

THE GAMBIA

**A DIAGNOSTIC EXERCISE CONDUCTED BY THE
CLIMATE RESILIENT FOOD SYSTEMS ALLIANCE**

DECEMBER 2022

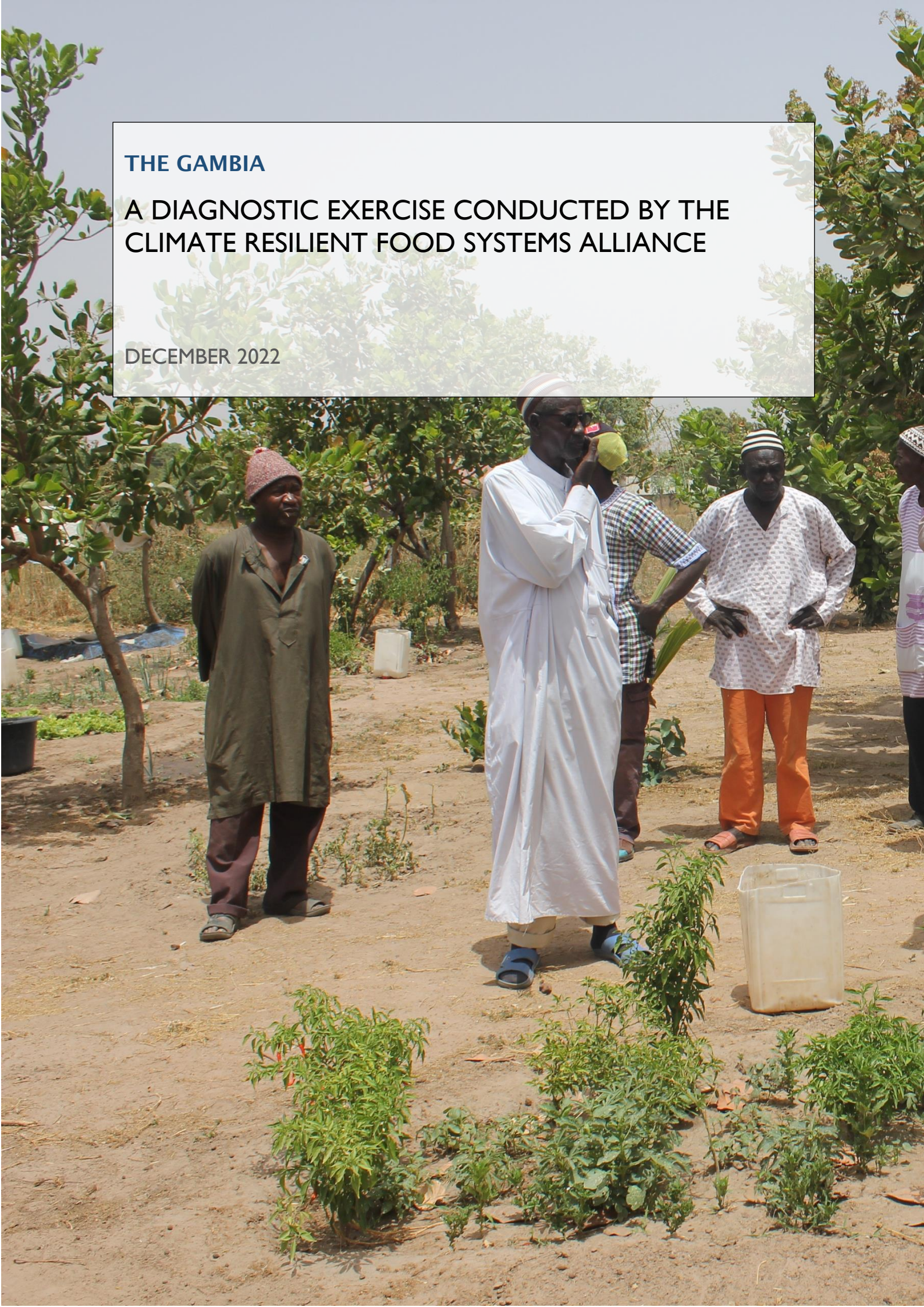


Table of Contents

1. National circumstances	3
1.1 Country overview	3
1.1.1 Ecology.....	3
1.1.2 Economy.....	3
2. Food systems overview	4
2.3 Production.....	4
2.2 Processing and manufacture.....	7
2.3 Distribution.....	7
2.4 Consumption.....	8
2.5 Waste management.....	9
3. Climate risks and food systems	9
3.1 Climate risks and vulnerability overview.....	10
3.2 Impacts of climate change on food systems	11
3.3 Other factors and stressors leading to non-resilient food systems.....	14
4. Climate, agriculture and food systems policies	15
4.1 Visions, goals and objectives.....	15
4.2 National policies, plans, strategies and commitments	15
5. Institutional arrangements and coordination	20
6. Priority actions for resilient food systems	23
7. Relevant projects, programmes and initiatives contributing to the implementation of the priority actions	25
8. Entry points for the work of the CRFS Alliance	33
9. Bibliography	36

1. National circumstances

1.1 Country overview

Stretching 450 km along the Gambia River, the country (11,295 km²) is surrounded by Senegal (Figure 1), except for a 60-km Atlantic Ocean front. The Gambia is the smallest country in continental Sub-Saharan Africa but one of the most densely populated. Most of the population (57 %) is concentrated around urban and peri-urban centers. The population is young and growing rapidly. Almost three-fifths of the population is under the age of 24 (World Bank, 2021).

The Gambia is a multiparty Republic. Under the 1997 constitution, the President is the head of state and government, and is elected by universal suffrage to a five-year term. The 2016 Presidential Election led to the end of the autocratic rule of former President Yahya Jammeh, who was in power from 1994 to 2017. The recent presidential elections took place on December 4, 2021, in which Adama Barrow was re-elected for a second term (The World Bank Group, 2021)



Overall population:	2, 487,000
(2021)	
Undernourishment:	21.6%
(2020)	
CO ₂ emissions (annual):	499,912.00 tons (2020)
Weather-related disasters:	12 reported (since 2008)

Figure 1: Map of The Gambia

1.1.1 Ecology

The Gambia is geographically located between the arid Sahara Desert and humid rainforests in the south. This, combined with the extensive wetland systems along the River Gambia, result in a wide range of habitats.

Climate in The Gambia is characterised by a long dry season from October to early June and a short rainy season from mid-June to early October. Average annual rainfall ranges from 850 mm to 1,200 mm and average temperatures range from 18 °C to 33 °C.

The Gambia has 347,700 ha of savannah woodlands with trees and shrubs, 83,500 ha of woodlands (forest), 66,900 ha of mangroves, 102,000 ha of fallow land or bush, and 274,800 ha of upland crop area. The country has about 62,000 ha of saline swamps (Duguma *et al.*, 2020).

The River Gambia and tributaries occupy 1,300 km² permanent surface. However, during the flood season, it can extend over 1,965 square kilometres, covering about 18 % of the country (Jaiteh Malanding, 2010).

1.1.2 Economy

The economy relies upon agriculture, tourism, and remittances. Over 60 % of Gambians depend on farming for their livelihood, which accounts for about one-third of the country's GDP. However, 73.9 % of the inhabitants in rural areas are below the poverty line. Farmers and agricultural workers, especially women and young people, form a large part of the poor and extremely poor. Many are illiterate, and lack opportunities and access to productive resources such as credit, land ownership, and support services. Weather-induced crop failures

and shortages of cash often force farmers to sell part of their produce immediately after harvest, when prices are at their lowest, and buy grain at high prices later in the year (Government of The Gambia, 2019a)

In 2021 Gambia was the number 169 economy in the world in terms of total exports and the number 158 in total imports. The top exports of Gambia are groundnuts, fish and cotton and the top imports are rice, raw sugar, passenger and cargo ships, and refined petroleum (OEC, 2021).

Despite considerable progress in recent years – particularly in primary education – levels of poverty, food insecurity and malnutrition have remained unchanged or have worsened in the last ten years. Major crises such as the 2015 Ebola outbreak and the consequent reduction in tourism, and climate-related drought and floods in 2012 and 2016 respectively, have all taken their toll on the country's economy.

The Gambia's poverty rate remains at 48 %, while food insecurity has risen from 5 to 8 % over the past five years due to weak food production systems and the effects of successive shocks such as drought and floods. In 2018, The Gambia suffered another drought leading a food security emergency. According to FAO statistics, 21.6 % of Gambia's population suffer from undernourishment, while 27.1 % dwells in a situation of severe food insecurity (FAOSTAT, 2020).

2. Food systems overview

The Gambia's food systems are primarily rooted in agriculture, which has the potential to become a robust engine of inclusive growth and poverty reduction.

2.3 Production

The sector is characterised by small-scale, subsistence rain-fed crop production (mainly groundnuts, coarse grains, rice, and cassava), traditional livestock rearing, semi-commercial groundnut and horticultural production, and a large artisanal fisheries sub-sector (Government of The Gambia, 2019b).

The Gambia has three main agroecological zones (AEZs). The Sahelian Zone, characterised by less than 600 mm total annual rainfall and soils of low water holding capacity, the Sahelian zone is noted for early maturing, short-duration and drought tolerant crops; cassava, cowpea and sesame are the main crops with millet grown only intermittently. The Sudan-Sahelian Zone, with within 600 to 900 mm annual rainfall, is well suited for groundnut, sorghum and cotton in the upland areas. However, the flood plains along the Gambia River and associated lowland valley systems are occupied for rice growing under tidal swamp irrigation. The Sudanian-Guinean Zone lies within the 900 to 1 200 mm rainfall isohyets; the principal crops cultivated in this zone are early millet, groundnut, rice, maize, vegetable, cowpea and sesame (Government of The Gambia, 2019b).

The agriculture sector contributes 25 % of the gross domestic product (GDP) and employing about 70 % of the labour force, with 32 % into active primary agricultural production. Agriculture is the main source of income for about 72 % of the extremely poor rural households (Government of The Gambia, 2019b). Women play a crucial role in the sector, representing 40 % of total agri-food production, and 60 % in the case of the rice production (MWCSW, 2020).

The country has favourable arable land resources with about 553,116 ha (56 % of the land mass) that could be suitable for agriculture. During the last two decades, the total arable land area increased by 173 % (about 8.7 % per year). Additionally, The Country counts with abundant water resources (118 thousand ha of surface water regimes and two major aquifers) with potential to irrigate over 80 thousand ha (14.46 % of total arable land). However, agriculture in The Gambia is largely dependent on rainfall, with only 1.12 % of the cultivated area equipped with irrigation (FAOSTAT, 2020). Such opportunities, have not been developed

due to technical constraints such as poor infrastructure, lack of maintenance and inadequate management skills, as well as fiscal constraints (high cost of water extraction, user charges and inadequate government financing, etc)(FAO, 2018).

Production systems generally have low input of fertilisers and pesticides. Fertiliser consumption per unit of arable land is about 5.95 kg per hectare (FAO, 2016). Farmlands are generally small scale with dominant production of millet, groundnut, rice, maize and sorghum which covers approximately 24 %, 23 %, 15 %, 8 % and 7 %, respectively, of the total land under cultivation in the Gambia. Pulses and vegetables occupy less than one % of the total agriculture area. Meanwhile, groundnut remains a major cash crop for the Gambia with about 5 % contribution to the national GDP. Rice, sorghum, millet and maize are generally produced for subsistence purposes (Government of The Gambia, 2019b). Figure presents the purpose of crop production according to the survey conducted within the Comprehensive Food Security and Vulnerability Analysis CFSVA (2021).

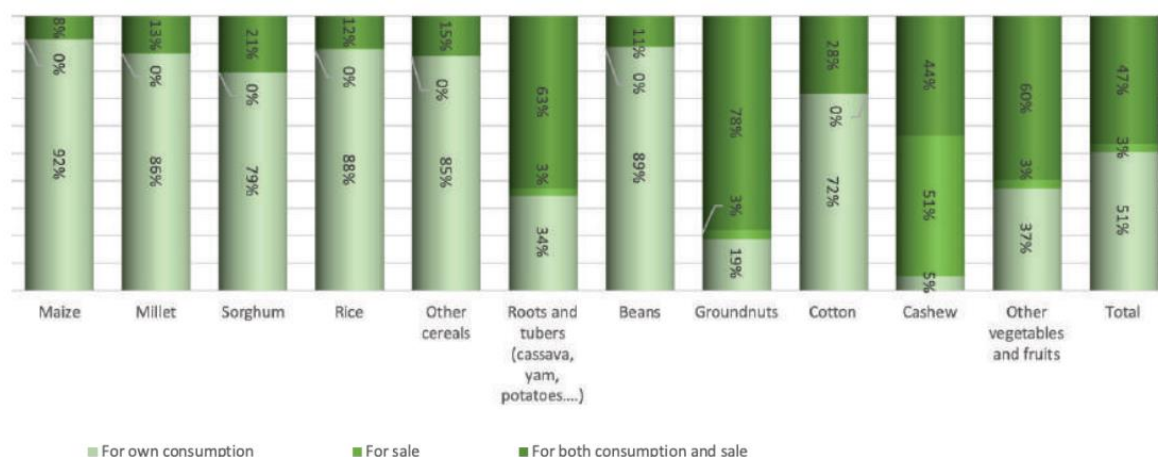


Figure 2: Purpose of crop production [Source: Comprehensive Food Security and Vulnerability Analysis (Republic of The Gambia and World Food Programme, 2021)].

The country's main food crops are cereals, groundnuts and horticultural products, which provided a gross production value at USD 110.8 million in 2017. However, dependence on rainfed agriculture, insufficient implementation of Climate-Smart Agriculture (CSA), and socioeconomic and institutional factors culminate in low agricultural productivity. Figure presents the evolution of crop yields and shows a declining trend that could be associated with climate change and climate variability impacts, along with poor infrastructure, soil fertility depletion, declining agriculture commodity prices, soaring prices of production inputs and low private investment (FAO, 2022).

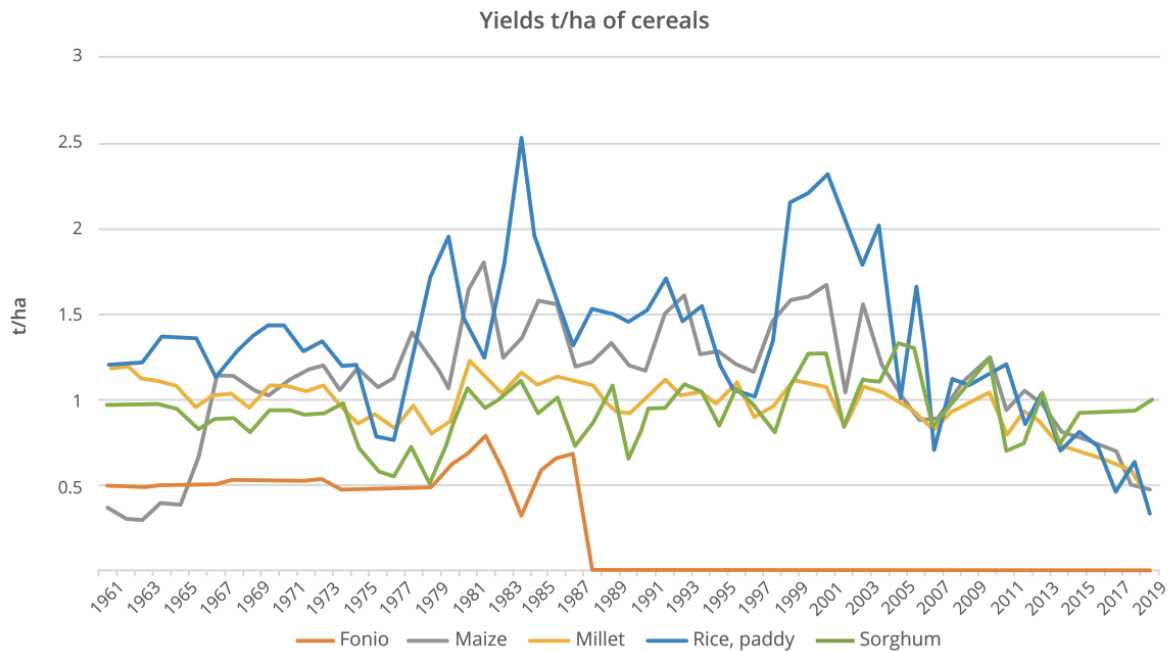


Figure 3: Evolution of crop yields reduction (Source: FAOSTAT, <http://www.fao.org/faostat/en/#data/QC>)

In recent years, the horticulture subsector has seen the most commercial investment, in particular for export of high-value products like fresh mangoes, baby corn and chili peppers. There are great prospects in horticulture export markets, with a projected growth of USD 17 million from 2019 to 2025. However, the agri-food export market is constrained by inadequate compliance with sanitary and phytosanitary requirements, and a failure to meet standards and technical requirements in EU markets.

Livestock sub-sector

As per the Livestock Census (2017), the Gambia’s livestock population was estimated at 3.28 million heads.

Of this, its cattle population was about 0.3 million and poultry was 1.38 million, of which chicken was 0.94 million, while duck and guinea fowl made up 0.44 million. The population of small ruminants – both sheep and goats – increased from 0.1 million (1993–1994) to 0.17 million (2016–2017), and from 0.21 million (1993–1994) to 0.33 million (2016–2017) heads, respectively. The evolution of livestock production presents similar stagnating trends in small ruminants and cattle (including dairy cows) in recent years. Most of these animals are concentrated in the Central River and Upper River Regions of the country, where owners mainly use free grazing systems (Ministry of Environment, 2022).

Milk production is largely seasonal with more milk being available during the rainy season when more quality feeds are available. Most cows are milked twice per day during the rainy season. Average milk production is estimated at 1.2 litres per day (Government of The Gambia, 2019b).

There are no commercial farms producing beef in The Gambia. The main constraints to beef production are low growth rates with mature animals losing between 10 to 25 % of their body weight in the dry season, prevalence of diseases, inadequate feeding and scarcity of watering points (Government of The Gambia, 2019b).

Fisheries sector

The fishing sector contributes an estimated USD 55.5 million to the economy, on average 12 % of GDP, of which USD 38 million is derived from production and USD 16.1 million from industrial processing. An estimated 30,000 people are employed in the artisanal fishery sub-

sector serving as a source of livelihoods system for about 200,000 people. In 2020, the average monthly wage of Gambians working in artisanal fisheries is in a range of USD 264–1751 for a crew member (Avadi *et al.*, 2020)

Currently, fish exports (fishmeal, fish processing for exports, off-Gambia landings by industrial vessels, etc.) represent roughly 19,300 tonnes per year, generating USD 65 million. The Gambia's fisheries sector has a strong potential to develop into an emerging export market. However, coastal communities are have risen concerns about over-exploitation and depletion of marine resources (FAO, 2022).

2.2 Processing and manufacture

The processing sector is still nascent, with a few obsolete state-owned rice mills. On-farm rice threshing mainly uses manual methods; which causes around 30 % of losses during harvesting processing (WFP, 2020).

Collection of non-timber forest products (NTFP) is a common practice for subsistence and income for around 90 % of rural residents. There is growing interest in wild fruits (*Adansonia digitata*, *Saba senegalensis*, *Parkia biglobosa*, *Ziziphus*) honey, local tea and herbal medicines. Local entrepreneurs process wild fruits to produce juice, dried fruits and preserves, earning an average annual income of USD 211. NTFP are vital to rural communities, and with some value addition, reliable markets for the products could be created (MECCNAR - FAO, 2018).

The Large-scale Ecosystems-based Adaptation (EbA) project is working with the Gambia Standards Bureau to develop national standards for a number of NTFP. In addition, the project supports the construction of a Central of Processing and Packaging Facility for NTFP and upgraded the network of the Multipurpose Skills Training centres to serve as natural resource aggregators.

Regarding the fishery sector, overall, 200,000 people depend on this economic activity for their livelihoods in Gambia. Only 1500, most of them foreigners, are involved in processing activities, employed by 14 fish export companies (Avadi *et al.*, 2020).

2.3 Distribution

The Gambia's export base is very narrow, mainly constituted by groundnuts. The last decade, the exports have ranged at the historic lowest, between 5 and 20 thousand MT. The purchase and export of groundnuts used to be dominated by a parastatal, making private sector activities risky and difficult to sustain (FAOSTAT, 2022). Although the government has liberalised groundnut marketing and exports, it is still taxing the commodity. Moreover, the price-fixing policy for groundnuts limits incentives to develop and reward any high-quality standards. The rest of the export market is dominated by 6 large farms producing high-value horticultural commodities (FAO, 2022).

Informal, small-scale itinerant traders connect with retailers and wholesalers at 'Lumo', weekly organised markets, and 'Samdika', regional agricultural markets. However, according to The CFSVA (2021), 51.3 % of communities don't have functional market within their villages and travel for 6.4 km, on average, to buy or sell products including food. In those cases, traders are engaged in aggregation, transportation, storage and distribution.

There are four major supermarket chains with a proliferation of mini supermarkets in urban areas. The four dominant, large-scale, licensed supermarkets serve as major aggregators with storage facilities, vehicles or vessels in the import market (FAO, 2022).

2.4 Consumption

Imports fill the gap between food demand and domestic supply and have been growing over time. The Gambia's food imports are dominated by rice, sugar and vegetable oils. Rice is the dominant staple, with an average of 60 thousand MT/year of local production supplemented by imports of almost 200 thousand MT/year. This could represent an opportunity for increased domestic production. However, the price of local rice is uncompetitive against imported rice (FAO, 2022)

The Gambia depends on import for almost 50 % of its food requirements. Of the top 15 imported items, 55 % are food products with over 40 percent being fully processed. Figure 4 shows The Gambia's historic volume composition of food imports.

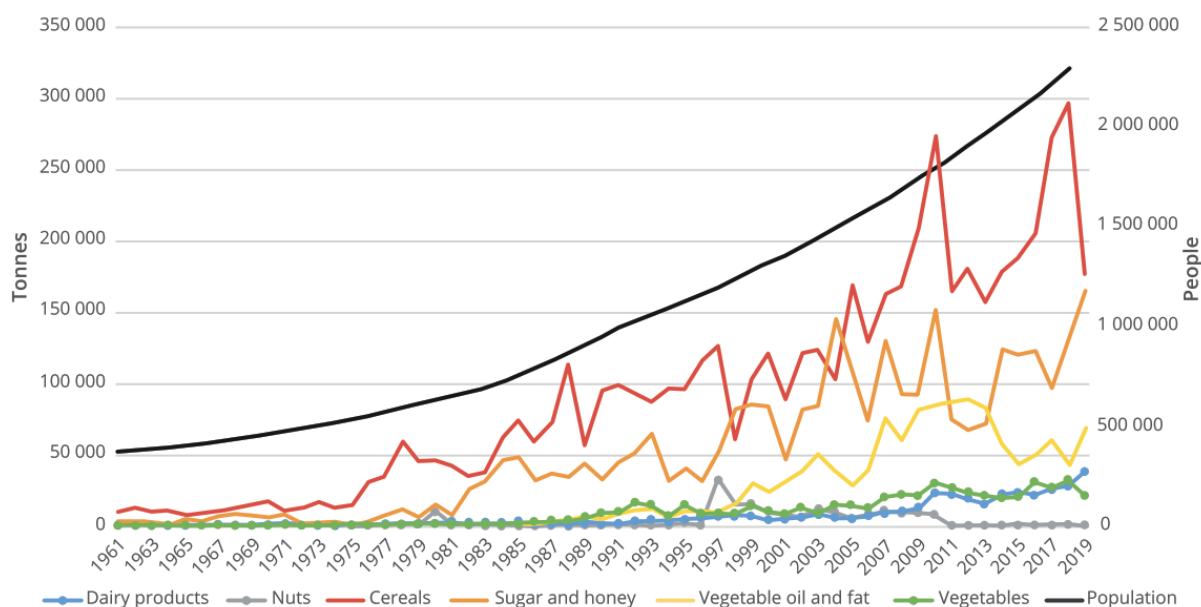


Figure 4: Main imported food products in volumes with population growth [Source: FAOSTAT, <http://www.fao.org/faostat/en/#data/TP>]

Results of national poverty surveys, using the US\$ 1.25 per day, show that 48.6 % of the population fall below the poverty line and 55.1 % of Gambians have a caloric intake below 2,400 calories with stunting occurring at 22.9 %, underweight at 21.4 % and wasting at 10.3 % (Gambia Bureau of Statistics, 2017). Food consumption in Gambian households is dominated by cereal-based diets, principally rice, with low dietary diversity.

Regarding the Prevalence of Global Acute Malnutrition (GAM), The Gambia had 5.1 % of children under five (CUF) in this condition in 2019. The highest prevalence of global acute malnutrition is observed in the regions of Banjul, Kuntaur, Kerewan and Janjanbureh (Figure 5) (Republic of The Gambia and World Food Programme, 2021). Moreover, just 14 % of children aged 6–23 months receive a minimal acceptable diet (GBoS and ICF, 2021).

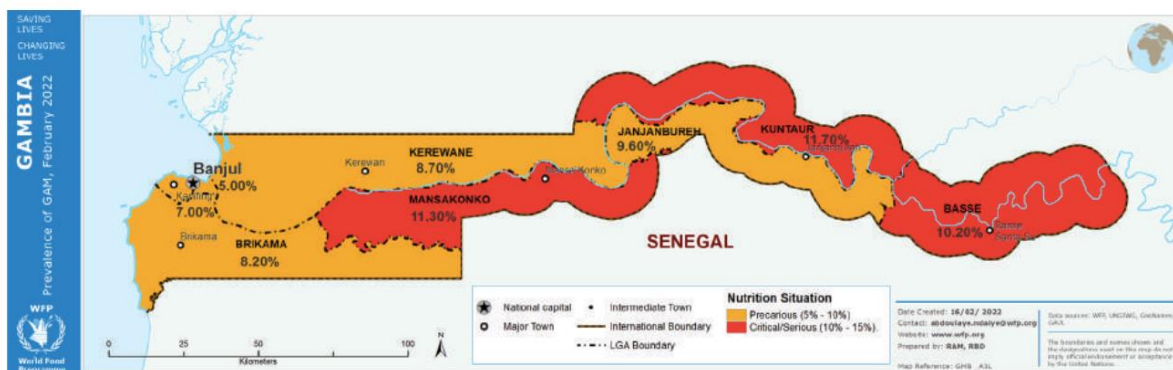


Figure 5: Prevalence of malnutrition [Source: Comprehensive Food Security and Vulnerability Analysis (Republic of The Gambia and World Food Programme, 2021)].

More than 50 % of Gambian households eat vegetables, meat, fish and sugar daily; and 99 % eat cereals seven days a week. Only 15 % of households eat fruit on a daily basis; also poorer households were found to be less likely to eat meat, fruit, and dairy (WFP, 2016). There are not official dietary guidelines in The Gambia, nevertheless, the National Nutrition Agency (NaNA) and the Ministry of Health (MOH) promote the consumption of nutritious food.

In average, 58 % of the monthly expenditure of a Gambian household is dedicated to food (FAOSTAT, 2019). Prices of meat per kilo doubled between 2010 and 2019 (GLMA, 2020), while the price of millet increased by 50 % between 2016 and 2020 (PSU, 2020). However, there has been a significant increase in demand for meat products in The Gambia in recent years. The present domestic production of beef, milk, lamb, goat meat, poultry meat and eggs are insufficient to meet the national demand (FAO, 2022).

On the other hand, unaffordability of nutritious foods, increasing penetration of supermarkets, and changing food habits of urban consumers result in the high consumption of processed foods. This is resulting in high incidence of overweight, obesity and NCDs. For example, obesity in children under five and adults have increased by two percentage points in a six-years period (FAO, 2021).

2.5 Waste management

There are not updated figures about food waste in the country. However, it is well known that waste generation is compounded by the inadequacy of storage infrastructure, which makes highly perishable and often nutritious products (vegetables, fruits, milk, fish) last for only short durations (FAO, 2022). In some markets, community waste management that include composting processes exist (Wasteaid, 2021).

3. Climate risks and food systems

Climate change and variability constitute a significant burden on the food systems. This is due to the negative impact that climate and environmental shocks can have along the value chain by inhibiting production, constraining processing and transportation, increasing trade deficits, lowering export prices and, thus, limiting the participation of food system actors. Through a domino effect, climate change and environmental shocks negatively impact the food and nutrition security status of the population while having a detrimental effect on their resilience.

3.1 Climate risks and vulnerability overview

Temperature

Average temperatures in The Gambia vary between 18 °C and 30 °C during the dry season, and range between 23 °C and 33 °C during the wet season (from June to October) (Government of The Gambia, 2020).

For the West Africa region, observed mean annual and seasonal temperatures have increased 1–3 °C since the mid-1970s. Similarly for The Gambia, observations indicate that minimum temperatures have increased at the rate of 0.4 to 0.67 °C per decade (Government of The Gambia, 2007). Additionally, heatwaves have become hotter, longer and more extended in the 21st century (Barbier *et al.*, 2018).

According to the temperature projections of the PCC, 1.5 °C and 2 °C of global warming above pre-industrial levels, mean annual temperatures in west Africa are projected to be on average, 0.6°C, and 1.1 °C warmer than the 1994–2005 average, respectively. The annual number of hot days and heatwaves frequency and intensity are projected to increase at all global warming levels (IPCC, 2022).

Precipitation

The West African monsoon brings to The Gambia 90 % of the annual rainfall between June and October. Average rainfall in a year varies from 1,000 mm in the South and Southeast to 700 mm in the most northerly part of the country (Government of The Gambia, 2020).

Negative trends in rainfall accompanied by increased rainfall variability have been observed in the country. Moreover, the average length of the rainy season decreased in the western and eastern parts of country (Government of The Gambia, 2007).

Although there are uncertainties in rainfall projections in West Africa, some models project monsoon rainfall amounts to increase by approximately 2.9 % per degree of warming (Jin, Wang and Liu, 2020). At 2 °C global warming, West Africa is projected to experience a drier, more drought-prone and arid climate. The duration of meteorological drought in the western parts of West Africa is projected to increase from approximately 2 months during the 1950–2014 period to approximately 4 months between 2050–2100 under RCP8.5 (Ukkola *et al.*, 2020).

Overall, increased intensity of heavy precipitation events combined with increasing drought occurrences will substantially increase the cumulative hydroclimatic stress on populations in west Africa during the late 21st century (IPCC, 2022). However, the current state of knowledge is not strong at the national level and the Third National Communication calls for caution and sensitivity analyses in applications using regional rainfall projections.

Sea-level rise

Over 48 % of the total land area of the Gambia is below 20 m above mean sea level, and nearly one-third is below 10 m above sea level (Njie *et al.*, 2012). The Gambia is classified as the tenth most vulnerable country to the impacts of sea level rise globally, with consequences of salinization of coastal areas, water aquifers and other sources of drinking water (Gomez *et al.*, 2020; FAO, 2022).

Sea level rise studies (e.g., Brown *et al.*, 2011) showed sea level rise in The Gambia could be projected by 0.35 m in 2050 and 1.23 m in 2100 in comparison to 1995 levels. These projections are highly alarming, indicating that a sea level rise of 1 m will potentially inundate about 8.7 % of The Gambia's total land area, which includes over 61 % of the current mangrove area, over one-third of its swampland, over 20 % of the lowland rice growing regions and 50 % of the capital city of Banjul (Jaiteh Malanding, 2010).

3.2 Impacts of climate change on food systems

Ideally, a systems approach should be used to assess how climate change affect the food sector in The Gambia, emphasising the interactions within the components of the system, including its enabling socioeconomic and biophysical environment. However, most of the research on climate change impacts on food systems is only focused on production. A significant knowledge gap exists around the complex ways in which climate change impacts food processing, storage, distribution and consumption (IPCC, 2022).

Agriculture-based food systems

Climate change is already negatively impacting crop production and slowing productivity growth in Africa, reducing total agricultural productivity growth by 34 % since 1961, more than in any other region (Ortiz-Bobea *et al.*, 2021). The 2011 and 2014 droughts in The Gambia led to a 50 % drop in crop output while the 2016 short rainy season led to a drop of crop production, boosting food price inflation and affecting children's nutrition as well as access to basic social services (IFAD, 2019).

Increased aridity predisposes soils in uplands to higher rates of topsoil erosion, whilst extreme rainfall events are strong triggers for sheet erosion (Government of The Gambia, 2020). Under progressively drier climate, the combined effects of heat and soil moisture stress is expected to become a major constraint to crop development and yield under rainfed cropping systems (Republic of The Gambia, 2021).

According to surveys, farmers in West Africa attribute the major yield losses to droughts, precipitation variability, a delayed onset and overall reductions in early growing season rainfall and excess heat (Alvar-Beltrán *et al.*, 2020). Additionally, farmers perceive changes in the range and seasonality of many crop pests and diseases as due to climate change (IPCC, 2022). At household level, changing climatic conditions influence decisions on whether to consume or sell the harvest (Duguma *et al.*, 2020).

Climate change impacts are expected to put considerable pressure on the country's natural and societal systems connected to food systems. For example, decreasing rainfall is projected to intensify salinisation and acidification of lowland soils in The Gambia, affecting marginally productive soils or soils most exposed to climate stressors.

Several studies indicate that changes in the ecosystems driven by climate change will keep impacting negatively yields of major crops grown in The Gambia, such as millet, sorghum, maize, and groundnuts. For example, Gambian forests, including coastal mangroves, may undergo noticeable changes as a result of increasing temperature, modified rainfall patterns, and sea level rise by 2050, which will limit the productivity of agriculture activities, and the availability of wild fruits and edible plant parts collected by farmers to cope with food shortage (Duguma *et al.*, 2020; MCCNR, 2021).

Livestock-based food systems

Changing seasonality, increasing frequency of drought and rising temperatures are affecting pastoral systems in West Africa leading to decreasing fodder availability, and increasing incidence of vector borne diseases, and parasites and decreasing productivity (Stanimirova *et al.*, 2019).

Climate change is projected to negatively affect fodder availability because overall rangeland net primary productivity (NPP) by 2050 is projected to decrease 42 % under RCP4.5 for western sub-Saharan Africa, compared to a 2000 baseline (Boone *et al.*, 2018).

In Gambia, the changing climate is further lowering livestock productivity by reducing water availability and quality. Water resources for livestock may decrease in places because of increased runoff and decreased groundwater availability (Government of The Gambia, 2020).

Additionally, climate change is projected to increase heat stress for all types of livestock. Most domestic livestock have comfort zones in the range 10–30 °C, depending on species and breed

(Nardone *et al.*, 2006). At higher temperatures, animals eat 3–5% less per additional degree of temperature, reducing their productivity and reproductive performance. Heat stress suppresses the immune and endocrine system, enhancing susceptibility of the animal to disease (Das *et al.*, 2016).

The impacts of climate change on livestock diseases remain highly uncertain. However, it might impact livestock disease prevalence primarily through changes in vector dynamics or range. In The Gambia, as in most part of sub-Saharan Africa, diseases are positively associated with extreme climate events, such as droughts and ENSO and are projected to expand in range under climate change (Bett *et al.*, 2017).

Fisheries

At 1.5 °C global warming the maximum catch potential (MCP) from marine fisheries in African Exclusive Economic Zones (EEZs) would decrease by 3–41 % relative to recent decades (1986–2005) (Cheung *et al.*, 2016).

Increased sea surface temperatures have been associated with increases in spring and summer upwelling intensity reducing the abundance and larval survival of small pelagic fishes and shellfish (Atindana *et al.*, 2020). Ocean warming, acidification and hypoxia are predicted to affect the early life stages of several marine food species, including fish and crustaceans (IPCC, 2022).

In regard to fishing in marine ecosystems, the superposition of decades-long fishing pressures in The Gambia and the current and projected climate impacts makes it likely to expect accentuated changes in marine species diversity, geographical distribution and inter-species relationships.

Additionally, The Gambia's high reliance on the Gambia river and its floodplains make them more likely to experience downturns in catch, as hydrological dynamics may be altered (Harrod, 2015). Short- and long-term changes in freshwater inputs and salinity gradients also influence the geographic distribution of emblematic fish species such as *S. maderensis*, *S. aurita* and shad (*Ethmalosa* spp.) (Sarré *et al.*, 2018). Additionally, projections suggest that opportunistic species that do well in modified systems and small pelagic fishes will remain important components of inland fishery food systems (IPCC, 2022).

On the other hand, shellfish fisheries are quite likely to gain from higher mangrove productivity under higher freshwater inflows. However, higher pollutant loading of wetlands, and higher water temperatures in a wetter climate future are quite likely to decrease the availability of shellfish and compromise food safety (Government of The Gambia, 2020).

The climate change impacts on cockle fisheries, dominated by fisherwomen operating within the lower estuary of the River Gambia have not been studied. Additionally, climate change implications for emergence of pests and spread of diseases in marine and freshwater sources is another area of uncertainty (Government of The Gambia, 2020).

The country, as the entire West Africa region, is projected to be at the greatest nutritional risk from sea temperature rise, leading to reduced catch in coastal waters, which could leave thousands of people in The Gambia vulnerable to deficiencies in iron, vitamin A, vitamin B12 and omega-3 fatty acids by mid-century under 1.7 °C global warming (Golden *et al.*, 2016).

The water–energy–food (WEF) nexus in The Gambia

There is a strong interdependence of these three sectors and their high levels of exposure to climate change. With increasing societal demands, an intensification of WEF competition and trade-offs are projected (IPCC, 2022).

For example, under projected sea level rise as a result of future climate change, combined with the construction of dams in upper Gambia River, the saline front is expected to migrate upstream of its present upper limit. Hypersalinity will make strategies like tidal irrigation no longer viable, impacting food production. Additionally, this would result in reduced freshwater recharge downstream, causing hyper salinity in mangrove and other wetlands

along the river's estuary and coastal zone, which provide regulation services for food production (Republic of The Gambia, 2016).

In addition to salt intrusion, expected increase in evaporation and evapotranspiration will result in a significant reduction in groundwater recharge, demanding more energy for water pumping, treatment and transport to meet the demand in rural and urban areas (Republic of The Gambia, 2016).

In The Gambia, as part of the West Africa sub-region, the climate risks that the water, energy and food sectors will face in the future are heavily influenced by the infrastructure decisions that governments make in the near term (IPCC, 2022). For example, national and transnational investments in hydropower projects (i.e., Sambangalou, a 128MW hydro power project) can lead to increased competition for water resources.

Another example can be drawn from the links between the use of fuelwood, the efforts of restoration of ecosystems and food production. Despite official efforts to increase the viability and attractiveness of alternative sources of energy, fuelwood represents the major source of domestic energy in the rural Gambia. The Gambia's fuelwood consumption per capita was valued at 0.45 m³/year in 2004. With the current population of the country, the annual demand for firewood is estimated in about 0.95 million cubic metres. The rural population obtains their fuelwood locally from trees in farmland or the nearby forest. Additionally, each year more than half of the country's woodlands and forest get burned more than once (Nget et al., 2011).

If no clear measures are taken, harvesting firewood can lead to a decrease in the population of standing trees and jeopardise ecosystems restoration efforts and the services that support food production. However, if sustainably managed, the establishment of woodlots for supplying firewood in Community Forests (CF) could be beneficial for resilient food systems. Additionally, there is a big unexploited potential for groundnut shell briquettes as well as sources of renewable energy (Duguma *et al.*, 2020).

The post-harvest supply chain

Climate change impacts along the value chain alter availability, access and stability of food security. Despite there is a gap of scientific information on the post-harvest supply chain in The Gambia, many of the impacts identified for other locations are applicable, especially for nutrition-dense foods nationally produced or imported, which tend to be more perishable and are thus more vulnerable to the impacts of climate change during the processing, storage, transportation, commercialisation and consumption processes. Among the impacts included in the Sixth IPCC report, the most applicable for The Gambia's food system are listed below:

- Climate-change-related damage to food in storage (e.g., loss of cold storage) and transportation infrastructure (e.g., extreme weather events damaging roads and other infrastructure) could significantly decrease availability and increase the cost of highly perishable, nutritious foods such as fruits, vegetables, fish, meat and dairy.
- Higher temperatures and humidity can increase post-harvest loss from pests and diseases, increase occurrence of food-borne diseases and contamination, and raise the cost of refrigeration and other forms of preservation.
- Post-harvest food loss from climate change can occur from improper handling to damage from microorganisms, insects, rodents or birds.
- Food waste caused by climate change may occur at both retail units and homes because fresh ingredients and freshly prepared foods are vulnerable to quality reduction from exposure to higher temperatures and humidity.
- Rising air temperature, ocean warming and high CO₂ conditions increase risk of food poisoning and pollutant contamination of food through increased prevalence of pathogens, and increased contaminant bioaccumulation and threaten human health.

3.3 Other factors and stressors leading to non-resilient food systems

Non-climatic stressors aggravate climate risks in food systems in The Gambia. For example, climate change interacts with multi-dimensional vulnerability factors like access to public services. In the Gambia 18 % of rural households and 11.2 % of urban households use unimproved water sources for drinking water, and only 60 % have access to electricity (Republic of The Gambia and World Food Programme, 2021).

In regard to the natural environment, high pressure on natural resources with widespread deforestation, accelerated desertification and increased pollution is eroding the country's productive lands.

Smallholder farmers have limited access to education, finance, inputs, services, infrastructure and technology, which constrains productivity in agriculture and allied sectors (FAO, 2022). Geographic and social isolation is another type of social vulnerability, rural communities often have poor transport networks, limited access to markets or information and fewer livelihood alternatives, and are less able to be informed of risks or be assisted in the event of extreme climate events (IPCC, 2022).

In addition, a legacy of authoritarianism, weak public institutions, political instability, and the limited capacity of the public administration influence the fragility of the country. In addition, challenges included a history of political restrictions and marginalization, ethnic divisions, youth unemployment, gender-based inequities in participation in decision-making and access to land ownership and essential services (ECOWAS Commission, 2018). Table 1 presents some indicators of non-climatic factors that influence the resilience of food systems in The Gambia.

Indicators	Measures/Rates	Comments
National poverty level (head count)	48.6% (2015)	Gambians live on less than USD 1.25/day.
Rural poverty level (head count)	69.5% (2016) 62.1% (2010) 60.0% (2003)	Increasingly rising.
Urban poverty level	31.6% (2015–16)	Rising, owing to rapid rural–urban migration.
Percentage share of urban population	62.0% (2019)	High levels of urbanization.
Urban population growth rate	4.0% (2019)	Average annual migration of 57 711 people to urban areas.
Percentage of youth (below 15 years) in total population	43.0% (2018)	Signifying youth bulge with The Gambia's young population.
Urban unemployment rate for youth (15–35 years)	30.6% (2019)	Contributes to youth rural–urban exodus, increasing migration to Europe.
Rural unemployment rate for youth (15–35 years)	69.4% (2019)	
Percentage of population with access to health facilities within a 30 minute radius	80.2% (2015–16)	Signifying fairly good access to health facilities, but generally with poor-quality services and limited drug availability.
Access to electricity	60.3% (2018)	Signifying that at the national level, access to electricity is more than half. However, there is a significant rural–urban gap.
Rural–urban gap in access to electricity	40.5% (2018)	

Table 1: Indicators of non-climatic factors that influence the resilience of food systems in The Gambia (Source: WFP, 2016; NDP, 2018–2021; GBoS, 2016, 2017; Statistical Abstract; World Bank, 2019; GBoS, 2018 and 2019 Statistical Abstract; The Gambia multiple indicator cluster survey, 2018).

Finally, COVID-19 impacted a wide majority of people in Gambia, both directly as well as indirectly. Due to closure of businesses and restrictions on movement, many people lost their jobs or at least declined their income. According to CFSVA (2021), the income of 86.3 % of households was affected across the country, where 42.2 % severely affected. In terms of income, rural areas population was more affected than urban households (Republic of The Gambia and World Food Programme, 2021).

In this context a combination of long-term structural vulnerabilities and short-term economic shocks is exacerbating food insecurity and resilience in The Gambia.

4. Climate, agriculture and food systems policies

4.1 Visions, goals and objectives

The Gambia undertook a year-long process of participatory consultation, jointly coordinated by the Ministry of Environment, Climate Change and Natural Resources (MECCNAR) and the Ministry of Finance and Economic Affairs (MoFEA), to inform the development of its 2050 Climate Vision: *By 2050, The Gambia aspires to be a climate-resilient, middle-income country through green economic growth supporting sustainable, low emissions development, contributing its fair share to global efforts to address climate change* (Republic of The Gambia, 2021). The vision established four strategic priorities aligned with the National Climate change Policy (2016):

- Climate-resilient food and landscapes: agriculture, food security, forestry and natural resources (including water, biodiversity and wildlife)
- Low emissions and resilient economy: energy, transport, infrastructure and the key economic sectors of tourism and financial services
- Climate-resilient people: health, education, equitable social development and human settlements
- Managing our coasts in a changing environment: climate-aware Integrated Coastal Zone Management.

The 2050 Climate Vision includes the understanding of food systems beyond the agriculture production and recognizes its inalienable link with socio-environmental systems. For example, for priority number one establishes that adaptation will be prioritized, including *building sustainable food systems through agricultural innovations for food production, storage and processing, as well as agroecology, supporting smallholder women farmers, and promoting social protection for climate-induced impacts on small-scale food producers.*

Additionally, The Vision establishes that a Long-term strategy will be developed to address operationalisation issues: (1) policy implications and adjustments, (2) institutional arrangements, (3) financing, (4) monitoring and evaluation of progress and (5) Advocacy, mobilisation, communication and information.

After the adoption of the vision 2050, The Gambia's Long-term Climate-neutral Development Strategy 2050 was developed in order to operationalize the implementation of the Vision.

Additionally, in 2022, The Gambia stepped forward as a frontrunner country for the LDC Initiative for Effective Adaptation and Resilience (LIFE-AR), and committed itself to achieving the LDC Group's 2050 Vision to be on climate-resilient development pathways by 2030 and deliver net-zero emissions by 2050.

4.2 National policies, plans, strategies and commitments

In terms of policies, there is no specific policy or institution on climate-resilient agri-food systems in the country. The approach is rather embedded in multiple instruments put into

place to cope with the challenges of economic development, poverty, food security and climate change in the Gambia:

National Development Plan (NDP): The NDP (2018–2021) was developed in eight strategic priorities touching on governance, macro-economic reforms, modernising agriculture and fisheries sectors, human capital, infrastructure, private-sector development and youth empowerment. The NDP (2018–2021) also identified climate change as a critical enabler to support the socio-economic transformation agenda of the government. The new NDP (2023-2027), with a strong focus on green recovery, is under development.

Second Nationally Determined Contribution (NDC) of The Gambia: The Resilience-related points included are the preparation of the NAP process and the Strategic Programme for Climate Resilience - SPCR (2017) described below.

National Adaptation Plan (NAP) road map:

A key process for enhancing the country's adaptive capacity to climate change is the development of a NAP. This process was initiated in The Gambia in 2015 with funding from UNDP. A NAP roadmap was developed based on discussions with key stakeholders. The roadmap covers a two-year implementation period that aims to address capacity and capability gaps along the entire spectrum of policy planning, review, development and outreach.

The NAP process is intended to facilitate the transition from project-based adaptation planning and implementation to an integrated approach to adaptation across all vulnerable economic sectors in The Gambia. It will thus enable the country to address climate change adaptation more coherently and efficiently. The outcome of the NAP process will be a costed adaptation strategy for the country. In addition, the NAP process will provide the tools, mechanisms, systems and information with which to replicate the NAP process at regular intervals and to mainstream adaptation into existing and future policies, programmes and activities across levels and sectors.

A proposal to the Green Climate Fund (GCF) Readiness and Preparatory Support Programme was submitted recently. The NAP process will be launched when funding is secured.

National Climate Change Policy (NCCP) – 2016: The NCCP and ensuing National Climate Change Response Strategy and Action Plan provides a mechanism to harmonise and scale up climate resilient planning and implementation. Two out of the four strategic and integrated focal areas for priority policy intervention are identified as relevant to resilient food systems:

- Climate resilient food systems and landscapes: Agriculture, food security, forestry and natural resources, including water, biodiversity and wildlife
 - Participatory integrated watershed management (PIWM)
 - Reduce dependence on groundnuts by encouraging agricultural diversification
 - Establish an Agro-meteorological Advisory Services
 - Plan and implement sustainable provision and usage of irrigation water to farming communities
 - Establish and scale up effective drought and flood early warning systems
 - Climate Change Adaptation through large-scale ecosystem restoration of the River Gambia Watershed
 - Sustainable adaptive management of fisheries resources
 - Water sector: increase adaptive capacity to (1) lessen the projected change in river salinity regime, (2) lessen the projected drop in groundwater availability, (3) develop rainfall harvesting systems.
 - Parks, wildlife and biodiversity sector: Raising awareness and restoring ecosystem health and biodiversity.
- Low emissions and resilient economy: Energy, transport, infrastructure, and the key economic sectors of tourism and financial services.

- Improve the urban and peri-urban infrastructure of the Gambia so that it is climate resilient: (i) water supply infrastructure, (ii) addressing infrastructural deficiencies of sanitation services, (iii) infrastructure construction and management codes and guidelines under climate change, (iv), improved road infrastructure and drainage systems.
- Managing coastlines under a changing climate
 - Improve ability of government departments to effectively mobilise financial resources
 - Enhance availability of credit and insurance facilities in coastal and inland communities to support disaster recovery
 - Develop understanding of climate change impacts on the coastal zone and appropriate responses

The Gambia's Long-term Climate-Neutral Development Strategy 2050- LTS (2022)

The Strategy recognises that climate resilient agriculture practices can help reduce hunger and poverty in the face of climate change. Similarly, it acknowledges that agroforestry can play a significant role in mitigating the impacts of extreme events and the resulting threats to food security. Additionally, there is mention of early warning and risk management systems as efficient adaptation measures to climate variability and change in forecasting crop yields.

The costed measures related to food resilient systems across different sectors established in the LTS are shown in Figure 6.

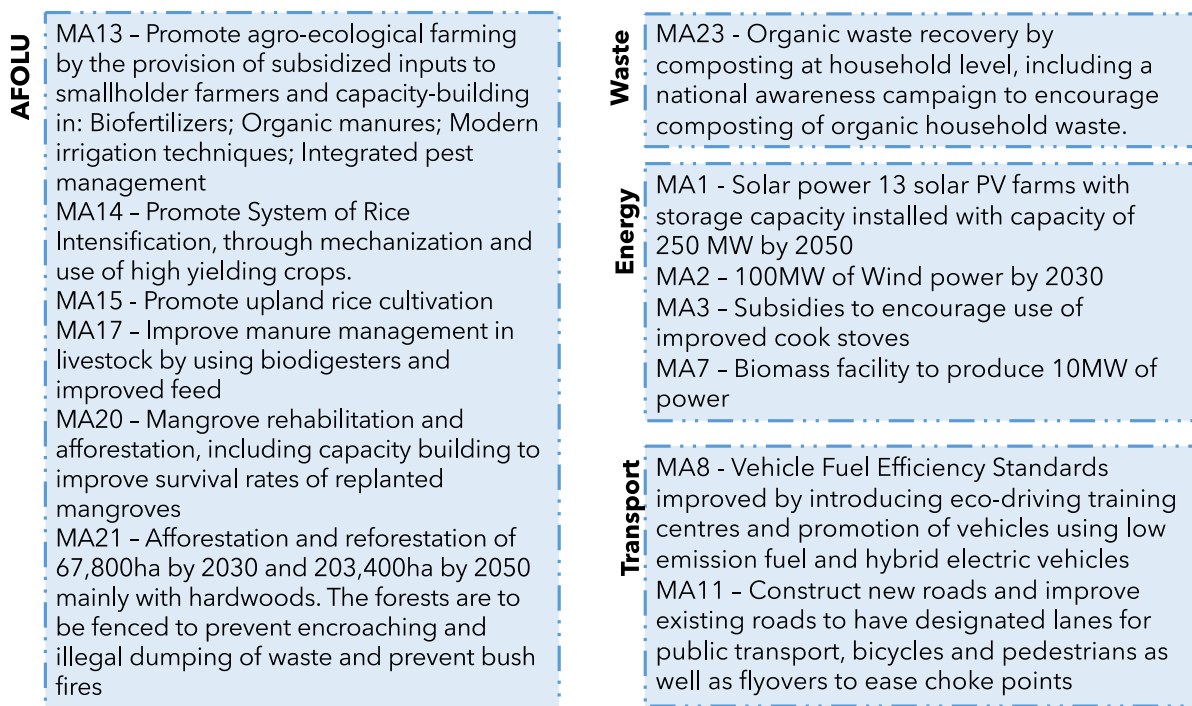


Figure 6: Interventions for the implementation of the LTS between 2022 and 2027

In regard to the means of implementation, the LTS highlights that the four concept notes prepared within the frame of the SPCR could be further developed into projects in coordination with the MECCNAR and relevant sectors, and in collaboration with international and UN Agencies.

Strategic Programme for Climate Resilience - SPCR (2017)

The SPCR provides the most comprehensive integrated adaptation framework developed up to date in The Gambia. When a costed adaptation strategy is developed through the NAP process, the NAP will become the new reference framework for adaptation planning and

investment in the country. Until then, the adaptation programme outlined in the SPCR can be used to guide adaptation investment in The Gambia.

The SPCR is based on four pillars:

- Pillar 1: Developing an enabling environment for climate resilience in The Gambia
- Pillar 2: Climate-resilient land use mapping, planning and information systems
- Pillar 3: Developing climate-resilient infrastructure, services and energy systems
- Pillar 4: Developing integrated approaches to build rural climate resilience in The Gambia

Adaptation Technology Needs Assessment (2017)

The Adaptation Sectoral Working Group worked with the National Consultant to conduct the technology characterisation and prioritisation for the Agriculture, Coastal Resources and Water Resources sectors. Among the Technology needs prioritised the following are the most relevant for the work on food systems resilience:

- Agriculture sector: Conservation agriculture, tidal irrigation and aquaculture.
- Water resources sector: Water conservation, and aquifer recharge.

The Second Generation National Agricultural Investment Plan - Food and Nutrition Security (GNAIP II) (2019-2026): It constitutes the main investment framework for agricultural development in The Gambia in the medium term. GNAIP II was formulated through a participatory process with stakeholders from the public and private sectors, including farmers' organisations. The Plan "aims to increase food and nutrition security at household level including for vulnerable households through increased ANR productivity based on sustainable use and management of natural resources in support of national goals of poverty reduction and improved livelihood". GNAIP II is based on five components: improving production and productivity of agro-forestry-pastoral and fisheries products; structuring of the value chains; strengthening the resilience of vulnerable populations; and governance.

Agriculture and Natural Resources (ANR) Policy (2017 – 2026)

The ANR Policy is a national multi sectoral Policy with the vision to create a market-led commercialised, efficient, competitive and dynamic ANR sector in the context of sustainable development. Within this frame, the Policy will be guided by the attainment of the over-arching objective of maximisation of poverty reduction and enhancement of food, income and nutrition securities through the optimal utilisation of the resources of the sector consistent with safeguarding the integrity of the environment.

The structural transformation and rationalisation of activities in the sub-sectors will be the main mechanisms for change. In specific terms, the objectives of the 2017 – 2026 ANR Policy are: 1. To achieve higher level of production and productivity of primary commodities through rehabilitation, intensification and expansion of ANR production systems and processes; 2. To enhance higher level of expansion and development of the food industry sub-sector; 3. To achieve wider and more effective participation and representation of subsistence farmers/operators especially women and youths in modern and commercial production, agribusiness and trade; 4. To achieve a balanced development between the ANR sector and other sectors of the economy; and, 5. To enhance the economic and structural integration of the ANR sector with the rest of the economy especially, manufacturing, tourism and hotel industries.

Supplementary Agriculture and Natural Resource (ANR) Policy (2017)

This policy framework is supplementary and aligned to Agriculture and Natural Resource (ANR) Policy (2017 – 2026). The goal of this Supplementary ANR Policy is to increase overall agricultural productivity and production through judicious utilisation of the natural resources base on sustainable basis. Specifically, this over-arching policy for the natural resource subsectors seeks:

- a) To put in place effective management of ecosystems and biodiversity that promotes sound and equitable natural resource base, reduce vulnerability to climate change impacts to achieve the desired green economy.
- b) To provide the basis for sound natural resource management, capacity enhancement of decentralised structures and clear allocation of resources, roles and responsibilities.
- c) To provide overall policy direction for inclusive management and use of Gambia' natural resource base, effectively integrating climate change into all sub-sectors and across all scales, and mainstreaming gender, youth and climate risks and opportunities into national and sectoral frameworks through effective policy coordination and implementation.
- d) To build capacities of communities and ensure a sound resources base through participatory, equitable and pro-poor approaches to natural resources management and use that emphasise the meaningful inclusion of women and youth.
- e) To integrate community-based adaptation with ecosystem-based approaches to strengthen people's adaptive capacities and develop more climate-resilient livelihoods, by investing in sustainable natural resource management initiatives.

National agroforestry strategy for The Gambia (2022-2032)

The strategy aims to create an enabling environment for agroforestry adoption through policy mainstreaming and coordination, knowledge creation and management, strengthening of markets and incentives systems, and embedding inclusive governance that is representative of the voices and interests of all. The specific objectives are to:

1. Establish a policy and institutional basis for the wider promotion and adoption of agroforestry in The Gambia.
2. Enhance coordination in agroforestry programmatic designs and implementation to promote institutional collaboration.
3. Promote agroforestry knowledge generation, dissemination, monitoring and backstopping for effective adoption of context-appropriate agroforestry practices at scale.
4. Devise incentive and investment mechanisms for agroforestry through enhanced value chains promotion.
5. Create an enabling environment for inclusive participation of all stakeholders in agroforestry promotion and adoption, and the development of associated value chains.

National Pathways for Food Systems Transformation in Support of the 2030 Agenda (2021)

The Gambia's dialogues on the Food Systems, leveraging on the Summit's Action Tracks, established four Action Tracks: 1) Ensure access to safe and nutritious food for all and shift to sustainable consumption patterns 2) Boost nature-positive production and advance equitable livelihoods 3) Build resilience against vulnerabilities, shocks and stress 4) Enhance private sector participation in the Food Systems

National Nutrition Policy (2010-2020)

This Policy has as a goal to attain optimal nutritional requirements of The Gambian population, to assure a healthy and sustainable livelihood. The National Nutrition Policy will focus on the following priority areas:

- Improving maternal nutrition
- Promoting optimal infant and young child feeding;
- Improving food and nutrition security at the national, community and household levels;
- Improving food standards, quality and safety;
- Nutrition and infectious diseases;
- Preventing and managing micronutrient malnutrition;

- Preventing and managing diet-related Non-Communicable Diseases;
- Caring for the socio-economically deprived and nutritionally vulnerable;
- Nutrition and HIV/AIDS
- Nutrition in emergency situations
- Nutrition surveillance
- Research

The priority areas will be implemented through the Community Nutrition Programming, mainstreaming nutrition into development policies, strategies and programmes, policy Implementation Framework, promoting effective Nutrition Education and resource Mobilisation.

Fisheries and Aquaculture Strategy Action Plan (2017 – 2021).

The Fisheries and Aquaculture Policy is a national policy with a cross-sectoral approach. The overall goal of this Policy is to achieve ecologically and economically sustainable fisheries that ensures food and nutrition security for the population in a thriving and stable society.

This Policy lays down strategies to ensure that all people at all times have both physical and economic access to fish products to meet their dietary needs and food preferences for an active and healthy life. Food security will be ensured through the increase in fish production from capture fisheries and aquaculture, protection of fish stocks, sustainable marine and inland fisheries, reduced post-harvest losses and by-catch, increased trade of aquatic and fish products to meet the local demands, and the development of fisheries infrastructure.

5. Institutional arrangements and coordination

Many of the institutions that work on climate change and embrace action in the agri-food system fall under the Agriculture and Natural Resources (ANR) sector and the Civil Society Organisations (CSOs). At the national level, the Ministry of Agriculture (MOA) is responsible for the agricultural sector comprising crops and livestock sub-sectors. Its primary roles are the formulation of appropriate agricultural policies and planning, and also monitoring and evaluation within the overall national development framework.

Institutions engaged in climate change and food systems works are of three types: International development Partners in the UN Systems (i.e., FAO, WFP, UNEP); ANR sector organisations, and CSOs (including both international and local NGOs and Community-Based Organisations).

Institutions under the ANR sector are:

- Department of Agricultural Services (Extension, Food and Nutrition, Soil and Water Management, Agricultural Pest Management, Agricultural Communications, and Horticulture Units)
- Department of Livestock Services (DLS)
- Department of Planning (DoP); Agribusiness/ Co-operative; Department of Forestry
- Department of Parks and Wildlife
- Department of Fisheries
- Department of Water Resources and the National Environment Agency (NEA).
- Gambia's National Agricultural Research Institute (NARI)

Governance of the agriculture and food sector is vested in key public institutions comprising:

- The Ministry of Agriculture (MoA) which provides the overall supervisory, regulatory, policy guidance, coordination and monitoring and evaluation role for the public sector in agriculture. The Minister has ultimate responsibility and is assisted by Permanent Secretary I for policy issues and Permanent Secretary II for project implementation and administrative matters, the four deputies in charge of Programmes/Projects, Investment and External Relations, Administration and Finance and the Permanent Inter-State

Committee for Drought Control in the Sahel (CILSS) coordinate the overall strategic management of MoA and coordinates operational activities. It comprises the Department of Agriculture (DoA) with nine service agencies, National Agricultural Research Institute (NARI) and Department of Livestock Services (DLS).

- The Ministry of Environment, climate change and Natural Resources (MECCNAR), charged with the mandate of managing and conserving the environment whilst promoting the rational use of our natural resources and ecological heritage for the benefit of present and future generation. It has the Vision to achieving sustainable development by managing the country's natural resources through quality water management, biodiversity conservation and maintenance of environmental integrity. The Minister assisted by the Permanent Secretary, Deputy Permanent Secretary have overall responsibility for management and coordination. It comprises two technical departments and one agency: the Department of Forestry (DoF), the Department of Parks and Wildlife Management (DPWM) and the National Environment Agency (NEA).
- The Ministry of Water Resources, Fisheries and National Assembly Matters, charged with supervision, policy implementation and regulation of the water and fisheries resources. Headed by a Minister supported by a Permanent Secretary and Deputy; It comprises two technical departments: Department of Water Resources (DWR) and the Department of Fisheries.
- The National Nutrition Agency (NaNA), is the institution charged with coordination of nutrition related policies and programme and is under the purview of the Office of the Vice President. It is headed by an Executive Director assisted by a Deputy and a number of Programme and Specialist staff.

These institutions are served by a number of coordinating structures including:

- The Agriculture and Natural Resources (ANR) Working Group

The ANR Working Group has been established as one of the first technical Working Group for enhanced coordination of interventions within the ANR. It is co- chaired by the Permanent Secretary Ministry of Agriculture (MOA) and that of Natural Resources and the Environment with the National Environment Agency (NEA) as the Secretariat. The ANR Working Group has registered a number of successes since its inception. It has established a permanent body and forum, acting as a clearing house for the respective natural resource and environment sub sectors, ensuring co-ordination among the members (including Ministries, NGOs, and the private sector) in the area of environment and natural resources management. The process has created a permanent system for continuous consultation and dialogue among the stakeholders in order to ensure that sectoral programs are complimentary to maintain maximum impact from often limited resources.

- The National Nutrition Council (NNC)

The National Nutrition Council (NNC) has a 12-person membership, chaired by the Vice President, the Executive Director of NaNA serves as the Secretary. The rest of the membership, apart from the Chairman of the NaNA Board are Cabinet members. The Council has responsibility for ensuring overall policy implementation and review; advocacy for increased support for nutrition and ensuring political commitment to nutrition security.

- The National Assembly Select Committee on Agriculture

The National Assembly Select Committee on Agriculture provides lawful oversight over public sector enterprises and agencies, public services and projects. This is in view of the fact that Government and public services as well as public enterprises and agencies are all accountable to The Gambian tax-payers. In this regard, all public enterprises and agencies must submit their annual reports and audited financial statements to the National Assembly within three months of the end of each financial year.

- National Climate Change Committee (NCC)

The National Climate Committee (NCC), the body charged with decision and policy making for climate change. The NCC has representatives from both the public and private sectors with an open membership. The Committee has successfully coordinated the preparation three National Communications Reports. While membership comprised some highly experienced personalities on the subject of climate change, a key limitation is the high turnover of representations, with new members requiring training and updating, culminating in the loss of valuable time during meetings.

- Climate Change Council (NCCC)

The 2016 NCCP provides for the establishment of a National Climate Change Council (NCCC) comprising ministers with portfolios on climate change, foreign affairs, economic affairs, environment and natural resources, health and social welfare, basic and higher education, food security and agriculture, energy, disaster management, local governance, gender issues, youth affairs, with the possibility of further enlargement for greater inclusivity and successful execution of its functions. Among other functions, the NCCC is assigned with the responsibility of implementing the NCCP, coordinating related policy processes, fostering and strengthening international cooperation on relevant transboundary issues, and governing the Gambian Climate Change Fund (GCCF).

- Climate Change Secretariat

An institutionalised Climate Change Secretariat housed within the MECCNAR interfaces and works in close collaboration with 1) a national network of climate change focal points, 2) a national stakeholder forum, 3) sub-national administrative authorities, and 4) research clusters to catalyse knowledge integration and evidence-based decision-making; effective implementation of policies programmes, and projects; effective communication and information dissemination; and seamless coordination of policy processes and programme activities, under the supervision of a newly established Inter-Ministerial Climate Committee (IMCC).

- Inter-Ministerial Climate Committee (IMCC)

When fully functional, the IMCC, composed of the Permanent Secretaries and Directors of the line ministries represented in the NCCC, will meet once every three months, to review reports and documents submitted to the oversight body by the Climate Change Secretariat, take a lead role in setting short- and medium-term goals in the National Climate Change Response Strategy and Action Plan prepare documentation (policy briefs, updates, etc.) and recommendations for consideration by the NCCC. The IMCC is co-chaired by the Permanent Secretaries from the MECCNAR and MOFEA, the latter being the designated national authority (DNA) for the Green Climate Fund (GCF).

- The Gambia Chamber of Commerce and Industry (GCCCI)

The Gambia Chamber of Commerce and Industry (GCCCI) is a not-for-profit membership based private sector organisation. It engages government to inform policy, law and regulations in pursuit of a more business friendly environment. It also seeks opportunities from development partners and delivers them to Micro, Small and Medium businesses and entrepreneurs for the enhancement of their trade. GCCCI is also the secretariat for the National Business Council comprising of representatives from the private sector as well as members engaged in the agribusiness sector.

- Non-Governmental Organisations (NGOs)

A number of NGOs are operating at grass root level undertaking diverse interventions ranging from capacity building of producers, enhancing production and productivity of diversification crops to service delivery in savings and credit mobilization. Key NGOs intervening agriculture and the food/nutrition sector include ActionAid International The Gambia (AAITG), Universal Purpose (UP) and National Association of Women Farmers (NAWFA), Catholic Relief Services (CRS), Gambia Food and Nutrition Association (GAFNA), Agency for the Development of Women and Children (ADWAC) and Gambia Methodist Mission Agriculture

Program. Most NGOs operate under the umbrella of The Association of NGO in The Gambia (TANGO).

6. Priority actions for resilient food systems

Drawing from the desk revision, the case study focuses on the priority action/strategies identified in the national instruments and/or respond to barriers identified in literature or interviews with experts (Table 2).

Priority 1: Technology transfer for food resilient systems, including but not limited to conservation agriculture, tidal irrigation, aquaculture, water conservation, aquifer recharge, livestock management and land development. It is a priority to materialise international support on technology transfer in the five aspects that The Gambia has prioritised and that are closely related to the production of food, water availability and ecosystems conservation, which are important factors for the well-being and development for the rural and urban population.

Priority 2: Climate Change Adaptation through Nature-based solutions in the River Gambia Watershed. EbA has the potential to put The Gambia on a more climate-resilient and nature-positive pathway. While EbA may not be applicable in every instance, it can meet many of society's adaptation needs and priorities, while also conserving and restoring the ecosystems on which food systems depend. It can also help the country to make progress in multiple global objectives including not only climate change adaptation, but also climate change mitigation, biodiversity conservation and sustainable development more broadly. Therefore, in order to harness the full potential of EbA, it is a priority to increase the pace and scale of EbA implementation at the national and regional level, backed by supportive policies, regulations and financial resources.

Priority 3: Promotion of climate-resilient livestock, agri-food and fisheries value chains. Improving agriculture, livestock and fisheries resilience and productivity by promoting climate-smart measures and reducing food losses.

Priority 4: Prevention and management of food and nutrition crises. This priority encompasses three components of risk management, (i) support and strengthen the information and early warning systems on climate risks to food systems and develop the harmonised framework of analysis; (ii) support and strengthen capacity in community food reserves, establish a national food reserve and link the latter with the regional management; and, (iii) prevent food crisis, strengthen alerts systems, mitigate them and prepare responses that are dependent on quality information systems.

Priority 5: Support for market development and linkage facilitation for youth and women in the agri-food system. This priority focuses on capacity building, value addition and innovation to support gender-responsive climate-resilient strategies with special emphasis on food production, processing and/or commercialisation. Also, it is important to ensure youth have access to tools to enhance their livelihood systems.

Priority 6: Developing an enabling environment for climate resilience in The Gambia. This priority highlights the need to review and develop key policies, legislation, and institutions; mainstream climate resilience into national development planning and implementation; and initiate and/or develop coherent systems and strategies for climate finance, capacity development and research, climate services, and a national system for monitoring, evaluation, and research of climate resilience.

Priority 7: Climate-resilient land use mapping, planning and information systems. The national Land Use Plan for The Gambia has not been reviewed or updated since 1989 and it does not integrate any climate change considerations. It is necessary to develop, implement and enforce a national Land Use Plan that recognises the need for climate resilience and balances the cross-sectoral aspirations of all relevant stakeholders. The Land Use Plan would provide an environment to achieve rational, efficient, economical and

equitable use of resources in The Gambia, considering future growth and climate risks. This will enhance effective and participatory land use planning as well as ensure diversification of farming systems and crop production.

Priority	Instrument	Barriers
<p>Technology transfer for food resilient systems, including but not limited to conservation agriculture, tidal irrigation, aquaculture, water conservation, aquifer recharge, livestock management and land development.</p>	<ul style="list-style-type: none"> • National Climate Change Policy of The Gambia (Climate resilient food systems and landscapes) • SPCR (Pillar 3 and 4) • GNAIP II (Axis 1 and 3) • Adaptation Technology Needs Assessment (2017) 	<ul style="list-style-type: none"> • Insufficient cooperation for technology transfer, and knowledge sharing and co-production.
<p>Climate Change Adaptation through Nature-based solutions in the River Gambia Watershed</p>	<ul style="list-style-type: none"> • National Climate Change Policy of The Gambia (Climate resilient food systems and landscapes). • NDC2 • SPCR (Pillar 4) • GNAIP II (Axis 3) • Supplementary ANR Policy (2017) (Objective a and e) • The Agroforestry Strategy (2022-2032) • National Pathways for Food Systems Transformation in Support of the 2030 Agenda (2021) 	<ul style="list-style-type: none"> • Limited awareness and understanding of EbA among national and local policymakers, preventing its inclusion in policies, regulations and budgets. • Limited awareness and understanding of EbA among private sector actors, hindering its integration in risk management strategies and investments. • Lack of transboundary approaches for EbA at the basin level. • Uncertainty about the biophysical limits to ecosystems in a changing climate.
<p>Promotion of climate-resilient livestock, agri-food and fisheries value chains</p>	<ul style="list-style-type: none"> • SPCR (Pillar 3 and 4) • GNAIP II (All axis) • The Agroforestry Strategy (2022-2032) • National Pathways for Food Systems Transformation (2030) (Action Track 2,3 and 4) • Fisheries and Aquaculture Strategy Action Plan (2017 – 2021). 	<ul style="list-style-type: none"> • Lack of an enabling environment for cold chain development to reduce food loss and waste. • Insufficient access to Agricultural Risk Insurance for resilience building. • Lack of Incentives to producers to adopt and invest in climate-smart technologies and practices.
<p>Prevention and management of food and nutrition crises.</p>	<ul style="list-style-type: none"> • GNAIP II (Axis 3) • National Pathways for Food Systems Transformation (2030) (Action Track 1) • National Nutrition Policy (2010-2020) 	<ul style="list-style-type: none"> • Limited monitoring of food crisis risks does not allow to take early and preventative action to protect vulnerable populations in contexts affected by natural resource scarcity, and exposure to climate shocks. • Lack of an Adaptive social protection (ASP), an integrated approach that addresses the challenges of climate

		change by combining social assistance and disaster risk reduction strategies.
Support for market development and linkage facilitation for youth and women in the agri-food system:	<ul style="list-style-type: none"> • SPCR (Pillars 3 and 4) • GNAIP II (Axis 2) • National Pathways for Food Systems Transformation in Support of the 2030 Agenda (2021) 	<ul style="list-style-type: none"> • Marginal women's and youth participation across resource governance, agri-business development, and digital innovations.
Developing an enabling environment for climate resilience in The Gambia:	<ul style="list-style-type: none"> • SPCR (Pillar 1) • GNAIP II (Axis 4) • Supplementary ANR Policy (2017) (Objective a and c) 	<ul style="list-style-type: none"> • Lack of financial gap assessment for building climate resilient food systems in The Gambia, and therefore, limited reorientation and mobilisation of funds. • Insufficient investment in research and innovation to transform the agri-food systems through improved resilience. • Limited policy packages that shift consumption towards sustainable healthy diets and make them affordable for all. • Existing counterproductive incentives in agricultural, trade, and investment policies prevent the mobilisation of public and private finance for climate-positive food systems transformation.
Climate-resilient land use mapping, planning and information systems:	<ul style="list-style-type: none"> • National Climate Change Policy of The Gambia (Improve the urban and peri-urban infrastructure of the Gambia so that it is • climate resilient) • SPCR (Pillar 2) • NDC2 	<ul style="list-style-type: none"> • Lack of updated information and regulations that promote resilient urban and rural planning. • The national Land Use Plan for The Gambia has not been reviewed or updated since 1989 and it does not integrate any climate change considerations.

Table 2: Barriers and policy instrument related to the priority actions/strategies for resilient food systems in The Gambia

7. Relevant projects, programmes and initiatives contributing to the implementation of the priority actions

Drawing from the desk revision, previous and current projects were reviewed and linked to the main priority action to which they have mainly contributed. In some cases, one project contributed to two or more priority actions (i.e., ROOTS project) while in one case no direct contributing projects were found for a specific priority action (i.e., Priority 7). Additionally, very few projects contributed to the progress in the priority actions from the EbA approach. Complemented with the desk revision of the policy framework, this exercise will help identify progress and gaps in the implementation of the priority actions for food resilient systems.

Priority 1: Technology transfer for food resilient systems, including but not limited to conservation agriculture, tidal irrigation, aquaculture, water conservation, aquifer recharge, livestock management and land development.

Project	Contribution
Climate Resilient Fishery Initiative for Livelihood Improvement in the Gambia (PROREFISH Gambia) <i>Described below</i>	Under Output 2.2, the project will introduce aquaculture activities as adaptation measures for livelihood improvement of 2,800 smallholder rural households.
Resilience of Organisations for Transformative Smallholder Agriculture Project (ROOTS). <i>Described below</i>	Under Component 1. Agricultural productivity and adaptation to climate change, the project will carry out the following actions related to 3 of the 5 themes of the technology transfer priorities: (i) consolidate 1,300 ha of existing poorly performing tidal irrigation and develop 2,800ha of new tidal irrigation on existing agricultural lands; (ii) develop 200ha new wet-season valley water control cascaded dykes; (iii) develop 800ha new micro-catchments runoff control dykes; (iv) establish and strengthen Water User Management Units; and (v) upgrade 20km of causeways to access 800harice-growing swampy areas

Priority 2: Climate Change Adaptation through Nature-based solutions in the River Gambia Watershed

Project	Contribution
Large-scale Ecosystem-based Adaptation in The Gambia: Developing a climate-resilient, natural resource-based economy. Duration: 2017-2025 Implemented by: UNEP Financed by: GCF (USD 20,546,756)	The project aims to build climate resilience over large areas and promote climate-resilient sustainable development. This is achieved firstly by restoring degraded forests and agricultural landscapes with climate resilient plant species that provide valuable goods for consumption or sale. Secondly, the project is facilitating the establishment of natural resource-based businesses through a participatory process and management committees to manage the Gambian natural resource base sustainably. The project is also revitalising community structures such as the forest management committee. Finally, the project is providing strategic recommendations and technical support to strengthen the implementation of existing policies for the participatory management and benefit-sharing of a climate-resilient natural resource base, as well as integrating EbA into these policies. Local communities are engaged in the planning and design of activities that will

<p>Executing entity: MECCNAR Co-financed by: Government of The Gambia (USD 4,974,611)</p>	<p>lead to the sustainable management of natural resources, and the project is well aligned with national and subnational needs and priorities. There is evidence of a high level of coordination between stakeholders.</p>
<p>Climate Resilient Fishery Initiative for Livelihood Improvement in the Gambia (PROREFISH Gambia) Described below</p>	<p>Under component 1, Strengthening restoration capacity and community management of artisanal fisheries habitats, mangrove ecosystems will be sustainably restored in fisheries priority areas through community-led restoration plans.</p>

Priority 3: Promotion of climate-resilient livestock, agri-food and fisheries value chains

Project	Contribution
<p>Adapting Agriculture to Climate Change in the Gambia</p> <p>Duration: 2016-2022</p> <p>Executed by: Ministry of Agriculture (MoA), Department of Agriculture (DoA), Department of Livestock Services (DLS), National Agriculture Research Institute (NARI), National Environment Agency (NEA), Department of Water Resources (DWR), Women's Bureau (WB)</p> <p>Financed by: GEF</p> <p>Grant: USD 6,288,356 Co-financing: USD 36,830,000</p>	<p>The project aims to (i) strengthen the Government's efforts towards better responding to climate risks, (ii) promote adaptation measures at local level to reduce risk of economic losses (iii) diversify and strengthen beneficiaries' livelihoods and sources of income.</p> <p>Diversified livelihoods and sources of income for vulnerable households were improved by:</p> <ul style="list-style-type: none"> - Securing access to livelihood assets by establishing community gardens, honey production systems and rehabilitating poultry houses. - Conducting training for farmers on food processing, handling, preservation and business management. <p>Climate-resilient livelihoods were strengthened by promoting sustainable intensification of drought tolerant crops, and innovative crop improvement and management practices for Cassava and sweet potato.</p> <p>Management of rangelands improved and access to livelihood assets increased for livestock dependent communities. 10 deferred grazing areas established and reseeded with multipurpose grass/legume species, 10 intensive feed gardens established in each district, 6 livestock water points and demarcation of cattle tracks established.</p> <p>Management committees established in each intervention district (10 committees) for effective management of natural feed resources.</p>
<p>Climate Resilient Fishery Initiative for Livelihood Improvement in the Gambia (PROREFISH Gambia)</p>	<p>The project components are:</p> <p>Component 1: Strengthening restoration capacity and community management of artisanal fisheries habitats</p> <p>Component 2: Climate resilient fisheries infrastructure and aquaculture development</p> <p>Component 3: Improved climate change adaptive capacities</p>

<p>Duration: 2022-2028</p> <p>Implemented by: FAO</p> <p>Financed by: GCF</p> <p>Grant: USD 17,200,000</p> <p>Co-financing: USD 7,800,000</p>	
<p>Resilience of Organizations for Transformative Smallholder Agriculture Project (ROOTS).</p> <p>Duration: 2021-2027</p> <p>Implemented by: The government of Gambia</p> <p>Co-financing: IFAD – OFID – GEF LDCF – The French Development Agency – The government of Gambia</p>	<p>The main goal of ROOTS is to improve food security, nutrition and resilience of smallholder farmers to climate change in The Gambia. Its development objective is to increase agricultural productivity and access to markets for enhanced food security and nutrition and for the resilience of family farms and Farming Organisations. To achieve its objectives, the project will support targeted investments in infrastructure and the technical and organisational capacities of farmers’ organisations, particularly youth and women.</p>
<p>Rural Integrated Climate Adaptation and Resilience Building Project (RICAR)</p> <p>Duration: 2021-2025</p> <p>Implemented by: WFP</p> <p>Financed by: AF</p> <p>Grant: USD 10,000.000</p>	<p>The overall goal of the project is to enhance adaptive capacity of rural populations in The Gambia through support to climate-resilient and diversified livelihoods.</p> <p>The project aims to achieve this through the following three objectives:</p> <ol style="list-style-type: none"> 1. Develop knowledge and awareness to underpin evidence-based resilience building and adaptation activities, particularly for women and youth, and enhance capacity for systematic sub-national level adaptation planning (Component 1) 2. Implement concrete resilience building and adaptation measures in the project target areas (Component 2) 3. Develop incentives, targeting women and youth, and risk transfer mechanisms, targeting smallholder farmers, for sustainable resilience building and adaptive capacity (Component 3)

Priority 4: Prevention and management of food and nutrition crises

Project	Contribution
<p>Adapting Agriculture to Climate Change in the Gambia Described above</p>	<p>The project develops a draft National Early Warning Strategy (2021-2026) to enhance the dissemination of relevant risk information for timely decision making.</p>

<p>The Africa Integrated Climate Risk Management Programme: Building the resilience of smallholder farmers to climate change impacts in 7 Sahelian Countries of the Great Green Wall (GGW)</p> <p>Duration: 2021-2027</p> <p>Implemented by: International Fund for Agricultural Development</p> <p>Financed by: GCF</p> <p>Grant: USD 82,849.900M Co-financing: USD 60,477M</p>	<p>The objective of this programme is to build, strengthen and scale up the resilience and adaptive capacity of smallholder farmers and rural communities of seven Sahelian Least Developed Countries (LDCs) (Burkina Faso, Chad, Mali, Mauritania, Niger, Senegal and The Gambia) to climate change using an integrated climate risk management approach. This approach combines climate risk preparedness with climate risk reduction and climate risk transfer. In relation to preparedness, the programme will address the need to strengthen the hydrometeorological network and develop climate information and early warning systems that provide robust climate data to governments, smallholder farmers and other relevant stakeholders to enable them to make more informed decisions and adopt effective preventative and adaptive measures to reduce the risks and impacts of climate change and extreme weather events. This means adopting a forecast-based approach (FbA) to pre-plan early actions (adaptation/mitigation) in agriculture, forestry and land use – including renewable energy access and power generation at rural, community and government levels – based on credible forecasts, and fund and implement them before a climate shock strikes. The said climate risk preparedness actions will be combined with climate risk reduction measures aimed at enabling farmers to adopt best climate adaptation and mitigation practices. Data from the strengthened climate information and early warning systems (CIEWS) will inform farmers’ choices on the most effective and sustainable agricultural and resource management practices in their area’s climate conditions.</p>
<p>Strengthening climate services and early warning systems in The Gambia for climate resilient development and adaptation to climate change</p> <p>Duration: 2014-2022</p> <p>Implemented by: UNEP- UNDP</p> <p>Financed by: GEF</p> <p>Grant: USD 5,000,000 Co-financing: USD 21,510,000</p>	<p>The problem that this project seeks to address is that rural populations and major settlements are severely exposed to climate variability, climate extremes and erratic rainfall regimes. Long-term climate impacts are also likely to further erode the Gambia’s economic development opportunities and livelihoods.</p> <p>The Government of The Gambia’s long term preferred solution to climate change induced problems is thus to enhance the country’s capacity to gather and analyse climate and environmental information in order to inform its population about severe and extreme weather events as well as on long-term systemic change triggered by climate change through effective early warning systems. The project involves:</p> <ul style="list-style-type: none"> ▪ Establishing a functional network of meteorological and hydrological monitoring stations and associated infrastructure to better understand climatic conditions and changes at short, mid-term and long-term ranges; ▪ Strengthening the skills, competencies, standards and procedures required to run an effective hydro-meteorological system, and early warning network; ▪ Developing and disseminating tailored weather and climate information to government entities, private sector, civil society, development partners and local communities; and ▪ Supporting the uptake of climate information and integration of climate knowledge into local development plans.
<p>Post-crisis response to food and nutrition</p>	<p>The project will complement the National Nutrition Policy 2010-2020 coordinated by the National Nutrition Agency (NaNa), through promotion of optimal maternal, infant and young child feeding, promotion of</p>

<p>insecurity in The Gambia</p> <p>Duration: 2017-2020</p> <p>Implemented by: FAO-WFP-UNICEF</p> <p>Financed by: EU</p> <p>Grant: USD11,500,000</p> <p>Co-financing: USD 21,510,000</p>	<p>micronutrients and dietary diversity, prevention of stunting and treatment of acute malnutrition.</p> <p>Furthermore, the project will contribute towards the achievement of the objectives of the Gambia National Agriculture Investment Plan (GNAIP) especially in promoting access of youth, men and women, to quickly adopt appropriate agribusiness, entrepreneurial, leadership and management knowledge and skills.</p> <p>The objectives of the project are:</p> <ul style="list-style-type: none"> ▪ Improving food security: Promoting employment in the agricultural sector through cash for work programmes, and increased food diversification through processing and fortification of locally available food crops. ▪ Promotion of optimal nutrition and care practices: Promoting better nutrition and health outcomes among target groups, reduction of stunting through supporting household income, food diversification, treating acute malnutrition and promoting optimal care practices, particularly in areas worst affected.
<p>Gambia agriculture and food security project</p> <p>Duration: 2021-2026</p> <p>Implemented by: WFP- The Gambia country office</p> <p>Financed by: African Development Bank and Government of Gambia</p> <p>USD18,500,000</p>	<p>The purpose of the project is to increase food and nutritional security, as well as household income, particularly for the vulnerable households in five administrative regions of the Gambia, through the strengthening of the sustainable HomeGrown School Feeding (HGSF) Programme. The specific objectives of the project are: (i) structuring the food demand side (for school feeding) to match with the supply side (local production by smallholder farmers), (ii) improving smallholder's income and productivity by increasing food production, postharvest management, market access and resilience for identified food chains; and, (iii) promoting social protection and food safety net programs to reduce food and nutrition security of vulnerable populations in the project areas</p>

Priority 5: Support for market development and linkage facilitation for youth and women in the agri-food system

Project	Contribution
<p>Climate Resilient Fishery Initiative for Livelihood Improvement in the Gambia (PROREFISH Gambia)</p> <p><i>Described above</i></p>	<p>Within the component 3: Improved climate change adaptive capacities, the project acknowledges the differentiated needs of women and youth and proposes responsive activities to build their capacities for implementation of market driven adaptation measures. For example, through a 3-year gender and youth empowerment process for 600 households, and the implementation of a functional literacy and numeracy programme targeted to project female beneficiaries.</p>
<p>National Agricultural Land and Water Management Development (NEMA) program.</p>	<p>The aim of the project was to increase the incomes of rural women and young people, among 22,860 households, through improved productivity, based on sustainable land and water management practices in six regional agricultural directorates. It aims to support the commercialisation of rice and vegetable production by incentivising private sector participation. Further it strives to improve productivity of scarce agricultural lands through investments in land and water resources, vegetable gardens and</p>

<p>Duration: 2012-2020</p> <p>Financed by: IFAD</p> <p>Grant: USD 39,410,000</p> <p>Co-financing:</p> <p>Islamic Development Bank US\$ 15 million</p> <p>African Development Fund US\$ 17.7 million</p>	<p>access roads, coupled with farmers' capacity to manage their productive assets.</p> <p>Among the most highlighted outcomes of the project, the following were found:</p> <ul style="list-style-type: none"> ▪ Increased access to field and market roads crucial for sustainable agricultural value chain development in The Gambia: by providing year-round access to farmlands and markets, NEMA has enhanced the overall performance of rice and horticulture value chains. ▪ Viable producer organisations enable farmers to participate profitably along agricultural value chains in The Gambia: the project supported the revitalisation of producer organisations. ▪ Access to capital stimulates agricultural mechanisation and sustainable value chain development: the project implemented the Capital Investment Stimulation Fund (CISF) for increased value chain performance.
<p>Strengthening Adaptive Capacities to Climate Change through Capacity Building for Small Scale Enterprises and Communities Dependent on Coastal Fisheries in The Gambia .</p> <p>Duration: 2021-2024</p> <p>Implemented by: UNIDO</p> <p>Financed by: GEF</p> <p>Grant: USD 2,200,000</p> <p>Co-financing: USD 9,8621,000</p>	<p>The project aims to increase adaptive capacities and Climate Change resilience of coastal fisheries and dependent populations and enterprises by mainstreaming CC adaptive measures, demonstration and scaling up of climate resilient business models for value addition and employment along the fisheries value chain particularly targeting vulnerable youth and women, and supporting enhanced community empowerment.</p> <p>The project's components are:</p> <ul style="list-style-type: none"> ▪ Climate Change Adaptation (CCA) and Gender Equality for Adaptation measures mainstreamed into relevant sector policies and national strategies. ▪ Pilot demonstrations on resilience building for small scale fisheries dependent enterprises and populated coastal communities. ▪ Community empowerment and awareness raising on CCA in fisheries value chains.
<p>Resilience of Organizations for Transformative Smallholder Agriculture Project (ROOTS).</p> <p><i>Described above</i></p>	<p>Under Component 1. Agricultural productivity and adaptation to climate change, the project will carry out the following actions related to market development and linkage facilitation for women and youth in the agri-food system:</p> <p>Support (i) the access to various agricultural services (extension, input provision, financial education) with the focus on the promotion of Farmers' Field Schools for rice and vegetables; (ii) the emergence of 240 youth-led businesses that will mainly focus on the provision of services to the value chains; and (iii) capacity development of grassroots farmers' organizations (FOs) so that they develop services for their members, particularly women-led farmers organizations.</p> <p>Additionally, under Component 2. Access to markets, the project will:</p> <p>(i) provide agricultural value-chain interaction platforms (AVIPs) and the voice-based market information system introduced by NEMA will be scaled-up; (ii) the construction of markets and roads; and (iii) will support business ideas of 4Ps, particularly those focused on post-harvest and value addition elements.</p>

<p>Jobs, Skills and Finance (JSF) for Women and Youth Programme.</p> <p>Duration: 2018-2022</p> <p>Implemented by: UNCDF</p> <p>Funded by: EU</p> <p>Budget: EUR 16,000,000</p>	<p>The Programme’s overall objective is to reduce poverty through improved inclusive and sustainable growth and employment. This programme will contribute to stabilising the economic, social and security situation of the country by facilitating social inclusion and employment of the youth and women, with a specific emphasis on promoting gender equality and addressing climate change.</p> <p>The JSF Programme uses the Local Climate Adaptive Living facility (LoCAL), and its innovative system of Performance Based Climate Resilience Grants to create jobs, particularly in the green economy. LoCAL supports local governments and communities in identifying needs in priority sectors and planning investments accordingly.</p> <p>Additionally, the program improves opportunities in education and skills development for women, youth and MSMEs by providing support to local training providers to improve the quality, and accessibility of vocational training schemes offered to youth and women.</p> <p>Finally, JSF aims to address the policy-and market level barriers that hinder financial inclusion. JSF works to strengthen the capacity of Financial Services Providers (FSPs) and policy-makers to help design the relevant environment leading to affordable, appropriate and responsible financial services for underserved populations, with a focus on youth, women and rural areas.</p>
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Priority 6: Developing an enabling environment for climate resilience in The Gambia

Project	Contribution
<p>Integrating Agriculture in National Adaptation Plans (NAP-Ag) Programme</p> <p>Coordinated by: UNEP and FAO</p> <p>Launched in: 2018</p>	<p>The program aims to Identify and integrate climate adaptation measures into national planning and budgeting processes, in support of achieving the Sustainable Development Goals and the Paris Agreement in 11 countries.</p> <p>NAP-Ag activities in the Gambia focused on; (1) strengthening individual and institutional coordination and capacities on hydroclimate information and gender-sensitive NAP process for agricultural sectors; (2) updating and mobilizing resources for the NAP roadmap, including climate-sensitive budgeting and reviewing and updating the Agriculture and Natural Resources policy and The Gambia National Agriculture Investment Plan; (3) improving evidence-based results for NAPs through training on cost-benefit analysis and monitoring and evaluation of gender-sensitive adaptation options in agricultural sectors; and (4) outreach, knowledge-sharing and advocacy on NAPs.</p>

Priority 7: Climate-resilient land use mapping, planning and information systems

Project	Contribution
<p>Land/Seascape planning and restoration to improve ecosystem services, and livelihoods, expand and effectively</p>	<p>To create an enabling environment for The Gambia in building national capacity to lead the reform of land use and marine spatial planning policies and to implement land/seascape level management that conserves ecosystem services in productive and protected land/seascapes.</p>

manage protected areas Duration: 2017-2022 Implemented by: UNEP Funded by: GEF USD 5,644,685 Co-finance: USD 19,797,260	
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8. Entry points for the work of the CRFS Alliance

The review of policy framework and complementary instruments related to climate change and food systems in The Gambia show that despite the complexity of both issues, the country is working on the integration of different agendas in order to have a more systemic approach to climate resilience in food systems.

The Climate-Resilient Food Systems (CRFS) alliance provides a framework for food systems transitions that deliver resilience to climate, shocks and stresses, protect biodiversity and ecosystems' services, reduce poverty and enhance social, gender, equity and North-South & inter-generational justice.

The table below outlines the entry points in relation to the Country Priority Actions, and how the CRFS alliance can mobilise its expertise to advance progress in the specific areas.

Priority	CRFS Alliance - Entry points
Priority 1: Technology transfer for food resilient systems, including but not limited to conservation agriculture, tidal irrigation, aquaculture, water conservation, aquifer recharge, livestock management and land development.	Support south-south and north-south cooperation and collaboration for the development/transfer of adaptation technologies for resilient food systems. The CRFS Alliance can call for state and non-state actors to support adaptation technology transfer and help channel the implementation of the technologies through the work of the member organisations that are already implementing projects that involve climate-resilient agriculture, aquaculture, tidal irrigation aquifer management, livestock management and land development in the country. Thus, reducing time and financial resources in the process of capacity building and appropriation of the technologies by smallholder farmers and other actors in the value chain.
Priority 2: Climate Change Adaptation through Nature-based	Promote cross-sectoral and transboundary coordination for up-scaling EbA to the Gambia River basin, bringing the water, energy, food nexus to the conversation.

<p>solutions in the River Gambia Watershed</p>	<p>UNEP has implemented the biggest EbA project in the country. As key partner of the CRFS Alliance, UNEP could bring the lessons learned to make the case for positioning EbA as a cost-effective strategy at the transnational level.</p>
<p>Priority 3: Promotion of climate-resilient livestock, agri-food and fisheries value chains</p>	<p>Collect lessons learned and identify opportunities and barriers that projects and initiatives faced, and inform the NAP Process and other adaptation planning instruments on the enabler conditions that diverse actors of the food systems need for the effective, long-term, gender responsive promotion of climate-resilient livestock, agri-food and fisheries value chains, with a special emphasis on Nature-based solutions.</p> <p>The CRFS alliance can help build the bridge between local action and national planning by promoting the integration of Nature-based solutions, supporting participatory processes and sharing lessons learned.</p>
<p>Priority 4: Prevention and management of food and nutrition cyclical crises.</p>	<p>Co-production of climate services and early warning systems</p> <ul style="list-style-type: none"> • Increase efficiency and reliability • Promote uptake by and communication to diverse stakeholder of the Agri-food system. <p>The CRFS Alliance is working on creating partnerships (i.e., with Insu-Resilience, REAP and FAO) to advance early warning systems with early or anticipatory action and climate risk insurance to strengthen the preparedness, food security and financial resilience of the most vulnerable communities.</p> <p>CRFS Alliance’s members have experience in DRR projects in The Gambia. For example, UNEP implements the Strengthening climate services and early warning systems in The Gambia for climate resilient development and adaptation to climate change project. The CRFS Alliance could articulate the work of member organisations to support initiatives that continuously improve the climate services and the uptake of knowledge and information by the communities.</p> <p>For example, the Alliance can support the National Government with the expertise of organisations like FAO, UNDRR and UNEP to enhance the draft Early Warning Strategy (2021-2026) to promote a comprehensive approach to Disaster Risk Reduction, Climate Risk Management, and responses to crisis, including food and nutrition crisis. The Alliance can also support the capacity building for the implementation of the strategy.</p>
<p>Priority 5: Support for market development and linkage facilitation for youth and women in resilient agri-food system:</p>	<p>Promote cross-sectoral approach to private sector engagement in resilient food systems.</p> <p>Private sector actors are essential to build resilient food systems. However, up-to-date information on their role and initiatives is scarce. Little is known about their drivers for engagement, the extent and type of impact of their interventions, their needs for support and enabling policy environments.</p> <p>Many of the projects in implementation are already working on the engagement of women and youth in climate resilience at different points of the value chain. However, there is a need for promoting the engagement and support from the private sector in these climate resilient strategies.</p> <p>The CRFS alliance has partners like UNCDF, with strong presence and experience in unlocking the access of women and youth to finance to increase their climate resilience in the agri-food sector, and in parallel, increasing the engagement of financial institutions in promoting SME’s adaptation action. This work can be up scaled in collaboration with other CRFS alliance partners with experience in microfinance for resilience in Africa (i.e., UNEP through the project Microfinance for EbA).</p>

<p>Priority 6: Developing an enabling environment for climate resilience in The Gambia:</p>	<ul style="list-style-type: none"> • Support access to climate finance • Support the NAP process • Inform instruments at the subnational level. <p>The CRFS alliance could mobilize partners to upgrade the work on analysis of climate change adaptation options to inform sectoral and adaptation plans.</p> <p>In addition, the CRFS alliance could mobilise partners to continue the work of NAP-Ag in the NAP process, also linking other aspects of the food systems beyond production.</p>
<p>Priority 7: Climate-resilient land use mapping, planning and information systems</p>	<p>Support the design, update and enhancement of the concept note for this priority action developed under the Strategic Programme for Climate Resilience and support the mobilisation of resources.</p> <p>The alliance can also promote technical dialogues in which the work of partners in resilience building could inform the integration of climate change considerations in the updated land-use plan and regulations.</p>

Table 3: The CRFS entry points in relation to The Gambia’s Priority Actions.

9. Bibliography

- Alvar-Beltrán, J. *et al.* (2020) “Farmers’ perceptions of climate change and agricultural adaptation in Burkina Faso,” *Atmosphere*, 11(8). doi: 10.3390/ATMOS11080827.
- Atindana, S. A. *et al.* (2020) “Coping with climate variability and non-climate stressors in the West African Oyster (*Crassostrea tulipa*) fishery in coastal Ghana,” *Maritime Studies*, 19(1), pp. 81–92. doi: 10.1007/s40152-019-00132-7.
- Avadi, A. *et al.* (2020) “Fisheries value chain analysis in The Gambia,” *Value Chain Analysis for Development*, p. 139.
- Barbier, J. *et al.* (2018) “Detection of intraseasonal large-scale heat waves: Characteristics and historical trends during the Sahelian spring,” *Journal of Climate*, 31(1), pp. 61–80. doi: 10.1175/JCLI-D-17-0244.1.
- Bett, B. *et al.* (2017) *Effects of climate change on the occurrence and distribution of livestock diseases*, *Preventive Veterinary Medicine*. Elsevier B.V. doi: 10.1016/j.prevetmed.2016.11.019.
- Boone, R. B. *et al.* (2018) “Climate change impacts on selected global rangeland ecosystem services,” *Global Change Biology*, 24(3), pp. 1382–1393. doi: 10.1111/gcb.13995.
- Cheung, W. W. L. *et al.* (2016) “Marine Resources To Climate Change,” *ICES Journal of Marine Science*, 73, pp. 1283–1296.
- Das, R. *et al.* (2016) “Impact of heat stress on health and performance of dairy animals: A review,” *Veterinary World*, 9(3), pp. 260–268. doi: 10.14202/vetworld.2016.260-268.
- Department of Livestock Services (2017) “Livestock Census.”
- Duguma, L. A. *et al.* (2020) *Diagnostic and a Baseline Study for Implementing Ecosystem-based Adaptation in Rural Landscapes of The Gambia*. Nairobi.
- ECOWAS Commision (2018) “Country Risk and Vulnerability Assessment,” (January), pp. 121–138. doi: 10.4324/9781315145891-5.
- FAO (2016) “AQUASTAT.”
- FAO (2018) “Climate-Smart Agriculture in the Gambia,” *The Food and Agricultural Organisation*, p. 26.
- FAO (2021) *Regional Overview of Food Security and Nutrition Statistics and Trends*.
- FAO (2022) *The Gambia Food Systems Profile-The Gambia: Catalysing the sustainable and inclusive transformation of food systems*.
- Gambia Bureau of Statistics (2017) “Integrated Household Survey 2015/6 - Prevalence and Depth of Poverty,” III(October).
- Gambia Bureau of Statistics (GBoS) and ICF (2021) “The Gambia Demographic and Health Survey 2019-20.”
- Golden, C. D. *et al.* (2016) “Fall in Fish Catch Threatens Human Health.,” *Nature*, 534, pp. 317–320.
- Gomez, M. L. A. *et al.* (2020) “Vulnerability to coastal erosion in The Gambia: Empirical experience from Gunjur,” *International Journal of Disaster Risk Reduction*, 45(December 2019), p. 101439. doi: 10.1016/j.ijdrr.2019.101439.
- Government of The Gambia (2007) “Gambia National Adaptation Programme of Action (NAPA) on Climate Change,” (November), p. 105.
- Government of The Gambia (2019a) “Country Strategic Opportunities Programme 2019-2024,” *Note to Executive Board representatives Focal points: Executive Board-126 th Session . Rome*, pp. 1–66.

- Government of The Gambia (2019b) “The Gambia Second Generation National Agricultural Investment Plan-Food and Nutrition Security (GNAIP II-FNS) 2019-2026,” *The Government of the Gambia*, pp. 1–133.
- Government of The Gambia (2020) “Third National Communication of the Gambia under the UNFCCC,” (July), p. 128.
- Harrod, C. (2015) *Climate change and freshwater fisheries, Freshwater Fisheries Ecology*. doi: 10.1002/9781118394380.ch50.
- IFAD (2019) “The Gambia: Resilience of Organizations for Transformative Smallholder Agriculture Programme,” (15).
- IPCC (2022) *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge. Edited by S. L. H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig and B. R. S. Löschke, V. Möller, A. Okem. Cambridge, UK and New York.
- Jaiteh Malanding, S. (2010) “Climate Change and Development in the Gambia Challenges to Ecosystem Goods and Services,” (May 2011), p. 57. doi: 10.13140/2.1.1731.1040.
- Jin, C., Wang, B. and Liu, J. (2020) “Future changes and controlling factors of the eight regional monsoons projected by cmip6 models,” *Journal of Climate*, 33(21), pp. 9307–9326. doi: 10.1175/JCLI-D-20-0236.1.
- MCCNR (2021) “Second Nationally Determined Contribution of The Gambia,” pp. 1–35.
- MECCNAR - FAO (2018) *Feasibility study on establishing financially viable natural resource-based businesses in The Gambia*. Banjul.
- Ministry of Environment, C. C. and N. R. (2022) “The Gambia`s Long-term Climate-neutral Development Strategy 2050,” pp. 1–84.
- Ministry of Women Children and Social Welfare (MWCSW) (2020) *Institutional Assessment of Ministry of Women, Children and Social Welfare*. Banjul.
- Nardone, A. *et al.* (2006) “Climatic effects on productive traits in livestock,” *Veterinary Research Communications*, 30(SUPPL. 1), pp. 75–81. doi: 10.1007/s11259-006-0016-x.
- Nget, S. *et al.* (2011) “The Gambia – National Forest Assessment 2008-2010,” p. 131.
- Njie, M. *et al.* (2012) “Making economic sense of adaptation in upland cereal production systems in The Gambia,” *Climate Change and Adaptation*, (May 2014), pp. 131–146. doi: 10.4324/9781849770750.
- Ortiz-Bobea, A. *et al.* (2021) “Anthropogenic climate change has slowed global agricultural productivity growth,” *Nature Climate Change*, 11(4), pp. 306–312. doi: 10.1038/s41558-021-01000-1.
- Planning Services Unit (PSU) (2020) *Five year prices of cereal in The Gambia*. Banjul, The Gambia.
- Republic of The Gambia (2016) *Technology needs assessment report – Adaptation*.
- Republic of The Gambia (2021) “The Gambia 2050 Climate Vision,” (March), pp. 1–22.
- Republic of The Gambia and World Food Programme (2021) “State of Food Security in The Gambia: Comprehensive Food Security and Vulnerability Analysis,” (October), pp. 1–107.
- Sarré, A. *et al.* (2018) “Spatial distribution of main clupeid species in relation to acoustic assessment surveys in the continental shelves of Senegal and the Gambia,” *Aquatic Living Resources*, 31. doi: 10.1051/alr/2017049.

- Stanimirova, R. *et al.* (2019) “Sensitivity of Global Pasturelands to Climate Variation,” *Earth’s Future*, 7(12), pp. 1353–1366. doi: 10.1029/2019EF001316.
- The Gambia Livestock Marketing Agency (GLMA) (2020) *Livestock Price Extracts 2020*. Abuko, The Gambia.
- The World Bank Group (2021) *No Title, The World Bank in The Gambia*. Available at: <https://www.worldbank.org/en/country/gambia/overview>.
- Ukkola, A. M. *et al.* (2020) “Robust Future Changes in Meteorological Drought in CMIP6 Projections Despite Uncertainty in Precipitation,” *Geophysical Research Letters*, 47(11), pp. 1–9. doi: 10.1029/2020GL087820.
- Wasteaid (2021) “Women tackling The Gambia’s waste problem.”
- WFP (2016) *Comprehensive Food Security and Vulnerability Analysis (CFSVA) - The Gambia*. Rome.
- World Bank (2021) “World Development Indicators.”
- World Food Programme (WFP) (2020) “Evaluation Report, An evaluation of nutrition programme activities in The Gambia.”