing	Mozambique	11,000,000	The DRARP goal is to strengthen the capacity of the rural communities to address the inter-linked challenges of climate change, rural poverty, food insecurity, and land degradation through the provision of water harvesting infrastructure, and improved food production and marketing activities, as well as capacity building for the affected communities.	The selected communities are among those mostly affected by the drought and they will be the direct beneficiaries. Public institutions such as the Ministry of Public Works and Water Resources, the National Agricultural Research Institute, and relevant Directorates in the Ministry of Agriculture and Food Security, and the provincial and district directorates of Agriculture and Public Works will benefit from the project interventions in terms of capacity building.	The indicators used to assess the project were aligned with the Productivity and Resilience components. The average scores of Productivity indicators and of Resilience indicators were 3 and 2.33, respectively, giving a CSA results score of the project of 2.67, which is an almost satisfactory level of performance.	
	Multinational – Programme to Rehabilitate and Strengthen The Resilience of Lake Chad Basin Systems (PRESIBALT)	Ongoing	Cameroon	12,500,000	PRESIBALT's overall goal is to improve the resilience of the populations who depend on Lake Chad Basin's resources for their livelihood. More specifically, the project will: (i) strengthen the resilience of socio-ecological systems; (ii) develop key products in a context of climate change adaptation; and (iii) strengthen social peace through sound governance of shared resources.	The direct and indirect beneficiaries are 15.3 million people living on the banks of Lake Chad and its immediate hinterland. Women and unemployed youth will also benefit from job skills training, professional integration, and income-generating activities.	The indicators used to assess the project were aligned with the Productivity and Resilience components. The average scores of Productivities and of Resilience indicators were 1 and 1.3, respectively, giving a CSA results score of the project of 1.15, which is an unsatisfactory level of performance.	Poor performance due to delays in the start of the project due to administrative and financial challenges, but corrective measures were taken.

Category	Project name	Status	Country	Project cost (UAC)	Objectives	Beneficiaries	Assessment results	Observations
	Africa Disaster Risks Financing Programme (ADRiFi)	Ongoing	Niger	4,000,000	The overall goal is to strengthen resilience and response to climate shocks by improving disaster risk management and adaptation to climate change in the Bank's Regional Member Countries (RMCs). The specific objectives of the ADRiFi Niger programme are to: (i) strengthen Niger's capacity to assess the risks and costs associated with climatological disasters, particularly drought, and develop prevention and management measures at the national and sub-national levels; and (ii) promote disaster risk coverage through parametric insurance in order to ensure the availability of emergency funds for prompt assistance to vulnerable communities in the event of a disaster.	Direct beneficiaries of the ADRiFi programme are the State of Niger, mainly through assistance with the payment of its drought risk insurance premium, and the decentralized services of the National Food Crises Prevention and Management Mechanism (DNPGCA) at the regional level. Vulnerable communities and small-scale farmers are the indirect beneficiaries.	All indicators used to assess the project were only aligned with the Resilience component. The CSA results score was 1.4, which is an unsatisfactory level of performance.	The delay in the disbursement of working capital had significant repercussions on the implementation of activities planned in the 2021 annual budget work plan. The lack of recruitment of a Procurement Specialist due to weak local capacities in procurement within the projects financed by the Bank presented limits in the management of the procurement process for works, goods, and services. Lack of capacity of the Project Implementation Unit (PIU) members to issue compliance notices and the non-payment of the Government's contribution to the payment of the insurance premium were other challenges faced by the project.
	Multinational – Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	Achieved	Senegal	22,241,096	The programme's sector goal is to contribute to reducing poverty and improving food and nutrition security in the Sahel. Its specific objective is to increase, on a sustainable basis, agro-sylvo-pastoral and fishery productivity and production in the Sahel.	Most vulnerable households, especially smallholders, stock breeders and agro-pastoralists, and traditional fishers (180,000 farms and smell and medium-sized enterprises targeted). Special attention will be paid to women and young children. Thus, nutrition actions will benefit 450,000 mothers and children. Overall, the number of direct and indirect beneficiaries impacted will be 3,030,000, 1,430,000 of whom direct targets and 51% women and girls.	The indicators used to assess the project were aligned with the Productivity, Resilience, and Mitigation components. The scores of Productivity, Resilience, and Mitigation were 3.6, 3.4, and 3.67, respectively, giving a CSA results score of 3.56, indicating an exceeding expectations level of performance.	

Category	Project name	Status	Country	Project cost (UAC)	Objectives	Beneficiaries	Assessment results	Observations
	Multinational – Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	Achieved	Chad	9,770,000	The programme's sector goal is to contribute to reducing poverty and improving food and nutrition security in the Sahel. Its specific objective is to increase, on a sustainable basis, agro-sylvo-pastoral and fishery productivity and production in the Sahel.	Most vulnerable households, especially smallholders, stock breeders and agro-pastoralists, and traditional fishers (180,000 farms and small and medium-sized enterprises targeted). Special attention will be paid to women and young children. Thus, nutrition actions will cover 450,000 mothers and children. Overall, the number of direct and indirect beneficiaries impacted will be 3,030,000, of whom 1,430,000 will be direct targets and 51% women and girls.	The indicators used to assess the project were aligned with Productivity and Resilience whose scores were 2.5, and 3.5, respectively. The CSA results score of the project was 3.0, indicating a satisfactory level of performance.	
	Multinational – Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	Achieved	The Permanent Interstate Committee for Drought Control in the Sahel (CILSS)	11,760,000	The programme's sector goa is to contribute to reducing poverty and improving food and nutrition security in the Sahel. Its specific objective is to increase, on a sustainable basis, agro-sylvo-pastoral and fishery productivity and production in the Sahel.	Most vulnerable households, especially smallholders, stock breeders and agro-pastoralists, and traditional fishers (180,000 farms and SMEs targeted). Special attention will be paid to women and young children. Thus, nutrition actions will cover 450,000 mothers and children. Overall, the number of direct and indirect beneficiaries impacted will be 3,030,000,	The indicators used to assess the project were aligned with Productivity, Resilience, and Mitigation. The scores of Productivity, Resilience, and Mitigation were 1.83, 3.0, and 4.33, respectively, signifying that the project: (i) has not reached the CSA goal of Productivity; (ii) has satisfactorily reached the CSA goal of Resilience; and (iii) has reached the CSA goal of Mitigation beyond exceeding expectations. The CSA results score of the project was 3.05, which is an exceeding expectations level of performance.	

Category	Project name	Status	Country	Project cost (UAC)	Objectives	Beneficiaries	Assessment results	Observations
	Multinational – Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	Achieved	Mali	36,390,000	The programme's sector objective is to contribute to reducing poverty and improving food and nutrition security in the Sahel. Its specific objective is to increase, on a sustainable basis, agro-sylvo-pastoral and fishery productivity and production in the Sahel.	Most vulnerable households, especially smallholders, stock breeders and agro-pastoralists, and traditional fishers (180,000 farms and SMEs targeted). Special attention will be paid to women and young children. Thus, nutrition actions will cover 450,000 mothers and children. Overall, 3.030,000 direct and indirect beneficiaries will be impacted, 1,430,000 of whom direct targets and 51% women and girls.	The indicators used to assess the project were aligned with the Productivity, Resilience, and Mitigation components, whose scores were 1.25, 2.5, and 5.0, indicating that the project: (i) has not reached the CSA goal of Productivity; (ii) has reached the CSA goal of Resilience below the satisfactory level; and (iii) has highly exceeded expectations in reaching the CSA goal of Mitigation. The CSA results score of the project was 1.75, which is an unsatisfactory level of performance.	
	Multinational – Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	Achieved	Burkina Faso	25,450,000	The programme's sector objective is to contribute to reducing poverty and improving food and nutrition security in the Sahel. Its specific objective is to increase, on a sustainable basis, agro-sylvo-pastoral and fishery productivity and production in the Sahel.	Most vulnerable households, especially smallholders, stock breeders and agro-pastoralists, and traditional fishers (180,000 farms and SMEs targeted). Special attention will be paid to women and young children. Thus, nutrition actions will cover 450,000 mothers and children. Overall, the number of direct and indirect beneficiaries impacted will be 3,030,000, 1,430,000 of whom direct targets, and 51% women and girls.	The indicators used to assess the project were aligned with the Productivity, Resilience, and Mitigation components, whose scores were 2.83, 3.88, and 5.0, respectively, indicating that the project: (i) has reached the CSA goal of Productivity just below the satisfactory level; (ii) has reached the CSA goal of Resilience beyond the satisfactory level; and (iii) has reached the CSA goal of Mitigation with a highly exceeding expectations level. The CSA results score of the project was 3.9, indicating an exceeding expectations level of performance.	

Category	Project name	Status	Country	Project cost (UAC)	Objectives	Beneficiaries	Assessment results	Observations
	Multinational – Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	Achieved	Gambia	11,500,000	The programme's sector objective is to contribute to reducing poverty and improving food and nutrition security in the Sahel. Its specific objective is to increase, on a sustainable basis, agro-sylvo-pastoral and fishery productivity and production in the Sahel.	Most vulnerable households, especially smallholders, stock breeders and agro-pastoralists, and traditional fishers (180,000 farms and SMEs targeted). Special attention will be paid to women and young children. Thus, nutrition actions will cover 450,000 mothers and children. Overall, 3.030,000 direct and indirect beneficiaries will be impacted, 1,430,000 of whom direct targets and 51% women and girls.	The indicators used to assess the project were aligned with Productivity, Resilience, and Mitigation components, whose scores were 2.8, 3.11, and 2.0, respectively, indicating that the project: (i) has reached the CSA goal of Productivity just below the satisfactory level; (ii) has reached the CSA goal of Resilience beyond the satisfactory level; and (iii) has not satisfactorily reached the CSA goal of Mitigation. The CSA results score of the project was 2.64, indicating an almost satisfactory level of performance.	
	Multinational – Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	Achieved	Mauritania	11,500,000	The programme's sector objective is to contribute to reducing poverty and improving food and nutrition security in the Sahel. Its specific objective is to increase, on a sustainable basis, agro-sylvo-pastoral and fishery productivity and production in the Sahel.	Most vulnerable households, especially smallholders, stock breeders and agro-pastoralists, and traditional fishers (180,000 farms and SMEs targeted). Special attention will be paid to women and young children. Thus, nutrition actions will cover 450,000 mothers and children. Overall, 3.030,000 direct and indirect beneficiaries will be impacted, 1,430,000 of whom direct targets and 51% women and girls.	The indicators used to assess the project were aligned with Productivity, Resilience, and Mitigation components, whose scores were 2.83, 2.9, and 4.5, respectively, indicating that the project: (i) has reached the CSA goals of Productivity and Resilience just below the satisfactory level; and (ii) has reached the CSA goal of Mitigation beyond exceeding expectations level. The CSA results score of the project was 3.41, indicating an exceeding expectations level of performance.	

Category	Project name	Status	Country	Project cost (UAC)	Objectives	Beneficiaries	Assessment results	Observations
	Multinational – Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	Achieved	Niger	28,960,000	The programme's sector objective is to contribute to reducing poverty and improving food and nutrition security in the Sahel. Its specific objective is to increase, on a sustainable basis, agro-sylvo-pastoral and fishery productivity and production in the Sahel.	Most vulnerable households, especially smallholders, stock breeders and agro-pastoralists, and traditional fishers (180,000 farms and SMEs targeted). Special attention will be paid to women and young children. Thus, nutrition actions will cover 450,000 mothers and children. Overall, 3.030,000 direct and indirect beneficiaries will be impacted, 1,430,000 of whom direct targets and 51% women and girls.	The indicators used to assess the project were aligned with Productivity, Resilience, and Mitigation. The scores of Productivity, Resilience, and Mitigation are 2.17, 2.77, and 3.67 indicating that the project: (i) has reached the CSA goals of Productivity and of Resilience below the satisfactory level; and (ii) has reached the CSA goal of Mitigation beyond the satisfactory level. The CSA results score of the project was 2.87, indicating an almost satisfactory level of performance.	
	Multinational - Drought Resilience and Sustainable Livelihoods Programme in the Horn of Africa - Phase I	Achieved	Djibouti	11,869,737	The project aims at addressing the root causes of the region's vulnerability in order to build a medium- to long-term resilience against drought, for enhancing peace building and conflict resolution, and ensuring equitable utilization of the limited natural resources. It will offer a sustainable and long-term solution to the drought, floods, and livelihoods issues in the Horn of Africa.	About 4 million beneficiaries in Djibouti, Ethiopia and Kenya. The Intergovernmental Authority on Development (IGAD) in the Horn of Africa will also benefit.	The indicators used to assess the project were aligned with Productivity, Resilience, and Mitigation components, whose scores were 2.0, 2.93, and 3.0 respectively, indicating that the project has reached the CSA goals of Productivity and Resilience below the satisfactory level, and has satisfactorily reached the Mitigation goal. The CSA results score of the project was 2.64, indicating an almost satisfactory level of performance.	

Category	Project name	Status	Country	Project cost (UAC)	Objectives	Beneficiaries	Assessment results	Observations
	Strengthening Climate Resilience in the Kafue Basin (SCRiKA) project	Ongoing	Zambia	38,720,001	The SCRIKA project in Zambia administered by the African Development Bank, will foster food security, sustained growth, and poverty reduction to better respond to current climate variability and the long-term consequences of climate change. More specifically, the project will strengthen the capacity of communities to cope with floods and droughts, thereby increasing the number of people who are resilient to climate change and contributing to growing the economy in the Kafue sub-basin.	Primary beneficiaries include poor rural farmers who often suffer climate-related losses, and other vulnerable groups that depend on natural resources for their livelihoods. The direct beneficiaries also include youth (36,000) and women (350,000), i.e. 48% of the population of 800,000 in the project area.	The indicators used to assess the project were aligned with Productivity and Resilience. The scores of Productivity, and Resilience were 4.5, and 2.5 respectively, indicating that the project has reached the CSA goals of Productivity at a highly exceeding expectation level, and the CSA goals of Resilience at an almost satisfactory level. The CSA results score of the project was 3.5, indicating an exceeding expectations level of performance.	
	Multinational - Drought Resilience and Sustainable Livelihoods Programme in the Horn of Africa - Phase I	Ongoing	Ethiopia	33,000,000	The project aimed at addressing the root causes of the region's vulnerability in order to build a medium- to long-term resilience against drought, enhance peace building and conflict resolution, and ensure equitable utilization of the limited natural resources. It will offer a sustainable and long term solution to the drought, floods, and livelihoods issues in the Horn of Africa.	About 4 million beneficiaries in Djibouti, Ethiopia and Kenya. The Intergovernmental Authority on Development (IGAD) in the Horn of Africa will also benefit.	The indicators used to assess the project were aligned with Resilience only. The CSA results score was 2.82, indicating a satisfactory level of performance.	
	Multinational - Drought Resilience and Sustainable Livelihoods Programme in the Horn of Africa - Phase I	Ongoing	IGAD Secretariat	5,000,000	The project aims at addressing the root causes of the region's vulnerability in order to build a medium- to long-term resilience against drought, enhance peace building and conflict resolution, and ensure equitable utilization of the limited natural resources. It will offer a sustainable and long-term solution to the drought, floods, and livelihoods issues in the Horn of Africa.	About 4 million beneficiaries in Djibouti, Ethiopia and Kenya. The Intergovernmental Authority on Development (IGAD) in the Horn of Africa will also benefit.	The indicators used to assess the project were aligned with Resilience only. The CSA results score was 4.00, an exceeding expectations level of performance.	

Category	Project name	Status	Country	Project cost (UAC)	Objectives	Beneficiaries	Assessment results	Observations
	Multinational - Drought Resilience and Sustainable Livelihoods Programme in the Horn of Africa - Phase I	Ongoing	Kenya	41,799,000	The project aims at addressing the root causes of the region's vulnerability in order to build a medium- to long-term resilience against drought, enhance peace building and conflict resolution, and ensure equitable utilization of the limited natural resources. It will offer a sustainable and long-term solution to the drought, floods, and livelihoods issues in the Horn of Africa.	About 4 million beneficiaries in Djibouti, Ethiopia and Kenya. The Intergovernmental Authority on Development (IGAD) in the Horn of Africa will also benefit.	The indicators used to assess the project were aligned with Resilience only. The CSA results score was 2.92, indicating a satisfactory level of performance.	
Information System	Climate Information Development and Forecasting Project (PDIPC)	Achieved	Niger	10,043,261	The PDIPC seeks to strengthen the population's resilience to climate change by mainstreaming climate information in the planning and implementation of development actions. More specifically, PDIPC will promote: (i) the resilience of the sectors that are the most vulnerable to climate change (agriculture, livestock, forestry, health and fisheries) by improving the quality of the climate information and products provided; (ii) the improved modelling of climate forecasting; (iii) the dissemination of climate information to all key users, in particular, the end-users who are farmers and herders, in simplified ways that are and easy to understand; and (iv) the strengthening of the early warning system.	The project will directly affect 150,000 producers, spread over Niger's 234 district councils of eight regions, and will indirectly benefit all of the country's inhabitants.	The indicators used to assess the project were aligned with Resilience only. The CSA results score was 4.4, indicating a highly exceeding expectations level of performance.	

Category	Project name	Status	Country	Project cost (UAC)	Objectives	Beneficiaries	Assessment results	Observations
Technologies for African Agricultural Transformation (TAAT)	Multinational - Technologies for African Agricultural Transformation - Framework Program in Support of "Feed Africa"	Achieved	Regional Member Countries (RMCs)	29,000,000	The development objective of TAAT is to rapidly expand access of smallholder farmers, mostly women, to high-yielding agricultural technologies to improve their food production, assure food security, raise rural incomes, and deliver regional public goods by scaling up agricultural technologies across similar agro-ecological zones. Overall, TAAT has three main objectives; (i) create an enabling environment for technology adoption by famers via policies for deployment and adoption of food production technologies that are regionally harmonized, food and nutrition conscious, and environmentally sustainable; (ii) facilitate the effective delivery of technologies to farmers by working with existing regional technology delivery Infrastructure in a compact with RMCs, represented by the National Agriculture Research and Extension System (NARES), private sector actors, and an independent technology clearinghouse; and (iii) increase agricultural production and productivity through the identification and deployment of appropriate technologies, including nutrient-dense crop varieties, and vigorous crop outreach campaigns, extension, and market linkage campaigns, in RMCs.	Project beneficiaries include a variety of stakeholders: agripreneurs, farmer-based organizations and cooperatives, commodity processors, private sector operators, registered SMEs, seeds producers, agro-input dealers, service providers, millers, aggregator and market operators, and young graduates.	The indicators used to assess the project were aligned with Productivity, Resilience, and Mitigation, whose scores were 3.9, 3.3, and 4, respectively, which indicates that the project has reached the CSA goals of Productivity, Resilience, and Mitigation at an exceeding expectations level. The CSA results score of the project was 3.73, indicating an exceeding expectations level of performance.	

Annex III. GAFSP Projects' Assessment Results per category

Category	Project name	Status	Country	Project cost (UAC)	Objectives	Beneficiaries	Assessment results	Observations
Resilience	Project to Support Food Production and Build Resilience in Alibori, Borgou, and Collines Departments (PAPVIRE-ABC)	Ongoing	Benin	27,500,000	The overall goal of the PAPVIRE-ABC is to contribute to the improvement of food and nutrition security and poverty reduction. The specific objective of the project is to sustainably boost food production in the project area through improved productivity, resilience to climate change, sustainable management of agricultural natural resources, the reduction of gender inequalities, and an increase in household incomes, especially of the most vulnerable in the project area.	There are 50,000 direct beneficiaries (40% women), including 25,445 farmers. Other beneficiaries are women processors, craftsmen, traders and service providers, representing a total population of direct and indirect beneficiaries estimated at 400,000 people. Particular attention will be paid to women (and more so to heads of households) and young people, who constitute the main vulnerable groups.	The indicators used to assess the project were aligned with Productivity, Resilience, and Mitigation components, whose scores were 4.0, 3.8, and 3.5 respectively, indicating that the project has reached the CSA goals of Productivity, Resilience, and Mitigation at exceeding expectations level of performance. The CSA results score was 3.78, an exceeding expectations level of performance.	
Resilience	Food Security Support Project in Louga, Matam and Kaffrine Regions (PASA/ LOU-MA-KAF)	Ongoing	Senegal	45,044,021	The project goal is to improve food security as well as rural incomes by targeting three weather hazard-prone regions of Senegal. It aims at generating crop and livestock production estimated at more than 22,000 tonnes and 5,000 tonnes, respectively, and incomes exceeding CFAF 3 million/year per farm.	There are 390,000 people (60% of whom women). Particular attention will be paid to youth employment (2,900 direct jobs) and to building resilience to climate change.	The indicators used to assess the project were aligned with Productivity, Resilience, and Mitigation components, whose scores were 3, 3.29, and 3, respectively. The CSA results score of the project was 3.09, an exceeding expectations level of performance.	
Resilience	Small-scale Irrigation and Value Addition Project (SIVAP)	Ongoing	Kenya	70,690,000	The SIVAP broad objective is to contribute to poverty reduction by enhancing agricultural productivity and income, and food security among beneficiaries of 11 counties.	As of 31 December 2022 (PPR 31 July -31	The indicators used to assess the project were aligned with Productivity, Resilience, and Mitigation components, whose scores were 1.25, 1.17, and 1, respectively, indicating that the project has not reached the CSA goals of Productivity, Resilience and Mitigation. The CSA results score of the project was 1.14, which is an unsatisfactory level of performance.	

Category	Project name	Status	Country	Project cost (UAC)	Objectives	Beneficiaries	Assessment results	Observations
Infrastructure/ Irrigation/ Productivity	Water Mobilization Project to Enhance Food Security in Maradi, Tahoua and Zinder Regions (PMERSA-MTZ)	Achieved	Niger	32,918,333	The goal of the project is to sustainably raise agricultural output and productivity through surface water mobilization. The project's main objective is to improve food security and the populations' living conditions in the project area.	More than 213,000 inhabitants of the project's three target regions (Maradi, Tahoua and Zinder) will directly benefit from the PMERSA-MTZ, while nearly 460,000 will be indirectly involved.	The indicators used to assess the project were aligned with Productivity, Resilience, and Mitigation. The Productivity has an average score of 4.25, indicating that the project exceeded expectations in reaching Productivity goals. The Resilience indicators' average score of 3.78 indicates that most of whom reached or exceeded their target value. The Mitigation score of 2 indicates that the project did not reach the Mitigation goals. The CSA results score of the project was 3.34, an exceeding expectations level of performance.	
Infrastructure/ Irrigation/ Productivity	Agriculture Productivity and Market Enhancement Project (APMEP)	Ongoing	Zambia	34,870,000	APMEP's objectives are to contribute to economic growth and poverty reduction by enhancing food, income, and nutrition security among participating households.	The direct beneficiaries are 75,000 rural people, of whom 33,750 (45%) women. About 40,000 people will indirectly benefit from the project along the commodity value chain development. About 2,000 (2.7%) rural youth who presently lack employment will be targeted by the project through income-generating activities. The project is expected to create at least 450 full-time skilled/semi-skilled and 2,200 part-time unskilled jobs in production, processing, and marketing, which will benefit men, women and youth.	The indicators used to assess the project were aligned with Productivity, Resilience, and Mitigation components, whose scores were 3.83, 3.6, and 4.0, respectively. The CSA results score of the project was 3.81, indicating an exceeding expectations level of performance.	

Annex IV. FIP Projects' Assessment Results per Category

Category	Project name	Status	Country	Project cost (UAC)	Objectives	Beneficiaries	Assessment results	Observations
Forest/ Mitigation	Cashew Development Support Project in Comoé Basin for REDD+	Ongoing	Burkina Faso	5,857,000	The sector goal of the Support project for the development of the cashew/ Reducing emissions from deforestation and forest degradation (REDD+) is to contribute to reducing rural poverty and increasing carbon sequestration capacity.	Direct beneficiaries are members of the Balamaya Kadi Union and the Interprofessional Association, as well as five processing units of Wouol Association, Anatrans, and Société de transformation industrielle de l'anacarde du Burkina (SOTRIAB, Industrial Cashew Processing Company in Burkina Faso) and three private developers.	The indicators used to assess the project were aligned with Productivity, Resilience, and Mitigation components, whose scores were 1, 3.14, and 2.5, respectively. Productivity is very unsatisfactory, while the Resilience and Mitigation are just above and below the satisfactory level, respectively. This means that the project helped build more than a satisfactory level of resilience and a below satisfactory level of Mitigation, but failed in Productivity. The CSA results score of the project was 2.21, which is an almost satisfactory level of performance.	The provisions required to obtain a loan have had a strong impact on its accessibility for beneficiaries. Many beneficiaries submitted micro-projects without receiving favourable feedback. During the 3 years of setting up the credit, only 6 micro-investment projects have been approved, mainly relating to the acquisition of tricycles, as of the date of the Implementation Progress Report (IPR), 23 March 2022.

Annex V. Data and detailed results from project assessments

The table below shows data and detailed results from the assessments of projects. The columns P, R, and M stand for Productivity, Resilience, and Mitigation, respectively.

Project						Indicator						
Name	Score	Index	P	R	M	Name	Unit of measure	Target value	Current value	P	R	M
Burkina Faso - Leraba Plain Management and Development Project (PAVAL)	1.00	0.20	1	1	1	Additional productions - market gardening	tonne/year	14,000	10,000	1	1	
						Increased income for youth and women	XOF/year	550,000	330,000		1	
						Land with improved water management developed or rehabilitated	ha	1,410	170	1	1	
						Areas planted	Ha	1,410	410		1	1
						Rural population trained, recruited and using improved technology	Number	2,600	1,200		1	
						Additional productions - food crops	tonne/year	7,500	1,750	1	1	
Burkina Faso - Cashew Development Support Project in Comoé Basin for REDD+	2.21	0.44	1	3.1	2.5	Number of economic interest groups supervised in the management and maintenance of processing units	Number	30	365		5	
						Yield of cashew nuts	kg/ha	600	400	1	1	
						Number of cooperatives and economic interest groups in compliance with Organization for the Harmonization of Business Law (OHADA)	Number	30	96		5	
						New plantation area	ha	25,000	26,645		4	4
						Rural population trained/ recruited/using improved technology	Number	1,500	35,340		5	
						Plants introduced (seedlings, trees, etc.)	Number	2,500,000	1,518,765		1	1
						Increase in the quantity of processed and certified cashew nuts	tonne/year	6,050	1,250		1	
Benin – Project to Support Food Production and build resilience in Alibori, Borgou and Collines Departments	3.78	0.76	4	3.8	3.5	Number of farmers trained in resilient technologies	Number	25,500	29,500		4	
						Person-days of training in technology review workshops	Number	18,900	18,144		2	
						Number of women processing farmer organizations (FOs) and economic interest groups strengthened	Number	30	50		5	
						Number of items of post-harvest equipment for women FOs and economic interest groups	Number	130	150		4	
						Person-days of training of specialized technicians and extension workers	Number	640	810		5	

Project						Indicator						
Name	Score	Index	P	R	M	Name	Unit of measure	Target value	Current value	P	R	M
						Person-days of training in processing, marketing, and post-harvest losses	Number	1,500	2,224		5	
						Number of young entrepreneurs trained in incubation centres	Number	400	473		4	
						Number of farmer organizations assisted and operational	Number	700	758		4	
						Number of improved seed producers assisted	Number	180	261	5	5	
						Volume of water supplied	Cubic metre	600,000	600,000		3	
						Number of women processing farmer organizations (FOs) and economic interest groups strengthened	Number	3,510	3,445		2	
						Income/year per food crop farm managed by men/women	XOF	214,000	198,000		2	
						Members of irrigated areas and infrastructure management committees trained	Number	1,350	3,668		5	
						Number of agro-pastoral dams rehabilitated	Number	7	7		3	
						New areas developed for irrigation	ha	1,869	1,569	2		2
						Area protected using the following methods – integrated soil fertility management, sustainable land management, Integrated Water Resources Management (IWRM), etc.	ha	350	1,303		5	
						Number of shops built for operators	Number	9	9		3	
						Average cereal crop productivity	kg/ha	4,500	8,111	5	5	
						Areas developed using new technologies for men/women	ha	30,000	36,434		5	5
						Income/year per market garden managed by men/women	XOF	557,500	518,000		2	
Eritrea - Drought Resilience and Sustainable Livelihoods Program	3.54	0.71	2.3	3.3	5	Amount of rainwater harvested	Cuber metre	20,000	1,000		1	
						Annual livestock (cattle) growth rate	%	3	1.5	1	1	
						Increased forage and crop production (planted with food crops and fodder)	ha	1,500,000	500,000	1	1	
						Amount of rainwater harvested	m3	20,000,000	1,000,000		1	
						Land whose use has been improved: replanted, reforested, landscaped, etc.	ha	1650	2,600		5	5

Project						Indicator						
Name	Score	Index	P	R	M	Name	Unit of measure	Target value	Current value	P	R	M
						Vegetable seed	kg	576	1,685	5	5	
						Beehives (with accessories)	Number	600	1,464		5	
						Number of chicks distributed	Number	7,500	10,329		5	
						Masonry dams constructed	Number	15	17		4	
						Plants introduced (seedlings, trees, etc.)	Number	3,000	6,000		5	
Guinea Bissau - Rice Value Chain Development Project in the Bafata and Oio Regions	4.17	0.83	5	3.3		Volume of rice production	tonne	1,529	3,058	5	5	
						Trained drivers of power tillers	Number	15	15		3	
						Number of stores built	Number	3	3		3	
						Number of markets rehabilitated	Number	2	2		3	
						Length of road rehabilitated	km	7	7		3	
						Average annual income of market gardeners	XOF	186,550	373,100		5	
						Average annual income of rice-producing households	XOF	179,500	359,000		5	
						Volume of market gardening production	tonne	285	570	5	5	
						Number of young people trained in business plan development and setup in businesses	Number	19	8		1	
						Number of conflict management committees established	Number	5	7		5	
						Number of women's economic interest groups set up for processing agricultural produce	Number	15	8		1	
						Number of school canteens supported	Number	3	3		3	
						Number of operational input shops	Number	2	2		3	
						Number of management committees set up for hydro-agricultural facilities	Number	30	12		1	
						Number of NGO-trained youth for the People-to-People Development Assistance (ADPP) centres	Number	70	75		4	
Kenya - Green Zones Development Support Project-Phase 2	1.17	0.23		1.3	1	Average annual household income	KES	150,000	90,000		1	
						Number of income-generating activities (IGAs) supported	Number	235	190		2	

Project						Indicator						
Name	Score	Index	P	R	M	Name	Unit of measure	Target value	Current value	P	R	M
Kenya- Small-scale Irrigation and Value Addition Project	1.14	0.23	1.3	1.2	1	Honey	litre	1,889	1,645	2		
						Area with new irrigation and drainage services developed	ha	1,644	882		1	
						Number of water harvesting infrastructures (water pans, subsurface dams and earth dams) developed	Number	60	19		1	
						Number of direct and indirect farmer household beneficiaries	Number	330,942	144,969		1	
						Area with improved or rehabilitated irrigation and drainage services	ha	957	400		1	1
						Number of erosion control infrastructures	Number	300	253		2	
						Livestock off-take per year – poultry	Number	10,684	7,985	1		
						Increased agricultural productivity – tomatoes	tonne/ha	25	14.80	1		
						Increased agricultural productivity – beans	tonne/ha	11	7	1		
						Increased agricultural productivity - watermelons	tonne/ha	25	17.80	1		
						Increased agricultural productivity – maize	tonne/ha	15	12.10	2		
						Rainfed area brought (catchments - micro irrigation) under irrigation	ha	300	160	1	1	
						Milk	litre	195,535	148,769	1		
Morocco – National Irrigation Water Saving Programme Support Programme – Phase II	1.14	0.23	1	1.3		Number of Agricultural Water Users' Associations upgraded and members trained	Number	10	2		1	
						Number of women's cooperatives established and trained	Number	4	1		1	
						Land area occupied by high value-added crops	%	40	10	1	1	
						Additional acreage converted into localized irrigation	ha	18,000	10,000		1	
						Increased energy saving	%	20	5		1	
						Share of productive water is increased	%	25	10		1	
						Number of consolidated groundwater information and monitoring systems	Number	1	1		3	
Malawi - Sustainable Fisheries Aquaculture Development and Watershed Management	1.17	0.23	1	1.3		Direct jobs (permanent)	Number	20,000	5,000		1	
						SME supported or created	Number	20	11		1	
						Number of fingerlings produced	Number	60,000,000	6,371,170	1	1	
						Quantity of fish feeds produced	Ton	20,000	7,900		1	

Project						Indicator						
Name	Score	Index	P	R	M	Name	Unit of measure	Target value	Current value	P	R	M
						Number of women and youth employed in the fisheries sector	Number	100,000	85,000		2	
						Number of youth employed in fisheries sector	Number	78,000	71,620		2	
Mozambique - Drought Recovery and Agriculture Resilience Project (DRARP)	2.67	0.53	3	2.3		Number of youth incubation centres rehabilitate	Number	2	2		3	
						Number of farmers adopting new agriculture techniques	Number	5,000	3,600		1	
						Increased annual income	$	400	250		1	
						Centre for artificial insemination	Number	1	1		3	
						Area rehabilitated under small-scale irrigation	ha	557	557	3	3	
						Number of surface and subsurface reservoirs	Number	31	31		3	
						Number of multifunctional boreholes	Number	48	20		1	
						Number of water troughs	Number	30	30		3	
						Area developed with irrigation kits	ha	530	530		3	
Mozambique - Baixo Limpopo Irrigation and Climate Resilience Project (BLICRP)	2.78	0.56		2.78		Area of new small- and medium-scale irrigation resource control schemes developed	ha	1,050	1,050		3	
						Areas of irrigation and drainage infrastructure rehabilitated and better adapted to flooding conditions	ha	2,000	2,000		3	
						Rice and vegetables national production	tonne/ha	1,273,080	313,100		1	
						People trained/recruited	Number	20	20		3	
						School rehabilitated	Number	1	1		3	
						Medium-size cold storage room	Number	1	14		5	
						Rural population trained/ recruited/using improved technology	Number	2,000	101		1	
						Upgraded agrarian centres	Number	7	7		3	
						Primary, secondary, and tertiary health centres constructed and/or equipped	Number	1	1		3	
Niger - Water Mobilization Project to Enhance Food Security in Maradi, Tahoua and Zinder Regions (PMERSA-MTZ)	3.34	0.67	4.3	3.8	2	Increase of production in cereals	tonne	155,000	168,719	4	4	
						Total population benefited	Number	673,000	693,000		4	
						Health workers trained	Number	175	175		3	

Project						Indicator						
Name	Score	Index	P	R	M	Name	Unit of measure	Target value	Current value	P	R	M
						Land whose use has been improved: replanted, reforested, landscaped, etc.	ha	23,700	22,507		2	2
						Strengthening of productivity (yields) – onion	t/ha	28	34.0999985	5	5	
						Rural marketing and production facilities constructed or rehabilitated	Number	723	741		4	
						Strengthening of productivity (yields) – tomatoes	tonne/ha	13.70	22.90	5	5	
						People with new or improved access to water and sanitation	Number	673,000	693,000		4	
						Land with improved water management developed or rehabilitated	ha	478	478	3	3	
NIGER - Africa Disaster Risks Financing Programme (ADRiFi)	1.40	0.28		1.4		Number of Africa RiskView customization reports independently developed by the country, including risk profiles	Number	8	4			
						Number of surveys monitoring the food situation in the country's 8 regions	Number	2	1		1	
						Number of drought risk management contingency plans developed and updated	Number	3	3		3	
						Number of drought risk profiles developed	Number	4	2		1	
						Number of drought contingency plans	Number	4	2		1	
						Number of disaster risk insurance policies purchased from the African Risk Capacity (ARC)	Number	7	5		1	
Niger - Project to Strengthen Resilience of Rural Communities to Food and Nutrition Insecurity in Niger (PRECIS)	1.15	0.23	1.3	1		Sorghum yield	tonne/ha	0.700	0.400	1	1	
						Sesame yield	tonne/ha	0.600	0.450	1	1	
						Cowpea yield	tonne/ha	0.75	0.375	1	1	
						Millet yield	tonne/ha	0.75	0.5	1	1	
						Sesame production	tonne	80,000	60,000	1		
						Peanut production	tonne	150,000	120,000	2		
						Cowpea production	tonne	600,000	400,000	1		
						Sorghum production	tonne	160,000	130,000	2		
						Millet production	tonne	150,000	120,000	2		

Project						Indicator						
Name	Score	Index	P	R	M	Name	Unit of measure	Target value	Current value	P	R	M
						Peanut yield	tonne/ha	0.80	0.50	1	1	
Niger- Climate Information and Forecasting Development Project (PDIPC)	4.40	0.88		4.4		Percentage of communes systematically using climate information in their carbon disclosure projects	%	50	60		4	
						Rate of systematic use of climate information by producers	%	65,000	265,000		5	
						Number of operational regional centres generating climate-related data	Number	8	8		3	
						Number of producers reached by the climate information disseminated	Number	150,000	265,000		5	
						Number of producers reached through agro-meteorological support	Number	1,500	6,471		5	
Senegal - Food Security Support Project in Louga, Matam and Kaffrine Regions (PASA/LOU-MA-KAF)	3.10	0.62	3	3.3	3	Volume of agriculture loans that are outstanding	$	13,000	10,000		1	
						Roads constructed or rehabilitated, percentage resilient to climate risks (km)	km	120	125		4	
						Percentage of beneficiaries with secure rights to land, property, and natural resources (percent of total beneficiaries)	%	6,340	6,340		3	
						Number of smallholders receiving productivity enhancement support and gender-disaggregated, climate-smart agriculture (CSA) support	Number	55,800	55,800	3	3	
						Land area receiving improved production support, and the percentage of which are climate-smart (ha)	ha/%	4,870	4,870	3	3	3
						Number of beneficiaries reached (gender-disaggregated, percentage of whom have been helped to cope with the impact of climate change)	Number/%	390,000	435,433		4	
						Number of producer-based organizations supported	Number	213	634		5	
Senegal - Water Valorisation for Value Chains Development Project (PROVALE-CV)	1.00	0.20	1	1	1	Production level at developed sites - rice	tonne	32,500	5,100	1		

Project						Indicator						
Name	Score	Index	P	R	M	Name	Unit of measure	Target value	Current value	P	R	M
						Level of additional income per beneficiary	XOF	1,207,000	234,000		1	
						Developed and cultivated areas (valleys and lowlands, salty land reclaimed, market garden plots and farms)	ha	12,730	1,695		1	1
Uganda - Farm Income Enhancement and Forestry Conservation Programme - Project 2	1.40	0.28	1	1.8		Acreage of new irrigated areas	ha	4,038	2,111.87	1	1	
						Number of seedlings distributed	Number	15,000,000	8,700,000	1	1	
						Number of km of soil and water conservation measures established	km	2,000	4,413		5	
						Length of access roads constructed (km)	km	50	37.5		1	
						Number of actors accessing support from financial institutions	Number	50	22		1	
Multinational - Technologies for African Agricultural Transformation (TAAT) - Framework Program in Support of "Feed Africa"	3.73	0.75	3.9	3.3	4	Number of functional multi-stakeholder platforms for learning, knowledge generation, and dissemination	Number	202	234		4	
						Effective compliance with environmental and social safeguards	Boolean Value (True = 1; False =0)	1	1		3	
						umber. of evidence-based policy dialogue events organized with stakeholders	Number	100	69		1	
						Finance leveraged from other independent initiatives (donors, public sector, private sector) in-kind and cash-based contributions to TAAT activities	US dollars	8,213,797	4,820,000		1	
						Number of partners involved in TAAT activities or engaged in operational implementation or in seed companies	Number	1,250	1,122		2	
						Number of new entrepreneurs engaged in agribusiness small and medium-sized enterprises	Number	2,789	2,421		2	
						Number of weak national seed system strengthened	number	76	106		5	
						Number of technologies deployed in targeted specific agro-ecological zones	number	208	202		2	
						Number of Intermediate beneficiaries involved in technology scaling up	number	63,472	62,427		2	
						Number and type of campaigns or promotional activities	Number	11,629	14,602		5	

Project						Indicator						
Name	Score	Index	P	R	M	Name	Unit of measure	Target value	Current value	P	R	M
						Effective Compliance with project covenants -	Boolean Value (True = 1; False =0)	1	1		3	
						Increased land coverage	ha	35,500,944	35,944,796		4	4
						Effective Audit compliance	Boolean Value (True = 1; False =0)	1	1		3	
						Presence of a functional TAAT programme Management -	Boolean Value (True = 1; False =0)	1	1		3	
						Increased commodity productivity (average inclusively) (cereals and legumes)	MT/ha	2.38	2.80	4	4	
						Number of new government policies, laws, and regulations revised, approved, and adopted for implementation contributed to by TAAT	Number	29	15		1	
						Increased income (average inclusively)	US dollar	1,117	1,650		5	
						Number of policy implementation gaps identified, and corresponding solutions recommended	Number	64	64		3	
						Increased livestock productivity (Inclusively) liveweight	g/day	66.5	100	5	5	
						Increased aquaculture productivity catfish and tilapia	g/fish	424.5	678	5	5	
						Increased roots and tubers productivity	MT/ha	20.6000004	20	2	2	
						Increased employment (inclusively)	Number	262,937	450,000		5	
						Increased food production - aquaculture – tilapia	MT	61,904,424	60,000,000	2		
						Increased food production – millet	ha	219,286	252,970	4		
						Increased food production – wheat	ha	7,559,898	7,654,800	4		
						Increased food and nutrition security	Scale	7	10	5		
						Direct TAAT beneficiaries	Number	24,910,364	40,000,000		5	
						Value addition of TAAT	US dollars	4,089,076,736	4,551,679,488		4	
						Increased food production - aquaculture of catfish	MT	12,880,719	15,000,000	4		

Project						Indicator						
Name	Score	Index	P	R	M	Name	Unit of measure	Target value	Current value	P	R	M
Multinational - Drought Resilience and Sustainable Livelihoods Programme in the Horn of Africa - Phase I	2.92	0.58		2.92		Developed and improved rural feeder roads	%	20	38		5	
						Number of personnel trained in peace building and conflict resolution	Number	481	529		4	
						Number of new technologies introduced to communities and adoption rates measured and enhanced	Number	4	4		3	
						Number of personnel of trained in peace building and conflict resolution	Number	481	529		4	
						Number of personnel trained and developed in areas of livestock production, animal health	Number	1,300	1,278		2	
						Number of diagnostic veterinary laboratories equipped	Number	6	6		3	
						Area of the 12 demonstration plots of communal pastures rehabilitated	ha	800	790		2	
						Area of the 7 irrigation schemes rehabilitated and expanded	ha	1,350	500		1	
						Number of diagnostic veterinary laboratories equipped	Number	6	6		3	
						Improved animal health services	%	20	10		1	
						Improved quality and availability of pasture	hlu	3	5		5	
						Number of water users' associations formed or strengthened	Number	140	128		2	

Project						Indicator						
Name	Score	Index	P	R	M	Name	Unit of measure	Target value	Current value	P	R	M
Multinational - Drought Resilience and Sustainable Livelihoods Programme in the Horn of Africa - Phase I	2.64	0.53	2	2.9	3	Fisheries infrastructure developed	Number	2	2		3	
						Rural population trained, recruited and using improved technology	Number	1,020	365		1	
						Number of common cross-border natural resource management policies and strategies developed and implemented	Number	2	2		3	
						Zoological parameters (natural growth rate and annual harvest rate)	%	95	150		5	
						Land with improved water management developed or rehabilitated	ha	192	192	3	3	3
						Feeder roads constructed or rehabilitated	km	24.60	24.60			
						Number of standpipes and/or drinking troughs built	Number	1	1		3	
						Number of mini-dams finalized or completed	Number	2	2		3	
						Percentage of the rural population and livestock in the project area with access to water within a 5 km radius	%	50	71.70		5	
						Yields of major crops	tonne/ha	1.5	1.28	2	2	
						T number of beneficiary populations	Number	10,000	8,967		2	
						Fisheries production	tone	44	35	1		
						Carrying capacity of pastures	ha/UBT	3	4		5	
						Commercial exploitation rate	%	30	28		2	
						Average rate of agricultural yields	tonne	1.5	1.280	2	2	
						Marketed agricultural production	tonne	298	265		2	

Project						Indicator						
Name	Score	Index	P	R	M	Name	Unit of measure	Target value	Current value	P	R	M
Multinational - Drought Resilience and Sustainable Livelihoods Programme in the Horn of Africa - Phase I	2.82	0.56		2.82		Number of pastoralists and agro-pastoralists trained in pasture, rangeland management, water management, and alternative livelihoods	Number	7,510	7,716		4	
						Livestock benefited from access to improved rangeland	Number	30,749	30,749		3	
						Access to improved animal health services	%	20	10		1	
						Developed and improved rural feeder roads and improved connectivity for livestock input delivery and marketing	%	20	20		3	
						Number of people and livestock accessing water	%	30	20		1	
						Community-based alternative livelihood group formed and certified	Number	2,771	3,309		4	
						Community members (CAHWs) trained to handle basic animal health services at village level	Number	390	420		4	
						Regional and woreda Site Management Support staff who attended MSc. training	Number	38	374		5	
						Percentage of personnel capable of handling pastoral livestock production systems trained in the country increased	%	30	0		1	
						People and livestock accessing water	%	30	20		1	
						Rangeland area rehabilitated and improved	ha	800	1,352		5	
						Number of standard livestock market centres built/rehabilitated	Number	10	10		3	
						Households that have benefited from access to improved rangeland	Number	17,427	17,427		3	
						Improved availability of pasture and fodder	luh	3	5		5	
						Livestock with improved access to safe water from rehabilitated schemes and other water supply schemes	Number	1,096,740	731,160		1	
						People with improved access to safe water from rehabilitated schemes and other water supply schemes	Number	203,552	135,701		1	
						Number of livestock market centres rehabilitated/upgraded	Number	3	3		3	

Project						Indicator						
Name	Score	Index	P	R	M	Name	Unit of measure	Target value	Current value	P	R	M
Multinational - Drought Resilience and Sustainable Livelihoods Programme in the Horn of Africa - Phase I	4	0.80		4		Functional food security, water, livestock, agriculture and natural resources management (NRM) information systems established	Number	3	6		5	
						Number of harmonized and effective trans-boundary surface and underground water bodies, livestock, natural resources management (NRM), peace and security policies and strategies developed and being implemented	Number	3	4		5	
						Number of qualified expertise recruited	Number	17	17		3	
						Number of regional workshops and seminars held on transboundary surface and underground water bodies, livestock, natural resource management, peacebuilding and conflict resolution						
							Number	3	3		3	
The Permanent Interstate Committee for Drought Control in the Sahel (CILSS) - Multinational - Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	2.11	0.42	1.5	3.15	1.67	Number of rural water points constructed	Number	172	197		4	
						Irrigated area under total control	ha	4,727	4,018.3	2		2
						Number of local stakeholders trained in conflict management	Number	1,165	1,165		3	
						Number of processing units constructed	Number	325	375		4	
						Number of producers trained	Number	160,000	181,534		4	
						Degraded agricultural lands restored	ha	15,470	12,238		1	1
						Number of rural markets constructed	Number	34	34		3	
						Number of pastoral boreholes drilled	Number	51	52		4	
						Additional annual grain production	tonnes/ha	100,194	79,862	1		
						Area of forest resources managed/ area reforested	ha	1,980	1,891		2	2
						Average rice yield	tonnes/ha	4	3.97	2	2	
						Number of vaccination parks constructed	Number	57	57		3	
						Additional annual market garden production	tonnes	83,746	61,064	1		

Project						Indicator						
Name	Score	Index	P	R	M	Name	Unit of measure	Target value	Current value	P	R	M
						Average yield /sorghum millet	tonnes/ha	0.96	0.83	2	2	
						Additional annual animal production	tonnes	5,858	4,288.4	1		
						Annual incomes of vulnerable populations are Improved	XOF	240,520	279,717		4	
						Improved women's access to resources (increase in resources allocated to women)	%	30	48		5	
Mali - Multinational - Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	1.58	0.32	1.25	2.5	1	Annual incomes of vulnerable populations are Improved	XOF	243,360	136,642		1	
						Area of forest resources managed/area reforested	ha	550	201		1	1
						Number of producers trained	Number	31,500	54,734		5	
						Number of rural water points constructed	Number	27	54		5	
						Degraded agricultural lands are restored	ha	2,200	1,338		1	1
						Number of rural markets constructed	Number	6	6		3	
						Number of local stakeholders trained in conflict management	Number	849	849		3	
						Number of vaccination parks constructed	Number	14	14		3	
						Improved women's access to resources (increase in resources allocated to women)	%	30	0		1	
						Additional annual animal production	tonnes	1,820	1,404	1		
						Additional annual grain production	tonnes/ha	21,400	11,547	1		
						Average rice yield	tonnes/ha	4	2.9	1	1	
						Average yield/sorghum millet	tonnes/ha	1	0.91	2	2	
						Number of pastoral boreholes drilled	Number	25	27		4	

Project						Indicator						
Name	Score	Index	P	R	M	Name	Unit of measure	Target value	Current value	P	R	M
Burkina Faso - Multinational - Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	2.26	0.45	2.17	3.62	1	Additional annual market garden production	tonnes	11,870	1,625.7	1		
						Number of rural water points constructed	Number	60	60		3	
						Irrigated area under total control	ha	157	123.3	1		1
						Number of vaccination parks constructed	Number	12	12		3	
						Number of producers trained	Number	30,000	28,608		4	
						Number of pastoral boreholes drilled	Number	3	3		3	
						Additional annual animal production	tonnes	2,118	1,004	1		
						Additional annual grain production	tonnes/ha	23,550	18,853	2		
						Average rice yield	tonnes/ha	4	4.1	4	4	
						Average yield /sorghum millet	tonnes/ha	0.90	1.0	4	4	
						Annual incomes of vulnerable populations are increased	XOF	258,460	333,437		5	
						Improved women's access to resources (increase in resources allocated to women)	%	30	48		5	
The Gambia- Multinational - Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	2.41	0.48	2.8	3.44	1	Improved women's access to resources (increase in resources allocated to women)	%	30	57.6		5	
						Number of local stakeholders trained in conflict management	Number	131	131			3
						Area of forest resources managed / area reforested	ha	213	100		1	1
						Number of producers trained	Number	11,000	13,733		5	
						Number of rural water points constructed	Number	5	5		3	
						Number of pastoral boreholes drilled	Number	5	5		3	
						Annual incomes of vulnerable populations are Improved	XOF	227,000	514,899		5	
						Additional annual animal production	tonnes	46	106.3	5		
						Additional annual market garden production	tonnes	778	68.8	1		
						Additional annual grain production	tonnes/ha	10,720	9,200	2		
						Average rice yield	tonnes/ha	4	5	5	5	
						Average yield /sorghum millet	tonnes/ha	1	0.70	1	1	

Project						Indicator						
Name	Score	Index	P	R	M	Name	Unit of measure	Target value	Current value	P	R	M
Mauritania - Multinational - Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	2.07	0.41	2.5	2.2	1.5	Number of vaccination parks constructed	Number	5	5		3	
						Number of producers trained	Number	11,500	1,104		1	
						Number of rural water points constructed	Number	5	5		3	
						Degraded agricultural lands are restored	ha	1,050	782		1	1
						Number of rural markets constructed	Number	3	3		3	
						Irrigated area under total control	ha	1,170	1,109	2		2
						Additional annual market garden production	tonnes	7,034	6,673	2		
						Improved women's access to resources (increase in resources allocated to women)	%	30	24		2	
						Additional annual animal production	tonnes	427	124	1		
						Annual incomes of vulnerable populations are Improved	XOF	246,400	200,100		2	
						Additional annual grain production	tonnes/ha	7,034	7,200	4		
						Average rice yield	tonnes/ha	4	5.80	5	5	
						Average yield /sorghum millet	tonnes/ha	1	0.60	1	1	
						Number of pastoral boreholes drilled	Number	4	3		1	

Project						Indicator						
Name	Score	Index	P	R	M	Name	Unit of measure	Target value	Current value	P	R	M
Niger- Multinational - Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	2.51	0.5	2.17	2.69	2.67	Number of producers trained	Number	30,000	34,000		4	
						Number of local stakeholders trained in conflict management	Number	185	185		3	
						Area of forest resources managed/area reforested	ha	500	400		2	2
						Number of rural water points constructed	Number	10	10		3	
						Degraded agricultural lands are restored	ha	2,900	2,900		3	3
						Number of rural markets constructed	Number	20	20		3	
						Irrigated area under total control	ha	700	700	3		3
						Number of vaccination parks constructed	Number	10	10		3	
						Average rice yield	tonnes/ha	4	2.9	1	1	
						Improved women's access to resources (increase in resources allocated to women)	%	30	46		5	
						Annual incomes of vulnerable populations are Improved	XOF	237,300	183,442		1	
						Additional annual animal production	tonnes	784	1,120	5		
						Additional annual market garden production	tonnes	15,685	14,500	2		
						Average yield /sorghum millet	tonnes/ha	0.900	0.660	1	1	
						Additional annual grain production	tonnes/ha	17,440	6,400	1		
						Number of pastoral boreholes drilled	Number	3	3		3	
						Number of processing units constructed	Number	200	200		3	
Senegal - Multinational - Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	3.16	0.63	3.17	3.3	3.73.	Number of vaccination parks constructed	Number	6	6		3	
						Irrigated area under total control	ha	2,510	2,086	2		2
						Degraded agricultural lands are restored	ha	9,000	7,218		2	2
						Number of rural water points constructed	Number	45	45		3	
						Area of forest resources managed / area reforested	ha	730	1,077		5	5

Project						Indicator						
Name	Score	Index	P	R	M	Name	Unit of measure	Target value	Current value	P	R	M
						Additional annual animal production tons)	tonnes	237	244.4		4	
						Number of producers trained	Number	34,500	33,855		2	
						Number of pastoral boreholes drilled	Number	8	8		3	
						Annual incomes of vulnerable populations are Improved (XOF)	XOF	301,400	347,500		4	
						Additional annual market garden production	tonnes	34,443	29,696.4	2		
						Additional annual grain production	tonnes/ha	14,950	26,178	5		
						Average rice yield	tonnes/ha	4	3.1	1	1	
						Average yield /sorghum millet	tonnes/ha	1	1.3	5	5	
						Improved women's access to resources (increase in resources allocated to women)	%	30	47		5	
Chad -Multinational - Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	3.00	0.60	2.5	3.5		Number of vaccination parks constructed	Number	10	10		3	
						Number of processing units constructed	Number	125	175		5	
						Number of producers trained	Number	16,000	15,500		2	
						Number of rural water points constructed	Number	20	18		2	
						Number of rural markets constructed	Number	5	5		3	
						Improved women's access to resources (increase in resources allocated to women)	%	30	55		5	
						Annual incomes of vulnerable populations are Improved	XAF	166,600	242,000		5	
						Additional annual animal production	tonnes	426	285.7	1		
						Additional annual market garden production	tonnes	7,275	8,500	4		
						Number of pastoral boreholes drilled	Number	3	3		3	
Cameroon - Multinational - Programme to Rehabilitate and Strengthen The Resilience of Lake Chad Basin Systems	1.15	0.23	1	1.3		Number of women's cooperatives established and trained	Number	4	1		1	
						Share of productive water is increased	%	25	10		1	
						Direct jobs (permanent)	Number	50,000	8,400		1	
						Average incomes of male and female farmers	XAF	294,172	196,110		1	
						Consolidate the groundwater information and monitoring system	Number	1	1		3	
						Number of agricultural water users' associations upgraded and members trained	Number	10	2		1	

Project						Indicator						
Name	Score	Index	P	R	M	Name	Unit of measure	Target value	Current value	P	R	M
						Land area occupied by high value-added crops	%	40	10	1	1	
						Additional acreage converted into localized irrigation	ha	18,000	10,000		1	
						Energy saving increased	%	20	5		1	
						Cash income generated by re-flooded plains	€/km^2/ year	3,125	2,750		2	
Multinational – Niger - Programme to Rehabilitate and Strengthen the Resilience of Lake Chad Basin Systems	1.25	0.25		1.25		Cash income generated by re-flooded plains	€/km^2/ year	3,125	2,750		2	
						Number of countries that have ratified the Water Charter	Number	5	3		1	
						Average incomes of male and female farmers	XAF	294,172	196,110		1	
						Direct jobs (permanent)	Number	50,000	8,400		1	
Zambia - Agriculture Productivity and Market Enhancement Project	3.81	0.76	3.8	3.6	4	Number of post-harvest facilities constructed and/or rehabilitated	Number	221	221		3	
						Fish production (mt/year) of which by women	Number	45,000	88,350	5	5	
						Area under conservation agriculture	ha	32,730	34,764	4	4	4
						Average crop yield maize	tonne/ha	2.4	3.6	5	5	
						Percentage of smallholders receiving productivity enhancement support, gender-disaggregated, CSA support	%	40	41	4	4	
						Number of smallholders receiving productivity enhancement support, gender-disaggregated, CMA support	Number	33,000	23,564	1	1	
						Land area receiving improved production support and percentage of these that are climate-smart	ha	32,000	33,383	4	4	
						Number of beneficiaries reached (gender-disaggregated, percentage who have been helped to cope with the impact of climate change)	Number	75,000	75,520		4	
						Number of beneficiaries irrigation, of whom women	number	45,000	45,000		3	
						Number of producer-based organizations supported	Number	10	10		3	
Zambia - Sustainable Livestock Infrastructure Management Project (SLIMP)	2.88	0.58		2.88		Number of livestock extension assistants trained in sustainable animal husbandry practices	Number	140	86		1	

Project						Indicator						
Name	Score	Index	P	R	M	Name	Unit of measure	Target value	Current value	P	R	M
						Number of (i) women; and (ii) youth in nutrition-sensitive livestock production	Number	1,500	191		1	
						Number of (i) women and (ii) youth trained in governance, gender, group dynamics and pasture management	Number	500	102		1	
						Number of (i) women, and (ii) youth groups supported through the pass on-a-gift scheme (small ruminants and poultry)	Number	25	40		5	
						Number of livestock service centres (LSC) Tier 1 upgraded to LSC Tier+ constructed (including dip tanks and low-cost houses)	Number	15	15		3	
						Number of livestock disease control calendars developed and distributed to key stakeholders, including women and youth	Number	15,000	15,000		3	
						Number of extension workers trained in diseases recognition and reporting	Number	150	78		1	
						Number of dairy farmers trained in milk handling (hygiene, milking, storage, transportation)	Number	180	236		5	
						Number of dairy animals stocked or restocked around the three milk collection centres through a pass-on a gift scheme	Number	250	600		5	
						Number of lead (trainers) breeders/farmers trained in animal husbandry	Number	100	192		5	
						Number of goats stocked/restocked through a pass-on-a gift scheme	Number	180	309		5	
						Number of beef cattle stocked/restocked through a pass-on-a gift scheme	Number	70	150		5	
						Number of livestock farmers trained by lead trainers in feed production, utilization, and business skills	Number	100	115		4	
						Number of community rangeland management committees established	Number	25	16		1	
						Proportion of children of 6–23 months with a minimum acceptable diet, among the target population	%	70	40		1	

Project						Indicator						
Name	Score	Index	P	R	M	Name	Unit of measure	Target value	Current value	P	R	M
						Average household income	$/Year	1,500	600		1	
						Number of dairy farmers trained in sustainable fodder production and utilization	Number	180	176		2	
Zambia - Strengthening Climate Resilience in the Kafue Basin	3.50	0.70	4.5	2.5		Extent to which climate-responsive instruments/ investment road models are developed	%	70	70		3	
						Number of people in areas at risk whose livelihoods have improved	Number	350,000	78,836		1	
						Extent to which vulnerable communities, private businesses, and public sector services use the Pilot Programme for Climate Resilience (PPCR)						
						PPCR-supported tools to respond to climate variability or climate change	%	58	51		2	
						Reduction of crop areas affected by droughts and floods during extreme climate events in pilot districts	%	74	76	4	4	
						Percentage of increase in agricultural productivity yields	%	3	26	5		

Annex VI Technology Classes

Class A: Integrated Soil Fertility Management, Sustainable Land Management, and Integrated Water Resources Management						
Project name	Technology/ Intervention	Features	Productivity	Resilience	Mitigation	Implementation Challenges
Project to Support Food Production and build resilience in Alibori, Borgou and Collines Departments	Integrated soil fertility management methods, sustainable land management, integrated water resource management	Soil fertility, integrated soil, water, and related resources management using efficient methods in view of a sustained increase of agricultural production. Hard and soft methods are used. The hard methods include Infrastructural measures (contour dykes, boreholes, water tanks, underground dams, etc.), the application of organic matter and fertilizers through micro-dosing, agronomic measures (intercropping and mixed cropping), and vegetative measures (using of perennial grasses, shrubs or trees). The soft method consists of building the capacity of rural communities through proven approaches for integrating climate risks into local development planning process.	The development of irrigation infrastructure (boreholes, water tanks, underground dams, etc.) and the training of irrigation water users have increased the availability and access to water for men and animals and makes sustainable cultivation possible on marginal lands. In addition, when integrated with other dryland technologies such as zai pits and contour dykes, it can increase yields of sorghum, millet and maize. The micro-dosing technique dramatically increases nutrient and water use efficiency, especially when combined with other climate-smart practices, such as zai pits. Effective use of a dose of fertilizer leads to an increase in crop yield of 40–120%. Some of the advantages of mixed cropping and inter-cropping include a minimization of pest infestation, a reduction in the risk of crop failure, a yield increase and stability, which all lead to an increase of productivity.. The mulches that cover the surfaces significantly reduce soil erosion, runoff, and evaporation, resulting in a 70% increase in grain harvest. Millet residues in soils can result in a much higher yield of the next crop. Small amounts of cattle manure applied to zai pits can double sorghum production.	The project reinforced resistance to droughts and temperature increases. Improved water management makes it possible to compensate for periods of drought, which opens up possibilities for additional agricultural production during the dry season with irrigation. A water information system has been set up to build resilience. Micro-dosing fertilizer results in healthier crops that are more able to withstand mid- and late-season droughts, providing a way to adapt to increased climate variability. Average household incomes have been increased; vulnerable populations have been reintegrated into the socio-economic structure; and sustainable jobs created. The many water mobilization infrastructures have led to the creation of permanent jobs (irrigators, drillers, pump repairers, agents recruited for the management of community infrastructure, etc.) as well as temporary jobs (for the implementation of works).	Irrigation strategies that reduce the amount of water needed can reduce energy use for pumping, thereby reducing emissions. The resulting increase in biomass can lead to greater soil carbon sequestration when properly managed.	Obtaining the full participation of all stakeholders, including workers and the community. Paying attention to the social dimensions. Availability of information and the capacity to use it for development purposes. For soil fertility management, access and availability of inputs are major challenges. For sustainable land management, optimal soil amendments could not be achieved because information on soil fertility was not available. Using crop residues as an amendment competes with its use as animal feed, and it is not easy to choose between them.
	Water control by strengthening irrigation techniques					
Drought Resilience and Sustainable Livelihoods Program	Integrated water resources management (IWRM)					
Drought Recovery and Agriculture Resilience Project (DRARP)	Sustainable land and water management					
Water Mobilization Project to Enhance Food Security in Maradi, Tahoua and Zinder Regions (PMERSA-MTZ)	Water and soil conservation					
Multinational - Technologies for African Agricultural Transformation - Framework Program in Support of “Feed Africa”	Improved arid rangeland management					
	Legumes Inoculation and biological nitrogen fixation					
	Micro-doses of chemical fertilizer					
	Organic matter management for soil fertility					
	Rain water harvesting using Zai pits					
	Strategic timetable of nitrogen application					
	Water and Soil Conservation by Dykes					

Class A: Integrated Soil Fertility Management, Sustainable Land Management, and Integrated Water Resources Management						
Project name	Technology/ Intervention	Features	Productivity	Resilience	Mitigation	Implementation Challenges
Multinational - Drought Resilience and Sustainable Livelihoods Programme in the Horn of Africa - Phase I	Development and management of water supply					
Multinational - Programme to Rehabilitate and Strengthen the Resilience of Lake Chad Basin Systems	Integrated water resources management (IWRM)					
Sustainable Livestock Infrastructure Management Project (SLIMP)	Rangeland improvement					
Strengthening Climate Resilience in the Kafue Basin	Technological innovations in natural resources at the community level					
Drought Recovery and Agriculture Resilience Project (DRARP)	Promotion of tested seeds resistant to drought (rice, maize).					
Baixo Limpopo Irrigation and Climate Resilience Project (BLICRP)	Introduction of tested and proven seeds, resistant to climate change effects and adapted to the Province of Gaza (variety of rice, maize, and vegetables)					
Multinational - Technologies for African Agricultural Transformation - Framework Program in Support of “Feed Africa”	Drought-tolerant maize varieties					
	Heat-tolerant wheat varieties					
	High-yielding irrigated and rainfed lowland rice varieties					
	Improved sorghum varieties					
	Improved Varieties of millet					

Class B Improved Varieties						
Project name	Technology/ Intervention	Features	Productivity	Resilience	Mitigation	Implementation Challenges
Project to Support Food Production and Build resilience in Alibori, Borgou and Collines Departments	Rice and maize varieties - TAAT	Improved drought- and heat-tolerant rice, millet, maize, sorghum, and wheat	The partial enhancement of developed sites, the provision of seeds of high-performing varieties, combined with training of leading producers and supervisory agents, and close monitoring, support and advice have allowed to improve yields.	Overall, the compacts produced I 2,831.4 MT of foundation seeds, 9,522.1 MT of basic seed, 191,947.4 MT of certified seed, 8,873.2 MT of quality declared seed and 2 MT of hybrid seed, during the last two years of the project. An analysis of the impact of TAAT technologies deployed under the programme through commodity and facilitation contracts has shown an average increase in revenue of 46% compared to baselines established at the start of the programme. The overall benefit shows an additional $400 in annual income per family compared to before the TAAT interventions. TAAT has created jobs for 262,786 people, of whom 84,776 (32%) are women and 71,178 (27%) youth. These technologies have been scaled up to 8.4 million ha and produced an additional 99.7 million tonnes of food worth over $4.09 billion. From a long-term perspective, it is important to consider sorghum as an industrial crop. It can be processed into a wide range of foods and used to replace imported cereals. In addition, it lends itself to the manufacture of alcohol, vegetable oil, adhesive, starch, lubricants, and other synthetic products. For seed production, increased incomes and job creation, refer to the global data presented in the Millet section.		Availability, quality, and cost of improved varieties seeds are major challenges.
Drought Recovery and Agriculture Resilience Project (DRARP)	Promotion of tested seeds resistant to drought (rice, maize).					
Baixo Limpopo Irrigation and Climate Resilience Project (BLICRP)	Introduction of tested and proven seeds, resistant to climate change effects and adapted to the Province of Gaza (variety of rice, maize, and vegetables)					
Multinational - Technologies for African Agricultural Transformation - Framework Program in Support of “Feed Africa”	Drought-tolerant maize varieties					
	Heat-tolerant wheat varieties					
	High-yielding irrigated and rainfed lowland rice varieties					
	Improved sorghum varieties					
	Improved Varieties of millet					

Class C Aquaculture Development						
Project name	Technology/ Intervention	Features	Productivity	Resilience	Mitigation	Implementation Challenges
Project to support Food Production and build resilience in Alibori, Borgou and Collines Departments	180 m3 floating cage devices for economic interest groups	Best management practices to increase fish production, income generation, food security, and scaling up along the value chain in collaboration with fish breeders, fish farmers, industry associations, fisheries extension service providers, the private sector and young agripreneurs. The practices include strengthening fisheries, developing aquaculture enterprises and watershed information systems with the aim of fostering data sharing as well as capacity and skills building to facilitate longer-term development planning for improving resilience to climate change.	In the first year, fish harvests of 7,856 metric tonnes were recorded against an annual target of 4,880 metric tonnes. In addition, the production of 376,360 fingerlings was facilitated, as was the development of technical messages on fish production.	Activities were conducted which le to a significant increase in job creation and increased income. These include: (i) training in fish catch assessment and aquaculture to improve data collection; (ii) development of extension messages to improve productivity; (iii) training of members of 5 groups of educational cooperativeseducation, rehabilitation of ponds; (iv) production of 376,360 fingerlings and the creation of incubation centres; and (v) the training of fish processing groups.		Conditions of particular relevance for the future of aquaculture in sub-Saharan Africa include the availability of quality inputs such as seed and feed, and access to good quality information, affordable long-term investment capital, and land and water resources. Land shortage is, and if likely to remain, one of the major constraints to aquaculture expansion global.
Sustainable Fisheries Aquaculture Development and Watershed Management	Strengthening of aquaculture					
Multinational - Technologies for African Agricultural Transformation - Framework Program in Support of “Feed Africa”	Aquaculture					

Class D Information systems and other digital platforms						
Project name	Technology/ Intervention	Features	Productivity	Resilience	Mitigation	Implementation Challenges
Project to support Food Production and build resilience in Alibori, Borgou and Collines Departments	Functional decentralized early warning systems (EWS)	Digital tools (agro-meteorological stations, hydrological stations and piezometers, rehabilitation/ installation of "data logger" pressure gauges with remote transmission) and geographic, climatic and natural resource management information systems to help manage climate change stressors, and consequently taking measures to improve the resilience of populations for climate change by better integrating different climate information, and disseminating the integrated information to all major users, particularly end users such as farmers and herders, in a simplified and easy-to-understand manner.		Resilience is built by the use of a food and nutrition security information system, the holding of regular meetings of the Regional Mechanism for Crisis Prevention and Management (PRGEC) and the Food Crisis Prevention Network (RPCA), the coverage of climate information (floods, drought, sandstorms, extreme temperatures) by the early warning system, and the use of that information by producers.		Up-front investments, lack of preparedness of some members of the project team and some of its employees, lack of support from vendors, and inadequate software training tools are the major challenges.
Africa Disaster Risks Financing Programme (ADRiFi)	Improving the skills and know-how of disaster management actors					
Climate Information Development and Forecasting Project (PDIPC)	Integration of climate information in the planning and implementation of development actions. Integration of climate information in the planning and implementation of development actions.					
Water Valorisation for Value Chains Development Project (PROVALE-CV)	Use of digital technologies in the prevention of natural and climatic risks (geo-referenced database relating to information on the inventory of flood-prone valleys and lowlands, water collection structures, as well as potential areas of valleys)					
Farm Income Enhancement and Forestry Conservation Programme - Project 2	Establishment of a digital platform (Geographic Information System, internet-based technology for the collection, compilation and presentation of data on natural resources, and market information system)					
Multinational - Programme to Build Resilience to Food and Nutrition Insecurity in the Sahel (P2RS)	Use of information and communication technologies (ICT) in the management of climate risks, and food and nutritional security					
Multinational - Programme to Rehabilitate and Strengthen the Resilience of Lake Chad Basin Systems	Utilization of information systems (early warning and climate informatics)					

Class E Improved irrigation systems						
Project name	Technology/ Intervention	Features	Productivity	Resilience	Mitigation	Implementation Challenges
Rice Value Chain Development Project in the Bafata and Oio Regions	Drip irrigation technique	Small-scale irrigation unique to the Horn of Africa with seasonal flooding from rivers and drip irrigation with precise control of water supplies, and modernizing irrigation systems and disseminating to its actors. Technical and organizational knowledge required (use of the various information systems, GIS, irrigation warning, monitoring and evaluation, etc., private agricultural advice, cultivation of high value-added crops, and participatory groundwater management, etc.).	The International Water Management Institute (IWMI) functions as the TAAT Water Compact Advisor to help smallholder farmers access low-cost irrigation and water management technologies, allowing to increase productivity.	Irrigation enables year-round cultivation and encourages investment in agriculture by reducing key agricultural risks. Irrigation is a key solution to address present and future agricultural production constraints due to the effects of climate change on weather patterns, and thus help to build resilience. The significant reduction of agro-pastoralist conflicts in the sylvopastoral zone and the facilitation of access to water in particular in the 'thirst triangle' strengthens the resilience of production systems.		In a community operation, irrigation planning could be a challenge. The challenges hindering the development of modern irrigation systems are water scarcity, poor water quality, inadequate irrigation infrastructure, a lack of credit facilities combined with high investment costs, inadequate participation of farmers in decision-making, and inadequate extension services.
National Irrigation Water Saving Programme Support Programme – Phase II	Localized irrigation conducted in an innovative manner at a large scale to promote the sustainable management of resources (water and energy)					
Food Security Support Project in Louga, Matam and Kaffrine Regions (PASA/LOU-MA-KAF)	Cost determination of agricultural and pastoral water and management of pastoral infrastructure					
Multinational - Technologies for African Agricultural Transformation - Framework Program in Support of "Feed Africa"	Management of seasonal floods in floodplains					
	Small-scale irrigation scheme					

Class F Crop Pest Control						
Project name	Technology/ Intervention	Features	Productivity	Resilience	Mitigation	Implementation Challenges
Multinational - Technologies for African Agricultural Transformation - Framework Program in Support of "Feed Africa"	Insect Invasion control	Monitoring and control of Sahelian harmful insects such as the desert locust (Schistocerca gregaria) and the fall armyworm (Spodoptera frugiperda), and cereal parasitic weeds such as striga, which pose a major threat to farming households and undermine broader efforts to strengthen food systems.	Using recommended pesticides contribute to the increase of the productivity. Striga control helps increasing the productivity of millet, sorghum and maize.	Early warning and preventive control are of paramount importance to prevent locust populations from reaching epidemic proportions. The size and development of these voracious insect populations are closely monitored by the Desert Locust Information Service, which relies on meteorological and vegetation data obtained by remote sensing, combined with real-time surveys carried out by national teams via digital platforms such as FAO's eLocust3.		Availability, quality, and costs of means of control, including biological control.
	Overcoming the parasite Striga					
Sustainable Livestock Infrastructure Management Project (SLIMP)	Improving disease surveillance and strengthening support					

Class G Agroforestry						
Project name	Technology/ Intervention	Features	Productivity	Resilience	Mitigation	Implementation Challenges
Cashew Development Support Project in Comoé Basin for REDD+	Sustainable management of tree plantations (e.g. cashew trees) in the context of adaptation to climate change	This practice consists of conserving the forest or better extending forest areas by rehabilitating degraded forest areas through the planting and maintenance of trees.	Restoration of degraded lands, thus increasing productivity and agricultural production.	Green jobs are created for women and youth. Community resilience strengthened by an effective management of resources and a substantial increase of community income through the development of a bamboo value chain.	Green parks hold and sequester significantly greater carbon stocks than open fields, which mitigates greenhouse gases. These increased carbon stocks can be 20 or 30 tonnes higher per ha than those retained by open land during the cultivation period. Agroforestry also reduces pressure on the natural forest, thereby reducing emissions related to land use change (deforestation).	One of the major drawbacks of agroforestry is undoubtedly the possible competition for space, and therefore for light, water and soil nutrients between certain types of trees and the crops planted. Taking steps to minimize this competition is a major challenge. Agricultural price supports or favourable credit terms are granted for certain agricultural activities but rarely for trees. This lack of credit facility adds to the implementation challenges. Delayed return on investment and under-developed markets for agroforestry are not incentives factors for Agroforestry adoption.
Green Zones Development Support Project - Phase 2	Forest conservation, community empowerment through capacity building and efficient use of resources.					
	Transition to agroforestry parks.					

Class G Agroforestry						
Project name	Technology/ Intervention	Features	Productivity	Resilience	Mitigation	Implementation Challenges
Multinational - Technologies for African Agricultural Transformation - Framework Program in Support of “Feed Africa”	Local production and utilization of biogas	This technology refers to the production of fuel gas in small-scale digesters at the household level. It is based on the use of organic waste from plant and animal residues, which are decomposed in anaerobic tanks to produce biogas, such as methane, and a useful digested sludge by-product such as organic fertilizer and soil amendment. The attraction for this technology is growing throughout the Sahelian zone.	The diversification of the energy supply creates economic opportunities for those who build and equip these digesters.	Socio-economic and environmental advantages: improving the lives of rural households that would otherwise cook with purchased wood; and the reduction of environmental pollution, soil degradation, and deforestation due to the collection of firewood and the manufacture of charcoal.	This technology enhances carbon sequestration in soils amended with digested organic waste. Carbon sequestration is also achieved by substituting recyclable energy with methane production versus reliance on fossil fuels.	Biogas production requires the collection of resources and the daily removal of slurry, resulting in additional labour for transportation. The labour intensity constitutes a constraint for the implementation.

Class I Roots and Tubers						
Project name	Technology/ Intervention	Features	Productivity	Resilience	Mitigation	Implementation Challenges
Multinational - Technologies for African Agricultural Transformation - Framework Program in Support of "Feed Africa"	Roots and tubers	The principal root and tuber crops of the tropics are cassava (Manihot esculenta Crantz), yam (Dioscorea spp.), sweet potato (Ipomoea batatas L.), potato (Solanum spp.) and edible aroids (Colocasia spp. and Xanthosoma sagittifolium). They are widely grown and consumed as subsistence staples in many parts of Africa. The potential of these crops is particularly high in the humid tropics and sub-humid tropics that are not suitable for cereal production. Roots and tuber crops are second only in importance to cereals as a global source of carbohydrates. They also provide some minerals and essential vitamins, although a proportion of the minerals and vitamins may be lost during processing as, for example, in the case of cassava.	Increased cassava yield from 10.5 tonnes to 30 tonnes per ha, and increased cassava production at farm level (40% increase).	An increase in employment (reduction of unemployment from 6% to 0.04%), an improvement in livelihoods (average annual per capita increase of $3,150 ($2,598 initially), an increase of food availability to households (kcal) (deficit of 147.0 kcal per day to 127.0 kcal per day) The result is considered very satisfactory.		These crops face common and unique challenges related to the production of quality seeds, adoption of new varieties, insect and disease losses, poor soils, heat stress and drought, and post-harvest losses.

Class J Small livestock (goats and sheep) and livestock products/pasture production/livestock diseases						
Project name	Technology/ Intervention	Features	Productivity	Resilience	Mitigation	Implementation Challenges
Multinational - Technologies for African Agricultural Transformation - Framework Program in Support of "Feed Africa"	Small livestock (goat and sheep)	Goats and sheep need less pasture, feed, and water than cattle but will still provide your family with meat, milk, and fibre. They are also easier to handle, and transport than full-size farm animals.	Increased livestock productivity (inclusive and equitable economic growth) live weight (g/ day), from 50% to 66%, with a target of 100%, i.e. a progress rate of 33%.	Improved livestock breeds are more tolerant to heat and/or drought. Delivery of dairy animals and training of technicians and dairy farmers in sustainable fodder production will build production resilience.		The availability of good feed is a major constraint. A poor diet leads to a drop in milk production and poor reproductive performance.
Sustainable Livestock Infrastructure Management Project (SLIMP)	Animal breed improvement					
	Improvement of dairy products					
	Scaling up of pasture production					

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