



THE GAMBIA STRATEGIC PROGRAMME FOR CLIMATE RESILIENCE: PHASE 1

Strategic Programme for Climate Resilience (SPCR) Volume I: Main Report *Draft for Review and Validation 24th April 2017*

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The findings, conclusions and interpretations expressed in this document are those of the consultant(s) and should in no way be taken to reflect the policies or opinions of the MoECCNAR or the AfDB.

Foreword and acknowledgements – to be added

Programme Summary

To be added after validation of SPCR components

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List of Acronyms

AfDB	African Development Bank
ANR	Agriculture and Natural Resources
ASPA	Agribusiness Services and Producers Association
BIA	Banjul International Airport
BOT	Build-Operate-Transfer
CC	Climate Change
CCA	Common Country Assessment
CSA	Climate Smart Agriculture
DRR	Disaster risk reduction
EbA	Ecosystem-based Adaptation
ECOWAS	Economic Community of West African States
EIF	Enhanced Integrated Framework
EU	European Union
FDI	Foreign Direct Investments
GAfsp	Gambia Agriculture and Food Security Project
GAMWORKS	Gambia Agency for Management of Public Works
GBoS	Gambia Bureau of Statistics
GCAA	Gambia Civil Aviation Authority
GCCA	Global Climate Change Alliance
GCCI	Gambia Chamber of Commerce and Industry
GCF	Green Climate Fund
GD	Gambian Datum (for topographic survey elevations)
GDP	Gross Domestic Product
GEF	Global Environment Fund
GIEPA	Gambia Investments and Exports Promotions Agency
GIS	Geographic Information System
GLF	Government Local Fund
GLFS	Gambia Labour Force Survey
GMD	Gambian Dalasi
GoTG	Government of The Gambia
GTB	Gambia Tourism Board
GTHI	Gambia Tourism and Hospitality Institute
ICT	Information and Communications Technology
ICT4D	Information and Communications Technology for Development
IFAD	International Fund for Agricultural Development
IFMIS	Integrated Financial Management Information System
IITA	International Institute for Tropical Agriculture
ILO	International Labour Organization

The Gambia Strategic Programme on Climate Resilience Phase 1 (SPCR)

IPPs	Independent Power Producers
ISO	International Organization of Standardization
ISRT	Inter-State Road Transit
ITCZ	Inter-Tropical Convergence Zone
LPG	Liquefied Petroleum Gas
MDGs	Millennium Development Goals
MFIs	Micro-Finance Institutes
MoTIE	Ministry of Trade, Industry and Employment
MoU	Memorandum of Understanding
MoWTI	Ministry of Works and Transport Infrastructure
MSME	Micro Small Medium Enterprises
NAWEC	National Water and Electricity Company
NCAC	National Council for Arts and Culture
NCC	National Climate Change Communications
NICI	National Information and Communications Infrastructure
NRA	National Roads Authority
OMVG	Organisation pour la Mise en Valeur du fleuve Gambie (Gambia River Basin Development Organization)
PAGE	Programme for Accelerated Growth and Employment
PPCR	Pilot Programme for Climate Resilience
PPPs	Public Private Partnerships
PSP	Profit Sharing Plan
PURA	Public Utilities Regulatory Authority
PV	Photovoltaic
SDGs	Sustainable Development Goals
SME	Small Medium Enterprises
SPCR	Strategic Programme for Climate Resilience
SPS	Sanitary and Phyto –Sanitary Standards
T&D	Transmission and Distribution
TBT	Technical Barriers to Trade
TV	Television
TVET	Technical and Vocational Education and Training
UK	United Kingdom
UNDP	United Nations Development Programme
UNESCO	United Nations Educational Scientific Cultural Organization
UNIDO	United Nations Industrial Development Organization
VISACAS	Village Savings and Credit Association
WB	World Bank
WTO	World Trade Organization

Part 1 Background and Rationale

1.1 Introduction

The Gambia is among a second round of countries selected to prepare their Strategic Programme for Climate Resilience (SPCR) under the Pilot Programme for Climate Resilience (PPCR), which forms part of the Climate Investment Funds. To that effect, a US\$1.5 million grant was approved to support the preparation of the SPCR, through the African Development Bank (AfDB) and in collaboration with the World Bank (WB).

The Ministry of Environment, Climate Change and Natural Resources (MoECCNAR) is the national focal point for the PPCR, and the lead Government Agency to guide the elaboration of the SPCR process. The SPCR preparation grant received from the AfDB is channelled through the Ministry of Finance and Economic Affairs. Other key institutions involved in the PPCR process include the National Environment Agency, the Ministry of Agriculture, the National Disaster Management Agency (NDMA), the Ministry of Petroleum and Energy, the Department of Water Resources, the Department of Forestry, as well as Civil Society Organizations, and the private sector.

The PPCR takes on a programmatic approach that supports Governments to undertake consultations to develop the SPCR in a participatory manner, support of strategic programs nested in national development goals and strategies for use in climate investment programming. The PPCR is implemented in two phases. Phase 1 involves the preparation of a Strategic Programme for Climate Resilience (SPCR) to be submitted for PPCR Sub-Committee endorsement in May 2017. Typical activities under this phase include vulnerability analysis from climate risks, institutional analysis, awareness raising, capacity building, stakeholder consultations, and investment prioritization. Phase two involves the implementation of the SPCR with grants and concessional loans, usually from PPCR. However, at present, the PPCR lacks sufficient funding to finance the projects and programs that may be proposed in the new SPCRs. In light of this, the new pilot countries are expected to design their SPCRs to attract funding from other sources, including the Green Climate Fund (GCF), in addition to any resources that may become available in the PPCR.

The PPCR design recognizes that creating an enabling environment, including integration of climate resilience considerations into development/sectoral planning and strengthened institutions, is essential for successfully responding to climate risks by the public and private sector. The Strategic Programme should therefore outline the government's agreed long-term vision to achieve a climate resilient development trajectory and a critical path to accomplish it. This should include consideration of vulnerable economic sectors, specific social groups (including women, youth, indigenous peoples, and local communities), and ecosystems. The Strategic Programme summarizes the country-driven strategic approach to climate resilience, building on related relevant efforts, and define the underlying investment programs proposed for PPCR support.

The development of the SPCR was launched with a joint scoping mission (from 1-5 February 2016) of AfDB and World Bank and various stakeholders, under the auspices of the MoECCNAR, which identified five priority themes: (i) climate resilient agriculture and rural livelihoods; (ii) climate resilient coastal, transport, and urban infrastructure; (iii) water supply, sanitation, and waste management; (iv) capacity building; and (v) climate services value chain. These priority themes served as a basis for the launching the preparation of The Gambia's SPCR.

This main report is Volume I of a three volume SPCR report. Volume II contains the Concept Notes for the proposed SPCR investments, while Volume III contains Supplementary Material.

1.2 Participatory process to develop the SPCR

The programming phase of the SPCR is used to develop an investment plan that targets investments in line with, and which reinforce, national development priorities. The Gambia's SPCR has been developed through constructive consultations between the country government, development partners and key stakeholders, including civil society, indigenous peoples and the private sector. This inclusive approach helps to mainstream an understanding of climate change in society.

The work carried out in the SPCR Phase 1 uses the vision, principles and goal of the NCCP to guide the overarching approach.

However, while the NCCP concerns all sectors of development and society, the SPCR focuses on defining priority investments within the key climate resilience priorities as reconfirmed in the Aide Memoire of the First Joint Mission for the PPCR, 21 – 26 November:

1. **Climate resilient food and landscapes:** Agriculture, food security, forestry and natural resources, including water, biodiversity and wildlife
2. **Low emissions and resilient economy:** Energy, transport, infrastructure, and the key economic sectors of tourism and financial services
3. **Climate resilient people:** Health, education, equitable social development, migration and human settlements, including climate proof urban planning and waste management, climate information and early warning system
4. **Managing coastlines in a changing environment:** climate-aware Integrated Coastal Zone Management, including coastal erosion management
5. **Infrastructure and waste management:** developing climate proof infrastructure, sanitation and solid waste management

Cross cutting issues for the SPCR are:

- Capacity development, including coordination mechanisms and capacity, climate data and services (including short and medium term forecasting), human resources, outreach and awareness raising, and analytical and modelling capacity, ICT, CSO participation, project management, monitoring, evaluation, and reporting.
- Gender, youth, health, and tourism.

The SPCR preparatory process has been guided by a multistakeholder Technical Team set up by the MoECCNAR to ensure a country-driven SPCR and to provide a high-level forum for stakeholder consultation. The Technical Team was constituted through the nomination of climate change Focal Points and alternates from 25 key institutions. The MoECCNAR convened two meetings of the Technical Team during the two-month process to develop the SPCR; Technical Team members were also present at some of the regional consultations, as well as at the National Validation Workshop.

The following is a summary of the extensive consultations process held to develop the SPCR. Please see Annex 2, as well as the Inception Report and the Stakeholder Consultation Plan, for additional details.

Stakeholder/scoping consultations in the Greater Banjul Area (GBA) included meetings with women, youth, indigenous peoples, NGOs and CBOs, as well as government and private sector. Please see Annex 3 for the list of participants in the GBA. Additionally, the SPCR preparatory process included regional consultations held in each of the regions of North Bank Region (NBR), Central River Region (CRR), Upper River Region (URR), Lower River Region (LRR), West Coast Region (WCR); as well as a regional consultation for the Banjul and Kanifing areas. See Volume II for reports on the regional consultations, as well as participant lists. The scoping and stakeholder consultations were extremely useful in identifying key gaps and priorities for the SPCR, and the SPCR investment programmes respond strongly to stakeholder gaps and priorities. The consultations also provided the opportunity for additional sensitisation on climate change risks and realities, as well as information sharing on the aims and approach of the SPCR.

1.3 Country context

The Gambia is a small West African state of 11,360 km² situated along the Gambia River, surrounded by the Atlantic Ocean to the west, and the country of Senegal along all other borders. The country sits within the Soudan-Sahel, the meridional transition zone between the semi-arid Sahel with the Sahara Desert further north, and the more southerly forest regions of West Africa. Rainfall is largely seasonal, the majority falling during the months of June to October at the time of the northward-most departure of the Inter-Tropical Convergence Zone (ITCZ) across Africa. Much of Gambia's rainfall comes from squall lines (lines of intense thunderstorms) associated with systems that form over the Ethiopian Highlands under the influence of the sub-tropical jet stream emanating from the Indian monsoon and thence move westwards; these systems continue out across the Atlantic Ocean some ultimately forming into hurricanes that may strike the Caribbean or North America. Given this, major factors determining inter-annual rainfall variations over The Gambia are changes to varying degrees in tropical sea surface temperatures in all three ocean basins, a system that includes influences from El Niño/Southern Oscillation (ENSO).

Located on the flood plain of the Gambia River, and flanked by savannah and low hills, the highest elevation is 53 metres above sea level.¹ The country has 80 km of open ocean coast and approximately 200 km of sheltered coast within the tidal reaches of the River Gambia. Its rich biodiversity is due to the combination of its geographical position and the central presence of the River Gambia.² However, habitat destruction as a result of urbanization, cultivation, uncontrolled burning, and wood utilization has led to local species extinction and degradation of ecosystem services. Comparison of the most recent forest inventory against earlier records reveals a declining forest cover from 505,300 hectares in 1981/1982 to 423,000 hectares in the 2009/2010 forest inventory.

¹ GoTG (2012) The Gambia's Second National Communication under the United Nations Framework Convention on Climate Change. Ministry of Forestry and the Environment, Banjul, 113p.

² GoTG (2014b) The Fifth National Report to The Convention on Biological Diversity. May, 2014. Wildlife Management Headquarters, Abuko, The Gambia.

The total population in 2013 was approximately 1.9 million, with an annual growth rate of about 3%, linked to a high birth rate and a decline in the infant mortality rate; around 40% of the population is between 13 and 30 years of age.³ Classified as a Least Developed Country (LDC), The Gambia is one of the poorest countries in Africa, ranking 165th out of 187 countries in the Human Development Index (HDI) in 2013. The GNI per capita is USD 450.⁴ According to the PAGE I, GDP per capita increased by an average of 4.5% per year from 2008 to 2011. The country retains a high ratio of external debt to GDP (around 43% in 2012).

Despite reducing poverty by almost 10 percentage points over a seven-year period, to a national average of 48.4%, many in the rural areas have not felt these gains: the urban poverty rate is 32.7%, compared to 73.9% in the rural areas.⁵ Regional variations in the poverty headcount⁶ mean that some areas record extremely high levels: approximately 9 out of every 10 households are multi-dimensionally poor in the Kuntaur LGA, and deprived of over half of the basic needs; similarly, the Janjanbureh LGA has an average poverty headcount of about 85%.⁷

The significantly higher poverty rates in rural areas exacerbate the current rural-urban migration trend, which, together with population growth and urban migration (58% urban population currently), place high demands on housing, sanitation, food, energy and other services. Unplanned urbanization is currently resulting in significant deterioration in ecosystem services and threats to human health. Moreover, The Gambia shows the second highest share from the West African Region of irregular migration, especially of the youth, to Italy, with 7,765 arrivals between January and August 2016 alone, representing a 40% increase from 2015.⁸ Most migrants are reportedly male, between the ages of 18 and 47, and are averagely educated. The vast majority of migrants leaving the country, however, remain within the West African region.

The adult total literacy rate is 52%.⁹ While the education sector has abolished all forms of fees and levies in public basic and secondary schools to promote access to education, there are concerns about quality and high drop-out levels: of those who started grade one in 2015, 54% will be expected to reach grade 6, 43% grade 9 and only about 21% to reach grade 12.¹⁰ The Gambia has made significant strides in putting in place the legislative and institutional framework to promote gender equality since 2012; however, socio-cultural beliefs and practices continue to hinder the full acceptance of women and their meaningful participation in decision making. Access to land and assets remains limited for women, requiring urgent action.

Agriculture remains the most important sector of the Gambian economy, contributing 32% of GDP, and providing employment and income for at least 75% of the rural population. The tourism industry contributes 12% - 16% of GDP, supports over 35,000 direct and 40,000 indirect jobs, and generates US\$ 85 million in foreign exchange earnings. According to the PAGE II, services accounted for the remaining – and majority – percentage of GDP, with transport, communications, retail and finance being the main components. The fast-growing Information, Communication and Telecommunication (ICT) sub-sector is a major contributor to the services sector. Trade has traditionally played an

³ GBOS, 2013, National Census.

⁴ Source: IFAD, 2014 figures, Atlas method, <http://www.ruralpovertyportal.org/country/statistics/tags/gambia> accessed 13 April 2017.

⁵ PAGE II, Draft, 2017-2020, GoTG.

⁶ Although the intensity of deprivation is fairly stable across the country.

⁷ Integrated Household Survey of 2010 and the Light Poverty study of 2014

⁸ http://ec.europa.eu/europeaid/sites/devco/files/t05-eutf-sah-gm-02_-_migration.pdf accessed 13 April 2017.

⁹ Source: IFAD, 2012 figures, <http://www.ruralpovertyportal.org/country/statistics/tags/gambia> accessed 13 April 2017.

¹⁰ GoTG, 2016, Education Sector Policy 2016-2020

important role in the economy, with exports largely comprising re-exports; domestic goods account for only 5% of merchandise exports. The country remains an important supplier of foreign-manufactured goods and other essential items to the sub-region. Locally produced goods include groundnuts, and to a lesser extent cashews and fisheries exports.

Approximately 54% of the land area in The Gambia is arable (540,000 ha), out of which about 39% (188,000ha) is currently farmed, mainly by subsistence farmers; less than 2,000 ha of the 81,000 ha of irrigable land are currently under irrigation.¹¹ Most rural households do not generate enough produce or income from farming activities to meet annual needs, and therefore rely heavily on ecosystem goods and services derived from woodlands, savannas, wetlands, mangroves and rivers to supplement their livelihoods.¹² Despite good efforts, falling cereal production now accounts for only 60% of annual consumption requirements; thus the country relies on food imports, especially for the main staple food of rice.

Poor energy and transportation infrastructure have multiple economic, social and health-related impacts, and result in high logistical costs that burden the private sector and reduce its ability to create jobs. Although above average by Sub-Saharan African standards, the quality of road infrastructure is poor due to maintenance neglect, with 82.5% of the network in poor condition and contributing to high cost of vehicle maintenance.¹³ The country has experienced a number of external shocks, including the 2011 drought that reduced agricultural output and economic performance, and the outbreak of Ebola in 2014, which had serious negative consequences on the Gambia's tourism industry.

Within this context, remittances have been increasing for over a decade at a rate of about 12% per annum, currently standing at about \$181 million per annum, which represents about 22% of GDP; they thus may have potential as a source for long-term capital expenditures, particularly for large infrastructure projects.¹⁴

The Draft PAGE II recognises the untapped potential of the Gambian private sector, which is dominated by Micro, Small and Medium Enterprises (MSMEs), mainly operating in the productive sectors: 97% of businesses have less than 5 employees (formal or informal sector); small firms (5 to 9 employees) make up 2.2% of the private sector; while medium and large firms comprise less than 1% of firms.

The unemployment rate stood at 29.8% in 2012, with the youth unemployment at 38%. Female youth are less likely to be employed or in education, and more likely to be inactive (31% against 27% for male youth).¹⁵ Increasing joblessness and under-employment is linked to a sense of desperation and helplessness, driving many youth to seek opportunities elsewhere, including illegal migration to Europe. The Draft PAGE II notes that almost 99% of all domestically employed Gambians are engaged in sectors with extremely low labour productivity.¹⁶ This, combined with high poverty and fertility rates, constitutes an extremely challenging development context.

¹¹ PAGE II, Draft, 2017-2020, GoTG.

¹² GoTG/UNEP, 2016, GCF Funding Proposal 'Large-scale Ecosystem-based Adaptation in The Gambia: developing a climate-resilient, natural resource-based economy'.

¹³ PAGE II, Draft, 2017-2020, GoTG

¹⁴ PAGE II (Draft), 2017-2021, GoTG.

¹⁵ The Gambia Labour Force Survey of 2012

¹⁶ Finance and Insurance is the sector with the highest output per worker.

Important transboundary issues considered in the development of the SPCR include the Gambia River Basin Development Authority (OMVG) and collaborative management of the Sambangalo Dam; as well as transfrontier conservation areas.

1.4 Nexus between development and climate variability and change

1.4.1 Introduction to the impacts and vulnerability assessment

Section 1.4 provides an analysis of the nexus between development and climate variability and change in The Gambia, as a basis for the Gap Analysis that follows in sections 1.5 and 1.6, and upon which the SPCR is based.

Section 1.4.2 sets out the observed and projected climatic changes for The Gambia, after which key vulnerabilities for rural and urban livelihoods, ecosystems and economic sectors are discussed in sections 1.4.3 to 1.4.5. Existing information on climate change-related health impacts and vulnerabilities is integrated into the discussion, to the extent that this is possible, given the limited focus to date on this important cross cutting area. Section 1.4.6 concludes with an integrated summary of key climate-related impacts and vulnerabilities in The Gambia, within the context of the multiple stressor environment within which livelihood, ecosystem and economic vulnerabilities are experienced.

1.4.2 Observed and projected climate

Trends in temperatures and rainfall

There is no doubt that temperatures across The Gambia have increased in recent years. No mention appears to have been made of temperature trends in the First National Communication to the UNFCCC (2003), but the Second National Communication (2012) comments on an increasing trend of 0.5°C per decade since the 1940s, without suggesting a source for this. This translates to an increase of the order of 3.5°C over the intervening period, which is likely more than observed.

An estimate of 0.21°C per decade is provided by McSweeney *et al.* (2012), converting to an increase of about 1.0°C since 1960, the largest trend being in OND at 0.32°C per decade. This work also provides the only estimate available of adjustments in temperature “extremes” – an increase of almost 8% in the number of “hot nights” (those in the top climatological 10%) between 1960 and 2003. Nevertheless the basic temperature trends suggested are higher than those calculated in the IPCC AR5, with one set of measurements illustrated giving an increase of about 0.8°C and two other sets about 0.5°C, both over the period 1901-2012. According to one of these data sets temperatures decreased over 1911-1940, increased somewhat over 1951-1980, and experienced strongest increases over 1981-2012.

Thus, while there is limited convergence on the rate of temperature change, and there are indications that calculated rates may be dependent on period, it is certain that increases have occurred and that these, according to the IPCC, may be attributed, to a substantial extent, to anthropogenic emissions with a high degree of confidence.

It is certain that rainfall over the country has decreased in recent decades. Graphics provided in the First National Communication to the UNFCCC suggest decreased rainfall in most, if not all, months between the two periods 1951-1980 and 1961-1990, most substantially in July and September; the Second National Communication appears to offer no information in this regards.

Decreased rainfall is noted also by McSweeney *et al.* (2012) between 1960 and 2006 at a rate of about 8.8 mm per month per decade; changes in rainfall “extremes”, such as flood-related or droughts, may not be calculated according to these authors because of the limited observational data available. Estimates given in the IPCC AR5 are also restricted through limited data, but indications from there are that there has been a downward trend of between about 10 and 25 mm per year per decade over both 1901-2010 and 1951-2010. It should be noted that trends in rainfall as calculated can be substantially sensitive to the period selected for analysis, such is the natural background variability of rainfall on seasonal and inter-annual periods.

Rainfall in The Gambia is part of the Sahelian rainfall system, which has undergone a substantial change from the observed wetter years of the 1950s and 1960s to the well-known Sahelian drought that peaked in the 1980s; there has been some recovery since over the region as a whole. A main driver of changes in Sahelian rainfall has been adjustments in Atlantic Ocean sea surface temperatures associated with the multi-decadal circulation of the global ocean, something that has no immediate association with any recent anthropogenic activities. Thus much of the cause of these rainfall changes over The Gambia has been linked to changes in the overall climate system unrelated to anthropogenic emissions; it is not possible currently to identify whether or not these emissions have exerted any influence on recent trends.

Projections of temperatures and rainfall

The only approach available for producing climate change projections, other than direct scenario creation, is through the use of climate models run necessarily on powerful computers. There are an increasing number of such models of increasing sophistication. Unfortunately, increasing sophistication does not necessarily translate to improved projections with reduced uncertainties and a decrease in the ranges of temperature and rainfall projections produced; it is worth noting that over successive IPCC Assessments, projections have changed somewhat each time without reduction in general in the ranges of these values. The technical reasons are complex but the outcomes are that any projections need to be treated within a probabilistic rather than an absolute framework and that the greater the number of independent models used to create the probabilistic framework, the higher, in principle, the confidence that might be placed on the results.

In order to provide the greatest possible clarity at this stage on climate projections for The Gambia, a summary has been developed of most of the climate change projections (excepting those in earlier IPCC Assessments than the AR5) developed to date for country – please see Annex 5. In general the number of models used to derive the projections surveyed has increased over time, the greatest number being in the IPCC AR5. Thus, of all assessments summarised, there is no doubt that the richest source of information lies in the projections made for the IPCC AR5, a source still to be examined in detail for The Gambia.

In summary, there is consensus that temperatures will continue to increase, although only broad ranges can be offered as to the magnitude of any changes. Certainly the lower the emissions the less the temperature increase is likely to be, with success under the Paris Agreement limiting increases to perhaps around 1°C according the IPCC AR5 ensemble mean. Failure of the Paris Agreement probably may expose the country to larger increases. Almost certainly other temperature-related parameters will adjust accordingly, including increases in the numbers of “hot” days and nights and the length of heat waves.

For rainfall the picture is less certain, with models projecting both increases and decreases without evident consistency; greatest changes are not necessarily under the highest emissions and do not necessarily increase through the century. There are suggestions that days/periods of higher rainfall may produce increased rainfall, and hence a higher flooding risk, but not all projections accord; both increases and decreases in drought frequencies are foreseen, with perhaps a slight bias towards increases.

Box 1 present summaries of the two most recent climate projections studies examined. Please see Annex 5 for additional detail on the earlier projections studies, and for a note on downscaling in The Gambia and Senegal.

Box 1 Summary of recent climate projections studies for The Gambia

The IPCC AR5 (2013)

- The IPCC provides a number of details of ensemble means and distributions for several parameters of projections from about 16 climate models (RCP2.6 and RCP6.0) to up to nearly 40 models (RCP4.5 and RCP8.5), but with no specific information for individual countries
- As a general rule projected temperatures increase more with higher emissions (RCP2.6→RCP8.5) and later in time, reaching over 7°C in the ensemble mean for interior Gambia by the end of the century under RCP8.5 (less than 1.0°C under RCP2.6)
- For rainfall under RCP8.5 the main pattern in the ensemble means is for decreases except in SON

PARCC Policy Brief (uses UKMO projections) (2016)

- Downscaling by RCM of projections from 5 GCMs (unspecified) to end of Century
- Temperatures to increase in the range 3.0°C to 4.5°C, greatest inland
- Low confidence in rainfall projections but suggests a range of decreases of 40% to 60%, but to be used only with caution

Even at the regional scale, the most recent climate scenarios are only coherent where it concerns temperature evolution - with an expected increase for West Africa of between 1.5 and 4 °C by 2050. Night time (minimum daily) temperatures are expected to increase at a faster rate than day time (maximum daily) temperatures, and the number of heatwave days each year is also projected to increase significantly. The projected changes in rainfall trends by the 2050s are however far less certain: for large parts of West Africa, climate models do not agree on whether rainfall will increase or decrease, and in many cases, models show significant trends in both directions ranging from -40% to +20% for example (Future Climate for Africa, 2016).

1.4.3 Impacts and vulnerabilities: climate resilient food and landscapes

Following the delineation of the thematic areas of the draft NCCP, section 1.4.3 provides a discussion of the observed and projected impacts and vulnerabilities for the climate resilient food and landscapes thematic area. This includes agriculture (crops and livestock), food security, forestry and natural resources, including water, biodiversity and wildlife. Where relevant, the cross cutting issues of gender, youth, health and tourism are integrated in the discussion.

Baseline Climate Scenario of The Gambia

Long-term weather records from the capital Banjul indicate a shift in the rainfall pattern. From 1950 to 2000 annual rainfall amounts have decreased by about 30% at an average rate of 8.8mm per month per decade between 1960 and 2006. This decrease has been evident in the reduction in the length of the rainy season and also the quantity of rainfall amounts recorded in the month of August, particularly during the period 1968 to 1985, and in 2002. This rainfall pattern has led to devastating droughts during the last three decades of the 20th century alternating however, with periods of intense rainfall that have also created increasingly numerous flooding events following closely to the average pattern of rainfall variation across the Sahel region. This erratic rainfall pattern is impacting in the farming system by reducing the Length of Growing Period (LGP) and the additional mid-season dry spell can create drought conditions for farming purposes even during normal rainfall conditions. There have been at least five significant intense drought episodes (1968, 1972, 1977, 1983 and 2002) between 1951-2007 and the year 1983 witnessed the worst climate change induced drought (worldwide drought). There was significant and extreme rainfall reduction in two of these events (1983: 479.50mm and 2002: 577.95mm respectively) when compared to the highest recorded rainfall of 1425.67 mm/year (occurred in 1958) (GoTG/UNDP, 2015). This climate change induced dryness and other contributing factors such as the human impacts of overgrazing and deforestation, has also led to an increase in the frequency and intensity of dust and sand storms across the farm land and woodlands lands of the Gambia with negative impact on agriculture by eroding fertile soil and uprooting young plants, disrupting the flowering cycle in fruit trees and enhancing the potential evaporation. Nonetheless this “Harmattan” dust from the Sahara has been found to contribute as much as 50% of the nutrients within the humid tropical rainforests of coastal West Africa (Stoorvogel et al., 1997).

Temperature and rainfall risks

Temperature is projected to reach over 7°C in the ensemble mean for interior Gambia by the end of the century including increases in the numbers of “hot” days and nights and the length of heat waves. In addition, there will be an increase in variability of rainfall amount and distribution in the Gambia with projections to a decrease except in SON (see Section 1.4.1). However, though under low confidence, some projections suggest a range of decreases of 40% to 60%, but to be used only with caution with others indicating both increase or decrease, and in many cases, models show significant trends in both directions ranging from -40% to +20% for example. All GCMs project increasing rates of evapotranspiration within a range of 2% to 45%. This will result in more frequent extreme events namely, frequent and intense heat waves in the case of temperature and droughts and floods in case of rainfall. Flooding events include flash floods immediately following an abnormally heavy rainfall event, which are compounded by inadequate planning and storm water management infrastructure in urban areas. Catastrophic seasonal floods may also occur along the River Gambia after an above average rainy season.

Changes in temperature and rainfall will adversely affect forests. Modelling results suggest that the Gambia’s forest cover will fit more into a dry forest and tropical dry forest categories which will have biodiversity impacts as well as impacts on sensitivity to fires and land degradation.

Sea Level Rise risks

The Gambia with approximately 50% of the total land area being less than 20m above sea level, and about 33% of the country below 10m above mean sea level, is one of the most vulnerable countries in Africa to the adverse impacts of climate change. Any substantial global warming-induced sea level

rise could immerse much of the country. About 20% of the country is currently flooded annually and the mangrove ecosystems, dilapidated by widespread logging are already affected by saline intrusion as well as flooding. Dynamic Interactive Vulnerability Assessment (DIVA) model projections indicate significantly higher sea level rise in The Gambia than the IPCC predictions of 0.13 m in 2025, 0.35 m in 2050, 0.72 m in 2075 and 1.23 m in 2100 (in comparison with 1995 levels) (Brown et al., 2011). A one metre rise in sea level would inundate 60% of mangrove forests, 33% of swamp area and 20% of rice growing areas, assuming no protection. Areas in the Upper River end of the country would also be affected. Saline water would infiltrate ground water aquifers, especially considering that the Gambia sits on top of a shallow sand aquifer with depths of between 4 and 50m (GoTG/UNDP, 2015).

The projected increasing in temperature and rates of evapotranspiration coupled with the expected increase in drought frequency and SLR will certainly affect freshwater water resources quantitatively and qualitatively in the country. Small surface water bodies would be hardest hit but the River Gambia is also expected to suffer greater saline intrusion from lower recharge as surface evaporation increases as well as changes in rainfall patterns (lower rainfall and longer dry spells). Other negative impacts on surface water quality could be due to surface run-off of agricultural chemicals, which would be exacerbated by heavier rains with risks of eutrophication and health effects from nitrate leaching into drinking water. The burden of ill health from increases in vector borne diseases is another risk, particularly in riverine locations further inland.

Overall predicted climate change and variability will present important short-term and long-term challenges to development efforts in the Gambia. In the short-term extreme climate events including windstorms, rainstorms, droughts and dust storms will become more frequent with increased severity. Land use and land cover change, sea level rise, and coastal erosion present significant long-term challenges.

Vulnerability and Climate change impacts on natural resources in The Gambia

Climate Change manifestations in The Gambia has been translated so far by noticeable environmental changes, including climate variability and extreme events. The Gambia's climate is of Sahelian nature characterized by high variability in the amount and distribution of annual precipitation and clear increase in temperature values; these combined interactions lead to recurrent drought episodes and dust storms events. Additionally, the impacts of climate change through SLR have been exacerbated by anthropogenic drivers that reduce the resilience of coastal ecological and geomorphological systems. The low-lying topography, combined with the high dependence on subsistence rain-fed agriculture, and inadequate drainage and storm water management system in a context of rapidly expanding un-regulated urban expansion has placed the Gambia among those countries most vulnerable to climate change. In summary, the reasons for Gambia's vulnerability are manifold which mainly include:

Agriculture sector

Agriculture accounts for approximately one-third of GDP, and meets about 50% of the national food requirements and 70% of the country's total exports, thus constituting a substantial part of The Gambia's foreign exchange earnings, according to the Gambia National Agricultural Investment Plan 2011-2015 (GoTG, 2010). Agriculture is dominated by subsistence rain-fed crop production and traditional livestock rearing, with only about 6% of the irrigation potential having been used (GoTG, 2010). Around 69,100 farm households with some 500,000-people engaged in farming cultivate 41%

of total arable land, estimated at 558,000 hectares (ha). Of the total cultivated area, about 30% is devoted to the production of key crops. Cereals make up about 51.6% of this area, with the remaining 48.4% under cash crop oil seeds, namely groundnut and sesame. Groundnut is the single most widely grown crop, occupying about 44% of the area, followed by millet at 32%. Yields are generally low and vary from year to year depending on rainfall. Horticultural production, which is a significant dry season farming activity, is presently an established key source of rural income, engaging over 65% of the agricultural labour force.

Agriculture in The Gambia is primarily rain-fed, with only 1,500 of the 320,000-ha classified as irrigated lands. This reliance on rains has made the sector very vulnerable to variability in the amount and distribution of rainfall, with yield of some major crops fluctuating as much as 100% from year to year. Since the 1960s, yields of these crops have decreased as much as 30 per cent. Decrease in yields has been attributed to climate variability but also to low use of improved technology and declining fertility of soils due to widespread land degradation (GOTG, 2003). Rice cropping taking place under tidal irrigation in the lower stretch of the river where the water is saline is already facing considerable disruption due to high levels of salinity. On the other hand, upland crop production of groundnuts is being affected by low soil fertility rates and increasingly drier environment as a result of lower rainfall amounts, higher evapotranspiration and increased frequency and intensity of “harmattan” related dust storms. The CC projections scenarios of potential increase in drought frequency will further impose uncertainty in crop production in The Gambia lowering crop yields unless irrigation technology is developed, coupled with climate smart agriculture interventions.

Livestock sub-sector

Livestock production is an important activity carried out nationwide by almost all rural households. This sub-sector is estimated to contribute 5% to GDP, and possesses potential to increase this level significantly. The most valuable assets in the sub-sector are: Cattle totalling about 300,000 head; Small ruminants comprising sheep (160,000) and goats (230,000); and poultry, which is an important source of quality animal protein (especially due to its short production period). The forecast for the demand for animal products for Sahel and West Africa is expected to increase by more than 250% by 2025 (ECOWAS). Since regional production is less than the demand for animal products, there will be an increasing demand for imports by some countries in the region – hence the potential for export. The equine population (horses and donkeys) has dramatically increased in numbers and significance in view of their role as a source of animal traction and farm transportation. The successful campaign to eradicate the tsetse fly and its accompanying sickness has also enabled horses and donkeys to survive and breed in most parts of the country.

Production is predominantly traditional, and some of its products, particularly commercial poultry are not price-competitive with cheaper imports, primarily because of the relatively high costs of imported feeds and drugs. Cattle production has also been constrained by factors similar to poultry: scarcity of feed and water during the long dry season, aggravated by rampant bush fires which consume most of the standing hay, crop residues and by-products to feed cattle; high incidence of diseases, including internal and external parasites. low genetic potential for milk production; inadequate access to, and high cost of inputs e.g. drugs, vaccines and credit, inadequate and inefficient infrastructure for processing; limited private sector involvement; weak extension and research services coupled with poor linkages with the private sector; weak or non-existent community-based organisations (CBOs)

i.e. Livestock Owners Associations, which could enable their members to take full advantage of opportunities in the potential value chains of the sub-sector.

There is significant potential for commercialization of livestock enterprises (cattle and short cycle animals) to satisfy increasing demands for meat and dairy products from within the country, especially the hotel, tourist and entertainment industry and urban consumers, as well as exports to the sub-region. Livestock also holds the potential to provide and improve on-farm power sources (mechanization and draught) available in the country for land preparation and transportation of bulk produce from production to assembly areas. The 1993/94 Census found there were 77,559 animals (oxen, donkeys, horses, cows and mules) providing draught power, and 87,862 such animals were recorded in the NAS Survey in 1998.

Rangeland occupies 40 per cent or 400,000 ha of the country's total area of which about 60 per cent (or 240,000 ha) is used for pasture practicing transhumance. Degradation and depletion of rangeland resources threatens the growth of the livestock sub-sector and exacerbates degradation of the natural resource base. The projected increase in temperature, evapotranspiration and simultaneous increase in extreme rainfall events (droughts and intense rainfall) will affect feed and water availability in the livestock sub-sector. Temperature and moisture effects under a changing climate will reduce nitrogen uptake in the rangelands and reduced nitrogen uptake translates to low palatability of the vegetation for animals and will thus lead to low productivity of livestock. In addition, due to soils compaction, overgrazing and forest overexploitation along the transboundary transhumance routes, land degradation will be accentuated in the next climate change scenarios, unless countermeasures are adopted.

Animal health is a new dimension that has been added to the recent issue of climate change. Animal health as well as human health is directly and indirectly related to the issue of climate change. According to the outline scenario of climate change from the IPCC projections for some regions of Africa, and in particular, those expected for The Gambia (see Section 1.4.1), with a tendency for increase in temperature as well as extreme events of precipitation, an increase in the spread of animal diseases is expected. A specific problem will be the effects of climate change on the ecology and dynamics of disease transmission. Significant changes in host distribution, density and availability to existing pathogens resulting from climate change can translate into the onset of the disease in animals and the man-animal interface. A pathogen can: (i) find access to new host territories and ecosystems; (ii) make the host more aggressive in places where hosts have become more abundant and / or immuno-compromised; or (iii) perform a series of host species jumps, as a possible response to enhance the host species mixture or contacts.

Forestry sector

Forest resources including mangroves cover from 350,000 ha to about 505,300 ha (43 per cent) of the country, according to the Participatory Integrated Watershed Project (2004) and the GNAIP (GoTG, 2010). While the exact contribution of Forestry to GDP is not established but assumed to be low - about 1% of GDP, it appears to be rapidly positioning itself to make significant contributions to poverty reduction in the country, in areas of its comparative advantage. An initial target of the GoTG was to achieve a forest cover of 30%, with 75% of the cover to be managed by communities and the private sector. In addition, government has declared 222,000 ha as forest reserves, 40,000 ha as forest parks, and 18,000 ha as community forests. More recently the Forestry Policy (2010-2019) advocates for the transfer of 200,000 ha of forest lands to communities. Significant efforts had been put into reducing

bush fires, but the increasing demand for fuelwood and charcoal to meet domestic energy needs remains an important challenge to protecting the forest cover. Earlier findings (Bojang et al., 2005) indicate that contraction of forest area and degradation of forest quality owes more to human activities than to any other causes. Anthropogenic activities magnify climate change and variability, which will impact woodland ecosystems in many ways.

Forests are clearly under severe strain by rural people who cut down trees for their use as fuelwood and charcoal, which are the major fuels used by the large majority of the population for cooking. Fish smoking is also a threat in fisher villages. Furthermore, there is also a regular encroachment into forests and virgin lands when the fertility of farming grounds is exhausted (mostly through inadequate land use and lack of technical knowledge on soil improvement, use of composting and mineral fertilizers, practice of rainwater harvesting, etc.), or when farmers want to increase their production. Farmers are also not very knowledgeable regarding practices of agroforestry. Fortunately (from a deforestation point of view), the wood industry is not well developed in The Gambia. It is clear that the major anthropogenic source for forest degradation is the constant logging that takes place to supply 85% of the energy consumed by the Gambian population, which comes from woody biomass from the forests and rangelands. The dependency on forests to meet the cooking fuel needs of the population is so great that charcoal production in The Gambia has been steadily increasing over the years, reaching over 60,000 tons in 2014 alone (FAOSTAT, 2015). This represents a driving force for rapid depletion of the vegetation cover of the country. In the absence of any compensatory measures to reduce this continuous logging of forests and mangroves, climate change will have additional impacts, thus further imperilling wildlife habitat and perpetuating the loss of valuable genetic resources. It must be noted that charcoal production is illegal in The Gambia. It is also not clear how much of the charcoal consumed in the country comes from beyond the borders.

Forest products include also timber, palm oil, wild fruits, honey, woodcarvings and fuelwood, the latter providing nearly 90% of all household energy needs. Forests also provide important potential revenue sources through ecotourism, forest-based enterprise development including wood and non-wood products, and habitats for wildlife and fish.

Direct climate change impacts will come through the effects of sea level rise, of which the foreseen (under certain scenarios) 1 m sea level rise in The Gambia is expected to potentially inundate 6,500 ha of woodland and 40,900 ha of mangrove areas within the North Bank, West Coast, and Central River regions. Other climate change-related impacts are linked to the frequent bushfire incidence, which is experienced by 79% of the population in The Gambia at least once or more times per year. This reduces the stock of fallen deadwood that is a source of fuelwood, as well as the stocks of mother trees, thus reducing regeneration. The problem of bushfires is more serious in URR where 68 000ha of forest and 7000ha of other wooded land are burnt every year (GoTG/MoFEN, 2010).

The expected drought episodes, resulting from diminishing rainfall and simultaneous increase in temperature and evapotranspiration rates, may exacerbate climate change impacts on bushfire incidence. Total biomass production is expected to be lower under warmer climate change.

Water resources

Threats to water resources in connection with the anticipated reduction of rainfall and drought through climate change are firstly the reduction in the recharge of aquifers, from which drinking water and water for small scale irrigation is obtained. Groundwater is the main source of drinking water for

the population in the country, which is captured at depths of 30m to 80m. Recharge of the shallow to medium groundwater aquifer is directly dependent on precipitations during the wet season. Secondly, there is the intrusion of saline water further up the River Gambia with a reduction of the river water flow. The flooding of settlement areas, as a result of abundant rainfall, may also cause the contamination of the groundwater through open stored household waste and flooded septic tanks. The climate change-induced migration of the saline water front in the dry season makes the use of the River Gambia for irrigation in the dry season problematic. Heavy pumping of freshwater volumes upstream may be enhancing the migration of the saline front to beyond the 250km mark at Kuntaur, which will undoubtedly affect rice tidal irrigation in the newly affected upstream stretches. Therefore, the combination of sea level rise, global warming and changes in rainfall patterns could impact freshwater resources quantitatively and qualitatively. Currently coastal aquifers are already at great risk of salinization under the twin threats of shoreline retreat and SLR induced saline intrusion. The expected changes in rainfall and temperature are likely to alter further hydrological cycle components — enhanced evaporation rate, runoff and temporary water courses (bolongs) as well as groundwater recharge.

However, the greatest vulnerability of water resources in The Gambia currently arises largely from the increasing demand for water in the last few years. Rapid increase in urban population and economic activity over the last 20-year period are two of the factors responsible for the increase. The Gambia's annual freshwater withdrawal is estimated at 30.6 million cubic meters, about 0.38% of annual total renewable water resources. About 65% of water withdrawal goes to agricultural use. Overall, water use has increased by 50% between 1982 and 2000, with industrial (where tourism is included) and domestic water use registering the largest increase —725% and 385% respectively compared to just 12.3% increase in agricultural water use. The tourism industry contributes some 12% to the gross national product and is vital to the country's economy. This is almost as much as the agricultural and livestock sector combined and it is expected to increase. Tourism is very seasonal with the main tourist period from November to March, when the bulk of the 66,000 to 90,000 visitors arrive, and consume the most water. The rainy season is fairly constant and runs from June to September. The average annual precipitation set at 850 mm is projected to suffer from a great instability with significant increases and decreases. With projected increase in the number of tourist visitors and the peak demand and supply periods staggered, careful management of ground water abstraction is needed to ensure there is sufficient groundwater recharge.

Finally, threats to water resources in The Gambia in connection to climate change are expected to impact on the River Gambia flows through enhanced (up to 10%) evaporation losses (set at 11 m³/s) from the dam to be constructed at Sambangalo. These losses, attributable to both climate change and human intervention, are to be considered as a net reduction of average annual flow entering The Gambia. In addition, using this information on the maximum expected increase in open water evaporation, in conjunction with the mean ratio of actual to potential evapotranspiration at Sambangalo and Gouloumbo, a 2% reduction in groundwater recharge is likely by the year 2050.

The Fisheries sector

The Gambia owns an Exclusive Economic Zone (EEZ) of 200 nautical miles and a territorial sea extending to 12 nautical miles from the geographical coastal area, with a continental estimated shelf area of about 4,000 square kilometres and an EEZ of nearly 10,500 square kilometres. The seas off The Gambia are located where two major oceanic currents converge along the coast of West Africa. One

is the highly productive upwelling zone of the Canary Current Large Marine Ecosystem (CCLME). Cold and nutrient-rich water flows southward starting from the seas off Mauritania and Senegal, attaining maximum effect on the Senegambia plateau in March/April. The other is the eastward-flowing warm Guinea Current. The effects of these currents, together with the trade winds that blow dominantly from the Sahara Desert westerly out over the Atlantic, create intermittent upwelling along the coast of The Gambia. These upwellings, combined with the outflow of the Gambia River, provide the nutrients that fuel a bountiful marine ecosystem.

The fisheries sub-sector is divided into two categories: artisanal and industrial fisheries, the former producing the bulk of resources. Industrial production remains largely underdeveloped, and there is little participation of the aquaculture sub-sector (Gianluca Ragusa, 2014). Fish is an important part of the dietary intake, supplying about 40% of the total animal protein consumed in The Gambia. Fisheries also contribute about 3% of The Gambia's GDP (2012 figures).

The artisanal sub-sector is composed of both subsistence and traditional commercial fishers, and is conducted along the coast, inland, as well as along the River Gambia. It is estimated that over 200,000 industrial and artisanal fishermen and women processors engaged in the sector. The total catch landed from both the artisanal and industrial sub-sectors was estimated at nearly 40,000 tonnes in 2006, over 90% of which was from the artisanal fisheries. The vast majority (90%) of the catch from the industrial sector is exported, mainly to countries of the European Union. The catch profile includes sole, grunts, sea breams, carangids and cephalopods, as well as sardinella, red mullet, shads, catfish, jacks, carangids and snappers. As the climate of The Gambia is warm (up to 40°C), and given the limited ice supply and cold storage facilities at the landing sites, a large part of the artisanal catch that is not marketed immediately is therefore smoked or dried for preservation. This sector is the major producer of cured fish, as about 40% of the annual artisanal catch is marketed and consumed smoked and/or dried (Njai & Njie, 1998). The fisheries sector has therefore a strategic importance in the Gambian economy and there is a need for planned adaptation to the expected impacts of climate change.

In the context of the fisheries, the estuary of the Gambia River provides support, protection and nurseries to the early life cycle stages of almost all commercially and ecologically important marine fish species, particularly shrimps which have mobility within the brackish zones of the Gambia River due to the hydrological variability between the dry and the flood seasons. Unlike the salinity regime, the water temperature regime in the estuary does not vary much vertically or horizontally. In addition, tropical regions like The Gambia, where climate and aquatic species are stenothermal (having a narrow range of temperature variation and tolerance), behavioural response to temperature is often minimal. Therefore, these earlier results identified salinity as the most important factor affecting the fish community structure in the River Gambia estuarine system. Earlier findings (Darboe, 2002) have shown that December-January marks the beginning of the reduction of fresh water discharge into the estuary, and therefore salinity recorded in April, four months later, indicated an increase in value and elaboration of estuary conditions further inland, but an extreme value of 40 parts per thousand (ppt) of salt in water, which is higher than the mean ocean salinity, which is generally in the range of 32 to 37 ppt. The Gambia is one of the countries listed as most vulnerable to certain impacts of climate change, in particular droughts and sea level rise. According to published literature (Izrael, 1991), a 1-2°C rise in global air temperature, accompanied by a 10% reduction in precipitation, may cause a 40-70% drop in mean annual river run-offs. In the event of the above scenario and according to results of surveys carried out in The Gambia and elsewhere, there may be a complete change in the hydrological

and salinity balance of the Gambia estuary, which would in turn affect fish species abundance, composition and distribution.

Additionally, higher salinity at the mouth of the River Gambia estuary caused by reduction of freshwater sources and enhanced by climate change-induced reduction of rainfall and simultaneous sea level rise may impede the entry of larvae and juveniles of many marine species into the estuary, particularly the shrimp (*Penaeus notialis*), to complete their earlier lifecycle processes. Furthermore, it has been observed that in periods of very high discharge the salinity level was reduced and extended downstream influencing the distribution of some species particularly *E. fimbriata*, *I. africana*, *P. notialis*, *Arius laticutatus* and *S. maderensis*.

One key issue for fish quality around the entire coastline of The Gambia is the human population pressure, as well as the expansion of tourist infrastructure and lack appropriate waste management, which potentiates the presence of undesirable levels of pollution in the nearshore waters. Therefore, there is a need for specialised expertise in fisheries laboratory work to determine the safety and wholesomeness of fish for domestic and export markets and to conduct experiments on product development, promotion and value added.

Finally, the performance of both artisanal and industrial fisheries is marred by several constraints: lack of accessibility and affordability of concessionary credit, limited technical capacity, foreign dominance, high cost of pre-mix fuel and low use of suitable fishing technologies; absence of a fisheries port and lack of sufficient industrial on-shore facilities (fish factories) to encourage landing of high value fish catches from national waters; inadequate fish handling and storage facilities; and poor distribution and marketing systems and structures.

Parks, Wildlife and Biodiversity sector

The Government attaches high priority to the preservation and management of national parks and wildlife, and is fully aware of the importance of conservation and sustainable use of the wildlife resource base to ensure biological diversity of species, genes and ecosystems, and to tap the potential of this sub-sector for the socio-economic development of the country. The natural resources base of The Gambia has been subjected to a wide variety of adverse human-induced impacts. The degree of environmental and natural resource threats varies in different ecosystems (from agricultural, fisheries, and forest to coastal and marine), depending on the intensity of and exposure to anthropogenic factors. In this respect, forest vegetation is exposed to widespread exploitation of forest resources for timber production and fuel wood. Urbanization, tourism and related industrial developments along the Atlantic coast of The Gambia have removed large areas of coastal vegetation, the habitat for many species that depend on coastal and marine biodiversity such as marine turtles, velvet monkeys, etc. (GoTG, 2014b).

The critical impacts on biodiversity and wildlife are mainly connected to forest deterioration and eventual changes in the fish and bird populations, which are not fully or primarily under anthropogenic control. A most severe threat is the encroachment into mangrove fields to make shelter for poor rural migrants as well as for intrinsic population growth — e.g. Ebo Town and Tallinding in the Kanifing Municipality.

Climate change-induced impacts on the Parks, Wildlife and Biodiversity sector include SLR inundation of riverine locations, dilapidation of mangrove area, which has decreased significantly since 1970s. Between 1980 and 1993, over-utilization and increased salinity has led to a decrease in total surface

area of mangroves by 650 ha per year (Jaiteh and Sarr, 2011). Similarly, the projected intensification of atmospheric dryness through augmentation of temperature and drought episodes, which, combined with livestock overgrazing and logging, is increasing deforestation and desertification, is currently exerting considerable pressure on availability of wildlife and maintenance of their natural habitat. In addition, frequent bush fires and drying of streams and other drinking points have significantly contributed to the disappearance of the natural habitats and indigenous traditional wildlife species.

The other major driving force responsible for environmental degradation and loss of wildlife and biodiversity is the largely ill-defined land ownership and over exploitation of natural resources, particularly those that are most marketable, which perpetuates environmental degradation. Close and open woodlands conversion for agricultural production plots particularly in the Central River Region (CRR) and Lower River Region (LRR), of which the last known rate of forest to farm conversions was 1.3% or 1,400ha/year. The impact of all these woodlands conversion into agricultural production plots is not only the ecosystems degradation but and also the reduction of forest cover with consequent impoverishment of biodiversity and loss of species and genetic diversity. Near beach sand extraction for construction and other purposes, has recently intensified phenomena of soil erosion and destruction of natural habitat along the coast posing a serious threat to the tourism infrastructure, wildlife habitat and the livelihood of communities living along the coast. Rapid and chaotic rate of urbanization (urban population rose from 10% in ten years 1993-2003 currently standing beyond 50%).

1.4.4 Impacts and vulnerabilities: managing coastlines in a changing environment

Section 1.4.4 provides a discussion of the observed and projected impacts and vulnerabilities for the thematic area concerning managing coastlines in a changing environment. This includes climate-aware Integrated Coastal Zone Management (ICZM) including coastal erosion management, and covers relevant River Gambia issues.

The Gambia's coastal zone consists of 80 km of open ocean coast and approximately 200 km of sheltered coast within the tidal reaches of the River Gambia. This coastal area is vulnerable to climate change impacts from rising sea levels, potential changes to precipitation patterns and potential increases to wet season rain storm intensity. Generally accepted impacts include:

- tidal flooding of low-lying areas along the open coast and up the river, with loss of important urban areas, port infrastructure, roads, fish landing sites, farmland, forestry and significant natural habitats;
- saline intrusion into fresh water aquifers; and
- shoreline erosion of the open coast with loss or damage to urban areas, roads, fish landing sites, historic and cultural sites and tourism assets.

Less certain, but highly likely, are further impacts such as increased erosion of storm runoff channels and increased rainwater flooding of urban and rural areas.

The potential impacts of climate change along the River Gambia will be both positively and negatively influenced by the proposed Sambangalo Hydroelectric Dam, which will control flows in the river. Proposed flow management plans may result in short-duration artificially induced flood events during

the wet season to support wetland agriculture and aquifer recharge, while also maintaining a minimum flow above the natural dry season rates. These changes would influence the natural habitat of the fresh and brackish water sections of the river, which traverses a very extensive low lying agricultural basin, with impacts on artisanal fisheries and river margin vegetation.

At a national level the greatest predicted impact of climate change will be the effective loss of the capital city, Banjul. Much of the residential area of the city is extremely low lying and already at risk from tidal flooding; this situation will be exacerbated by expected sea level rise, putting most of the city and the access highway at risk of flooding. Ongoing shoreline erosion along the north shore of the city will soon impact on the government and commercial areas of the city. The 2003 beach renourishment of the shoreline (Haskoning, 2004) was intended to have a maximum 25 year design life to provide time for planning a robust and permanent solution to the coastal threat; observations of the beach suggest that the remaining life of the nourishment is likely to be less than 10 years, after which the buildings and roads along the shore will be under direct attack by waves. Any solution for the capital city must not only allow for the existing and future tidal flood and erosion risks but must also recognise the need for substantial improvement of surface drainage, waste management, transport, water supply, power, sanitation, public spaces, etc. to provide for a healthy and efficient urban environment. The situation is complicated by the presence of the Port of Banjul located along the River Gambia shoreline of the city; the port is critical to the nation but is currently constrained by lack of storage space and poor ground transport links.

Beyond Banjul there is a widespread issue of ongoing coastal erosion that is predicted to increase in the future. Fish landing sites, high value residential / diplomatic properties, cultural sites and tourism assets are at risk. This risk has been recognised for over twenty years and there has been a longstanding theoretical presumption in principle against development of significant structures within 150 m of the shoreline to allow a buffer zone for erosion. Unfortunately this presumption has never been enshrined in policy, and inappropriate construction continues, particularly in the tourism development zones along the open coast, and within the government district of Banjul.

Almost all the supply of drinking water for the country, and much of the agricultural water supply is taken from the underlying aquifers. Abstraction near the coast has resulted in saline intrusion, reducing water quality and making some bore holes unviable. Population growth in the coastal zone and potential changing climatic conditions are expected to put increasing pressure on the water resource with lowering water tables and higher saline intrusion.

1.4.5 Impacts and vulnerabilities: climate-resilient infrastructure

Section 1.4.5 provides a discussion of the observed and projected impacts and vulnerabilities for the thematic area concerning climate-resilient urban and peri-urban infrastructure. This includes waste management, water supply and sanitation, roads and drainage infrastructure, as well as energy infrastructure.

Waste management

Waste management poses a major challenge in The Gambia, particularly in the Greater Banjul Area (GBA) and the growth centres. The three urban municipalities that make up the GBA, namely Banjul City Council (BCC), Brikama Area Council (BAC), and Kanifing Municipal Council (KMC), with a total population of more than 500,000 inhabitants, produce in excess of 150,000 tons of waste annually.

The increasing rate of production of waste in the GBA is linked to population growth, business development and household consumption. According to the recently prepared five-year development plan for the KMC, waste is categorized as municipal or residential waste, commercial waste, industrial waste, clinical waste, construction / demolition waste, electronic waste and liquid waste. Hazardous waste, however, is not addressed in this Plan, even though it is provided for in existing regulations.

The vulnerability of waste infrastructure to climate change depends on the geographical position and state of the disposal site, as well as its organization in terms of disposals methods and enforcement of relevant regulations.

Waste is collected and temporarily stored at community dumpsites, from where it is eventually transferred to permanent dumpsites. The process is largely *ad hoc*, reactive, and unsystematic, and is not guided or monitored by any clearly defined Waste Management Plan. Since neighbouring communities closed the dumpsite in March 2017 in protest at the environmental and health risks, the only dumpsite serving the GBA is the Banjul Mile 2 site, a much smaller site close to an ecologically sensitive area and within the Tanbi wetlands, which is a Ramsar site. Both Bakoteh and Mile 2 are poorly managed, resulting in their vulnerability to climate-related impacts from flooding of low-lying areas, including spread of water-borne diseases and contamination of the underground water system; and including unknown health impacts of air pollution resulting from continuous burning of the waste. Apart from the situation with respect to domestic waste, infectious / hazardous medical waste is dealt with in the hospitals using incinerators although this is not considered optimal yet. Where hospitals lack capacity for this, it is sent to the Medical Research Council (MRC) for safe disposal. Steps have been taken to recycle industrial waste wherever possible; these will need to be revisited and systems developed as industrial development continues. Sludge from septic tanks is discharged into sedimentation ponds in Kotu managed by Aqua Solutions.

In addition to the formal dumpsites, a number of illegal dumpsites exist in different locations throughout the GBA, with consequences similar to those posed by the formal sites. Riverine areas in Tallinding, Ebo Town, Fajikunda and Abuko are particularly affected by pollution due to indiscriminate and clandestine dumping of waste. Consequently, these could contribute to serious ground and surface water pollution through leachates and contaminants when they end up in the riverine areas, potentially affecting aquatic life and the livelihood of populations dependent on the wetlands.

Insert paragraph on waste management in the growth centres from NAWEC Master Plan

The impact of climate change on waste management depends on the factors noted above. Currently, solid waste is being dumped into the riverine areas, thus clogging drainage channels and greatly exacerbating the impacts of flash flooding linked to either climate variability or change. Given that rainfall intensity is projected to increase under climate change, the risks of flooding in the event of heavy rainfall are likely to increase into the future, with disastrous consequences resulting not only from the actual flooding, but also from contamination of the general environment. These consequences include increased incidence of infectious diseases, destruction of dwellings causing considerable discomfort, scattering of waste over a wide area, as well as the possible contamination of shallow aquifers.

Regarding mitigation, inadequate waste data is a major issue regarding both GHG emissions and waste production, for both solid waste and wastewater. Nevertheless, the GoTG included in its NAMA the implementation of an Integrated Waste Management initiative for solid and liquid waste in the GBA.

This is expected to reduce emissions significantly but is also associated with an estimated implementation cost of USD 68 million. The GoTG's 2015 INDC states, under waste management, that combined greenhouse gas emission reductions of 141 GgCO₂e in 2020, 239.7 GgCO₂e in 2025, and 413.7 GgCO₂e in 2030 will be achieved through conditional methane capture, and waste recycling and composting.

The significant negative impacts (current and future) close to a disposal site may gradually spread to become a national problem as wider areas become affected. The waste problem, which constitutes a real public health problem, requires local solutions involving the range of actors.

Water supply and sanitation

The National Water Policy calls strongly for an Integrated Water Resources Management (IWRM) approach, and clearly highlights the likelihood of future climate change-driven flood risks across the Gambia River Basin, noting that some 20% of the country's surface area consists of water, wetlands and tidal creeks. The Policy includes strong reference to both climate change and flooding, and clearly raises the issue of increased risks in the future in the face of climate change and sea level rise.

Water supply at village level is the responsibility of the Department of Water Resources, while the National Water and Electricity Company (NAWEC) operates the urban water supply systems in the surroundings of the capital and the provincial growth centres. It has been recognised that the peri-urban poor are often the forgotten group: not considered "rural", they do not qualify for DWR's rural water supply programmes and they also have little chance to benefit from urban connections.

Water for domestic and other uses in the GBA is mainly sourced from below ground in deep and shallow aquifers. Adequate amounts of rainfall are required to recharge the underground aquifers, necessitating reliable climate and precipitation projections for future estimates of groundwater recharge; moreover, extraction levels of the groundwater need to be controlled for sustainability.

In the GBA, two water resource management problems exist, both of which are essentially climate-induced:

- Salt intrusion due to increased extraction; and
- Insufficient recharge due to runoff from hard surfaces.

For the former, existing boreholes need to be relocated away from possible salt intrusion areas whilst extraction rates are adequately monitored to ensure that appropriate levels are always maintained. For the latter, new boreholes need to be located away from heavily built up areas to minimize runoff and facilitate recharge of aquifers. A likely reduction in rainfall due to climate change would be likely to further reduce the rate of recharge. In both cases, however, planning authorities should ensure that boreholes are adequately protected from encroachment.

Some of the soils in the Gambia River Valley are affected by salinization. During the rainy season, the salts are leached but during the dry months they remain saline. The flat topography of the country remains an unfavourable element. Soil leaching and lowering of the water table contribute to the salinity of groundwater, necessitating that existing wells be relocated away from possible salt intrusion areas, while extraction rates are adequately supervised to ensure that appropriate levels are always maintained. For the future, new boreholes should be located away from heavily constructed areas to minimize runoff, thus facilitating recharge of aquifers.

The GBA has only two sewerage systems, which are both operated by NAWEC. One serves only Banjul whilst the second, located in Kotu, serves the hotel industry as well as individual properties with septic tanks in the GBA. Unlike the Kotu system, which incorporates a treatment plant, the Banjul system disposes of raw sewage by means of an ocean outfall through a diffuser located approximately 1 km offshore. For both systems, sewage is disposed of in parts of the coast that are highly vulnerable to coastal erosion. In the long term, it would be appropriate to move away from the current practice and provide waste water treatment before dumping it at sea.

In the Kanifing Municipality and the southern part of the GBA, the use of septic tanks is more common. In such areas, sewage is collected from septic tanks by tankers and deposited at the existing disposal plant in Kotu. Pit latrines constitute the most common form of individual excreta disposal method generally used in rural areas.

In the case of sewage disposal infrastructure, heavy rains may result in water and sand infiltration through the sewer covers. In the event of flooding, which is likely to increase under climate change, pollution may be dispersed through leakage from sewer manholes, as well as from pits, with associated public health problems.

Roads and drainage infrastructure

Sustainable and well-maintained roads are important enablers of socio-economic development. The recurrent problem of road infrastructure in The Gambia is road maintenance, which depends to a large extent on the design and its use, with axle loads not very well considered. A major problem associated with drainage off roads is the relatively flat terrain in the Gambia. Designing roads to withstand current and future heavy rainfall events has budgetary implications, but is essential for performance of transportation infrastructure.

The GBA is served by a good network of roads supplemented by numerous bridges, which however have a long history of vulnerability to coastal erosion. The Banjul/Serekunda highway which runs westwards from Banjul parallel to the northern coast line of the GBA has in the past been threatened as erosion has reached less than 10 metres from the road. The Denton Bridge, across which the highway runs at Oyster Creek, is equally vulnerable. To protect this infrastructure, as well as other valuable shore front properties, a wide beach nourishment was undertaken in 2004, but this has subsequently been heavily eroded and the pre-2004 situation is expected to return in less than 10 years.

In a similar vein, a section of the Kombo coastal road, close to the Tanji Bridge, has been threatened by erosion, necessitating protection using a rock revetment. With a possible increasing intensity of some rainfall events, similar flooding may occur causing the Tanji River or other water channels to further damage road infrastructure in the GBA.

In the floodplain of the Gambia River and its main tributaries there is a complex pattern of alluvial deposits and fluvial marine deposits. Inappropriate road construction on these substrates has led to damage to the road surfaces, which reduces their durability and impacts negatively on road safety.

The impacts of changes caused by floods, drought and erosion may entail significant additional project costs. Because the GBA is relatively flat, flooding caused by heavy rains leads to inundation of the roads, destruction of the road shoulders and undermining of the infrastructure foundations. Additional studies, evaluation, budgeting, and consultation on the part of construction companies are required to ensure climate-resilient infrastructure. More thorough consideration of current and future

climate impacts in the design of projects should also contribute to a more ambitious quality of the works.

Drainage infrastructure keeps roads passable or conveys storm water to a disposal site. Without appropriate drainage, roads and bridges cannot be kept passable, leading to flooding especially in low-lying areas.

Existing facilities are limited to drainage systems in Banjul, Kanifing and Brikama and drainage canals constructed to serve some of the main roads. In most communities, there is no way to collect and eliminate rainwater and in many cases, drainage is insufficient or has not been provided. The provision of drainage services seems to be the responsibility of local councils even though there are no provisions under the Local Government Act 2002 for a council to provide drainage facilities. However, under the Act a local council is responsible for the upkeep and maintenance of all secondary roads under its jurisdiction presumably including the drainage facilities required to drain the road and to keep it passable. Also under the Act, a council's responsibility of providing local development may make it necessary to provide drainage facilities that may be required to convey storm water to a receiving water body. In areas where there are no drainage channels, or where these are not properly maintained, water puddles and ponds may occur, posing particular nuisance and making vehicular movements and pedestrian access very difficult. Such areas of standing water are often a daily problem during the wet season. Unfortunately, drainage channels located in the GBA are generally poorly maintained resulting in the dumping of waste leading to blockage of the channels and accumulation of stagnant water. With increasing temperature and rainfall, this scenario is potentially a source for transmission of diseases such as malaria and cholera.

The current situation in the remaining growth centres of the country is essentially the same, characterized by inadequately designed open drainage facilities, often without outlets, with minimal coverage of the main catchment area. At present, the only provincial centres with some drainage facilities are Bansang and Basse with 1.5 km each, and Janjangbureh with 3 km of drains network, which are apparently well interconnected.

Energy infrastructure

The Gambia's energy supply comes exclusively from four sources: fuelwood, petroleum products, butane gas and solar energy. Fuelwood is the most important energy source in the country and accounts for about 80% of the country's primary consumption. These high levels of fuel wood use have heavy implications for women, in terms of time spent collecting wood, as well as opportunity costs related to this. Access to electricity outside the GBA is very low. Therefore, wind and solar PV are likely to remain the most appropriate renewable power options in the Gambia in the short term. There is currently no interconnection within the West African region. This will change when the OMVG hydroelectric project becomes operational, as it will connect up the four member states, and in turn allow them to access the West African Power Pool.

Energy infrastructure refers to NAWEC's entire electricity generation, transmission and distribution assets, comprising of power stations with an aggregate capacity of 101 MW produced by electro-mechanical generators. Power is distributed through an electricity grid comprising of 181 km long 33kV/11kV transmission network, step-down transformers, and finally 230V and 400V distribution lines. With increase in temperatures, sagging of overhead lines will become more serious leading to

significant electricity transmission losses, resulting in subsequent power shortages and potentially triggering power outages.

Two small-scale wind turbine generating 100 to 150kW, at Batokunku and Brusubi, also provide surplus electricity to the power grid through commercial arrangements with NAWEC.

The Mandinary depot, serviced by oil tankers through a submarine pipeline, has a storage capacity of 150,000 metric tonnes. Petroleum products are lifted from the depot by operators with truck-tankers and sold to consumers at retail stations countrywide. Increase in temperatures is likely to reduce handling capacity of fuel storage facilities.

The unreliable nature of the electricity supplied in the Greater Banjul Area means that many businesses and the more privileged households use back-up generators. Only the latter make use of modern cooking and heating devices, meaning biomass use is still widespread in the GBA. Renewable energy (RE) technologies such as solar are used only in a limited fashion in the urban and semi-urban areas. However, rural dwellers rely heavily on RE, especially PV for the low voltage electricity required by most rural households for various applications, in addition to the heavy dependence on wood and charcoal for cooking.

Households and the transport sector are the biggest consumers of energy in The Gambia, with household fuelwood consumption reaching 796,252.7 metric tonnes in 2012, while petroleum consumption was around 150,000 tonnes between 2010 and 2012 (WAIS, 2015). Biomass consumption (wood-energy and agricultural residues) remains the main energy source for domestic and small-scale commercial sectors. Given the current consumption rate and high population growth, future shortages of fuelwood are inevitable and will result in the further depletion of natural forest cover, with serious negative environmental consequences.

The power supply in The Gambia is still largely inadequate, inefficient, and extremely unreliable, which had a negative impact on investment and production. This is one of the reasons for the excessive dependence within the city and major urban centres on firewood and charcoal, which reduce the country's forest resources and natural vegetation cover at an alarming rate, causing widespread environmental degradation

Vulnerability of the energy sector on the whole resides in various different effects, as set out in Njie (2016). Rising temperatures combined with decreasing rainfall are likely to cause a decline in standing forest biomass, and hence the renewable volume of fuelwood. Delivery of petroleum products, the second most important source of energy in use, could suffer disruptions in supply related to extreme weather. The vulnerability of growing renewable energy solutions varies according to technologies, with wind turbines likely to be least affected, and solar PV efficiencies slightly reduced by dust coating of modules. Electricity supply infrastructure faces decreased thermal efficiency of power lines, and possibly damage to infrastructure. Higher temperatures degrade heat exchange efficiency of engines and encourage use of air-conditioning, resulting in higher fuel consumption and increased GHG emissions.

1.4.6 Implications – climate and development nexus

This section synthesises information presented in sections 1.4.1 to 1.4.5, to provide an integrated discussion of the complex vulnerabilities of livelihoods, ecosystems, society and economy in The Gambia.

The gap analyses presented above illustrate the multi-dimensional vulnerability experienced by many people in The Gambia. It is not just the increasing temperatures, decreasing rainfall, and more erratic rainfall patterns that drive vulnerability, significant as these changes are. The low-lying topography, combined by high dependence on subsistence rain-fed agriculture, and inadequate drainage and storm water management system in a context of rapidly expanding unregulated urban expansion has placed The Gambia among those countries most vulnerable to climate change

This vulnerability is linked to the country's widespread poverty and limited adaptive capacity to deal with the effects of such changes. Limited access to resources to make quick changes to lifestyles, especially with respect to food supplies, and low access to risk-spreading mechanisms, render many people highly susceptible to the current and future climatic changes.

The vulnerability analysis highlights the specific challenges faced by women and youth with respect to current and future climate risks. Women have disproportionality high responsibilities for farming activities in rural areas; responsibilities for family health and welfare; problems of access to land and to credit; and additionally experience more subtle forms of discrimination related to the paternalistic cultural traditions. Female-headed households in the rural areas, who are primary users and managers of biomass, will bear the brunt of climate change impacts. There is thus an imperative for a coherent approach to sustainable management and use of biomass, from several perspectives. In addition, women are more likely to lack identity numbers making them difficult candidates for, for example, index-based insurance in case of crop failure, land acquisition (because of traditional norms) and difficulties obtaining collateral necessary for investments.

Youth face particular challenges relating to a lack of skills and/or a mismatch between skills developed through the education and training systems and those demanded by the modern job market, combined with a lack of job opportunities. These issues, together with resource degradation, poor quality of service in rural areas, and a desire to be part of the modern urban world are driving a rapid rural-urban migration, as well as the irregular migration to Europe that has become prevalent amongst youth from the rural areas.

A critical factor exacerbating social and environmental sustainability is the uncontrolled nature of the urbanisation process, which is primarily apparent in the GBA, but also manifests in other urban centres. Since the 1970s, the city of Banjul and Kombo St. Mary have been characterised by fast growing urbanisation, fuelled largely by rural-urban movement. While Banjul has reached its physical limits for further growth, and is severely threatened by sea level rise effects, the Kombo St. Mary area continues to undergo severe urban sprawl, which has uncontrollably spilled into the Kombo North District. The exceedingly high rate of urbanisation to the GBA is a result of an accelerated rural exodus due mainly to low returns from agriculture as the major employment for most families and individuals in other parts of the country, and the concentration of economic activity in the urban areas. The urbanisation process has occurred without any significant guidance or control by the authorities, resulting in increasingly haphazard land allocation, scattered urban sprawl into valuable agricultural land, depletion of mangroves and forests, increasing air, water and soil pollution, including pollution

of the riverine areas with concomitant health and ecosystem risks, strain on water resources and social services in general, poor sanitation, and a growing deterioration in quality of life in those urban areas struggling with problems of overcrowding.

It is also clear from the foregoing sections that the tourism industry experiences vulnerability to climate variability and change from multiple dimensions. These relate to severe threats from sea level rise and coastal erosion, exacerbated through lack of clarity on / enforcement of development control, including within the Tourism Development Area.

Within this understanding of a multi-dimensional vulnerability context for people and systems in The Gambia, the sections 1.5 and 1.6 present a gap analysis of climate information and services, and of adaptation and mitigation responses, in order to develop the analytical basis for the SPCR.

1.5 Gap Analysis: climate information and analytical base

Additional information regarding the gap analysis of the resources for and the provision of climate services carried out to develop the SPCR is provided in Volume III: Supplementary Material. The following section summarises previous relevant programmes and sets out the key conclusions from the gap analysis.

1.5.1 Summary of Previous Work

A number of projects have been undertaken in recent years providing gap analyses pertinent to supporting climate services and proposing actions to address these.

The first was the Technical Support Programme to The Gambia on Climate and Development, designed by ACPC/UNECA, covering upgrades to the observing networks and their onward uses, and planned to be undertaken in collaboration with a number of national and international institutes. It opened in 2012 and closed in 2014. An overview of the planned activities is provided in Volume III, which includes comments provided by the Director of the DWR on the final outcomes.

This project was intended to cover many of the missing technical aspects in providing climate services, in principle covering much of the area under this SPCR. but it encountered a number of issues with the result that much of the work planned was never completed. Achievements include: all meteorological observations to 2012 were captured to camera but remain to be digitised; some capacity building was completed; four automated hydrological stations were installed. A 9km resolution forecast model is in the process of being installed at CFO.

Next were two Situational Assessments of the Meteorology Division [of DWR] by the UKMO in 2012, one a SWOT analysis of the Division, the second on training needs; and a further report on Consultancy Services for the National Water Sector Reform Studies 2013. A summary of key points of the UKMO reports is given in Volume III, where a number of gaps are highlighted. The main pertinent aspect of the National Water Sector report is the recommendation for a restructuring of TGNMS, an alternate approach to that recommended in the EWS gap report reviewed below.

Key to the SPCR is the GoTG/GEF/UNEP LDCF NAPA Early Warning Project, originally designed to complement the ACPC project, of which the first phase is completed and Phase II is underway. Three documents have been seen:

- The report by John Peacock, a comprehensive coverage of systems in place in 2011 and their gaps; details and comments on progress are provided in Volume III
- The proposal document for Phase 2 of the project
- The PIF for Phase 2 of the project, with details given in Volume III. Also in Volume III are summaries taken from the EWS PIF of the project risk profiles and of the capacity assessments.

All three documents provide substantive information regarding the development of the EWS, and this gap analysis is built from that basis extended as necessary to cover climate services on the longer time scales.

In addition to the summary of the gaps as seen in planning the EWS project, consideration is also given in the PIF to the risks and capacity available; more details are provided in Volume III. In brief, the risk profile as assessed is:

- Lack of political will to support project – *low*
- Lack of financial stability for hydrometeorological services – *low/medium*
- Lack of coordination among government stakeholders – *medium*
- Unavailability of requisite human resources/lack of skilled human resources – *medium*
- Inability to communicate effectively with local communities – *medium*
- Limited capacity to effectively tackle all project components – *medium*
- Telecommunications challenges hamper implementation of the project – *high*
- Extreme climate events – *medium*

Most issues recognized were viewed as medium risk, the only high risk referring to telecommunications facilities. The view of this consultant is that this risk profile is too conservative, and that more risks, not least those covering resource, should be moved to the ‘high’ category.

For the capacity exercise the following categorisation was used, with results summarized in the table below, together with the sums of the priorities attached to capacity building within each category in terms of high/medium/low:

1. No evidence of capacity
2. Anecdotal evidence of capacity
3. Partially developed capacity
4. Widespread but not comprehensive capacity
5. Fully developed capacity

Table 1 Capacity with respect to climate services

Capacity	1	2	3	4	5	Priority h/m/l
Capacity of Agencies to produce information	1	4	7	1	0	9xh, 3xm, 1xl

Capacity of Agencies to package information	3	5	1	0	0	6xh, 3xm, 0xl
Capacity of Agencies to disseminate information	4	4	2	0	0	10xh, 0xm, 0xl
Capacity of Legislative and Governance frameworks	0	3	1	0	0	3xh, 1xm, 0xl
TOTALS	8	16	11	1	0	28xh, 7xm, 1xl

Of the 36 items related to capacity reviewed 28 are given high priority for attention, and only one low priority. The conclusion that capacity building within the various Agencies is a high priority remains valid.

1.5.2 Results of the gap analysis of climate services

The main framework under which this gap analysis of climate services is presented is that of legacy; that is the perspective of where the SPCR can offer legacy directly or, in cases that is not feasible, where SPCR might provide support that will assist in developing legacy. Areas in which contributions towards legacy might be achieved under the SPCR include:

- Human resources
- Physical resources
- Development of climate services

Human Resource. Without doubt the main gap in The Gambia is human resource, which relates to both numbers of staff and to their competencies at their appropriate levels. One aspect is that currently there is no research in any aspect of meteorology or climate; that conclusion also includes the UoTG. More broadly it is not only a matter of the staff numbers but also of their professional capacities, not least in the area of climate services, an issue not limited to a single Agency.

The SPCR may provide opportunities to address the human resource issue in a manner that offers inherent legacy in terms of climate resilience through facilitating:

- Climate and climate change education at all school levels
- Development of under-graduate and graduate training, both within The Gambia and externally
- Delivery of both general management and project management training
- Improving the knowledge basis of DWR staff
- Improving the knowledge basis of professional staff in all pertinent Government Ministries and the private sector, and enhancing their abilities to use climate services
- Sensitising the community to climate change and improving their abilities to use climate services
- Development of research on climate and climate change in The Gambia.

Physical resources. Physical resources fall into the categories of observing platforms, technical communications and visualisation systems, information storage systems, and Internet systems, with significant gaps in all.

Observing systems. An upgrade to observing systems is under way under the EWS project, but once fully implemented it will still leave network densities below WMO-recommended levels and inadequate for climate services.

The SPCR may provide opportunities to address the observations issue in a manner that offers inherent legacy in terms of climate resilience through providing equipment in collaboration with the EWS project, assuming on-going maintenance and supplies aspects are handled by the GoTG:

Additional automatic weather and hydrological stations to GCOS and WHYCOS standards, including at sites for research and change monitoring, with an appropriate range of instruments attached

- Additional automatic marine stations as required
- Upper air stations, ideally including at least one automated radiosonde stations
- Facilities for instrument calibration and repair
- Consideration of a rainfall-measuring radar
- Assist in accessing external climate records, including historical reconstructions

Technical communications and visualisation systems. It is essential that appropriate communications and visualisation systems providing near real time information are in place to support climate services throughout all development, production and reception locations.

The SPCR may provide opportunities to address dissemination of information beyond CFO, in a manner supporting climate resilience, in collaboration with the EWS project, providing on-going maintenance and supplies aspects are confirmed, through:

- Upgrading and/or supplying satellite links at appropriate locations
- Supplying computers and visualisation software at DWR, NDMA, and other pertinent locations to be identified

Information storage systems. Archiving historical information, plus the substantial streams of information anticipated with commissioning of all equipment planned under the EWS Project and proposed under SPCR, requires appropriate database facilities, in terms of input, of automated quality control, of storage and of data extraction, a goal not available with current systems. For research and development, and for the provision of climate services, sectoral databases are required in addition, that may be accessed alongside a climate database.

As an extension to the opportunities listed in the previous section, the SPCR may provide support for a climate database, providing on-going maintenance and supplies aspects are confirmed, through:

- Provision of suitable computer facilities for a climate database
- Assessment of and essential support for sectoral databases

- Provision of visualisation software.

Internet systems. In environments in which, in much of the world, the Internet plays a fundamental and essential role, the lack of an efficacious system at DWR, and generally across the GoTG, represents a critical gap.

The SPCR may support efficient transfer of information and other communication pertinent to climate services and climate resilience, providing on-going maintenance and supplies aspects are confirmed and that the caveat noted immediately above is observed, noting current GoTG regulations regarding placement of information on the web, through:

- Implementation of a full internet service, with computers for individual staff with a requirement, at DWR
- Similar implementation of full Internet services at other pertinent government offices.

Development of climate services. Services currently provided include summaries of recent observations and forecasts up to the seasonal time scale. No services are provided covering climate change in any form; the main approach to climate change adaptation is through a variety of focussed projects, although occasional radio broadcasts inform listeners.

The delivery side. In terms of climate resilience there is a case for utilising short-term forecasts, although in the main these applications are perhaps better considered under DDR than under CCA. Hence this gap analysis is limited to delivery of information on seasonal time scales and upwards.

Seasonal forecasts at present are created only at the annual RCOF for West Africa in May, with a month lead time ahead of the start of the main rainfall season in June. An update is issued in July. The issues involved are considered in detail in Volume III. The production of climate change scenarios presents similar issues to those of seasonal forecasts; scientists in The Gambia have produced climate change scenarios for the Second National Communication to the UNFCCC but difficulties are being experienced in developing projections for the Third Communication.

Opportunities are available, both pertinent to the legacy perspective of the SPCR:

- A framework in which to examine links between climate and activities in many areas, including water and food security, and health, and in which to examine applications of climate forecasts in these activity areas
- A framework in which to address understanding and use of probabilistic forecasts.
- Support to study advanced forms of delivering seasonal forecasts and in their implementation
- Support to use the IPCC data sets in the formulation of climate change projections
- Training in the scientific perspectives of producing seasonal forecasts and climate change scenarios
- Computer equipment and software necessary to undertake the research

The reception side. The reception side is extensive, covering government departments, the private sector, NGOs, CSOs, the media, the population in general, etc. Broadly speaking the needs can be broken into two areas, general sensitisation and specific capacity building for those with the capability to implement climate change adaptation.

The SPCR might support, with inherent legacy:

- Upgrades to the media centre to enable its use in CCA sensitisation
- Developing sectoral programmes to design and implement CCA services, including:
- Focused training and awareness raising
- Research into climate change impacts in The Gambia and into CCA options
- Incorporation of CCA as required into revised GoTG sectoral policies (see also Section 1.7)
- Development of sectoral CCA services, including incorporation into the National Platform for DRR and CCA

1.6 Gap Analysis: adaptation and mitigation responses and deficits

1.6.1 Background to the Gap Analysis

This Gap Analysis was carried out by building initially on the three Gap Analyses developed for the NCCP, as well as existing studies and policy documents, after which it was supplemented by key informant interviews and regional consultations. Insights gained were checked in an iterative fashion by means of these different methodologies.

The primary focus of the Gap Analysis is on adaptation, given the overriding needs in The Gambia. However, in line with the policy directions set out in the NCCP, it also considers an integrated approach to adaptation and mitigation where possible, and brings in mitigation priorities identified in the INDC, amongst other reports and policy statements.

1.6.2 Climate-resilient ANR and rural livelihoods, including livestock and rangelands

Agriculture and small-scale farming

Drivers of rural vulnerability include the absence of capacity to overcome the impacts of climate change, particularly the increasingly shortening of the growing period with late onset and early cessation of rains; the growing migration flux of young people, the main workforce, towards the urban centres and abroad, enlarging the number of women headed households; and the deficient technical support to adopt adaptive options that would enhance resilience to the shortening of the growing period. As it is, frequent dry spells in the middle of the rainy season limit farming activities such as ploughing, sowing and planting before the arrival of the dry spell. The Multidisciplinary Facilitating Teams (MDFTs), which are essentially extension services, are presently monovalent, with an extension/farmer ratio of 1: to over 3,500, and not cost effective in their delivery performances; and lack technical knowledge about climate smart farming techniques for erosion protection and

improving soil structure and fertility. Soils in the Gambia are generally poor in organic matter and chemical fertility, requiring high inputs of manure and fertilizers to increase yields and quality.

Adaptation efforts in this sector must address the following:

Reduce dependence on groundnuts by encouraging agricultural diversification - through Development of a National Plan for Crop Diversification, led by the Ministry of Agriculture, and to include the adoption of drought resistant crops with multiple gains and agroforestry crops production, which has potential both in terms of exports and for income generation for smallholder farmers; and multiple agronomic gains such as: (i) Horticulture, which seems a promising area of agricultural diversification that could reduce dependence on groundnuts; (ii) Cassava (*Manihot esculenta Crantz*), a source of food carbohydrates after rice and maize – drought tolerant; this attribute makes it the most suitable food crop during periods of drought and famine; it can be used as animal fodder and degradable plastic bags from starch); and (iii) Beans - Pigeon pea (*Cajanus cajan L.*): good crop for marginal land used by resource-poor farmers; the grain is used for human and stock feed; also used as a windbreak and shade; good plant for restoration of fertility and is used in a rotation such as maize-groundnut; one of the most drought tolerant legume crops, with a wide range of rainfall tolerance.

Enact Policy and guidelines to support the institutionalisation and expansion of Urban Farming practices - targeting women and youth in particular, as a contribution towards food security and employability of young population migrated into urban areas.

Establish an Agromet Advisory Services - using climate-smart agriculture technologies and practices (agro-advisories) through mobile phones, which produces weather-based, crop-focused agrometeorological advisories to provide practical advice on when to plant, appropriate irrigation, which pesticides and fertilizers to use at the correct time, as well as other relevant agricultural support services. The advisories are produced by teams of multi-disciplinary agricultural, water and soil research scientists, who interpret weather forecasts in light of what these mean for the soils, hydrological specificities and the various crops and farming practices of the targeted regions.

Reduce the impact of climate change on the major crops of groundnuts and maize - through a suite of measures that include better water management strategies, improved technical support to the farming communities through an enhanced extension network, and the targeted support of the Agromet Advisory Services.

Strengthen agricultural extension system - to promote climate-smart agriculture; support and expand Climate Change Farmer Field Schools (CC-FFS), particularly to address local climate change induced constraints, e.g. (i) Adoption of early crop varieties to overcome the constraints of shortening crop growing period (CGP), such as rice early varieties (75days); maize (75 days), cowpeas (75 days), etc.; (ii) Development of local composting units; (iii) Use of invasive species such as water hyacinth (*Eichhornia crassipes*) as animal fodder and composting sources; (iv) Use of fast growing species for household fuel and animal fodder (e. g. *Moringa oleifera*); and (v) Support the Institutionalisation of a “Farmers’ Needs Report” which will assist the Ministry of Agriculture to provide all farming inputs on time for each agriculture season ahead of the rainy season.

Implement Agroforestry as a resilience measure for small -scale farming — Integrating trees with crops to act as “nutrient pumps,” and “climate buffers” bringing nutrients that are too deep for crops and providing shade, wind breaker and litter source for water conservation.

Promote climate smart agriculture practices – land use degradation measures including no-till agriculture, off-season cover crops, use of animal manure and biochar.

Fertilizer efficiency – Promote composting and organic matter utilization, encouraging the use of appropriate types/quantities of fertilizer depending on crop response functions, developed through research considering soil type and native soil fertility.

Promote efficient rice water management – With optimal management of water in a rice system, such as alternate wet and dry (AWD), methane emissions can be reduced without adversely impacting yield and potentially increasing yields. It may also prove to be a more efficient use of water in many locations.

Strengthen the value chain of agriculture products – while simultaneously (i) Enhancing rural mobility (rural tracks and feeder roads); (ii) Developing produce cold storage capacity at local level using renewable solar/wind energy; (iii) Establishing milling machines and micro-processing units, and (iv) Establishing national facilities and mechanisms for product certification and market extension targeting in particular the tourism industry;

Promote youth centred “Spin-off” SMMEs for development of climate resilient value chains in each Region - Strengthen agricultural value chains (crops and fruit trees including cashew nuts), while simultaneously enhancing rural infrastructure (e. g. fresh water points, renewable energy source), accompanied by technical capacity development.

Livestock sub-sector

Many areas of The Gambia with mixed crop-livestock systems with large number of animals may in the future see decreases in the quantity and quality of crop residues, putting further pressure on livestock feeding resources, increasing conflict between livestock keepers and farmers, and thus reducing food security. Crop residues are a key dry-season feed resource for ruminants and currently there is only limited information on possible climate change impacts on grassland production and quality. Changes in temperature, rainfall regime and CO₂ levels will affect grassland productivity and species composition and dynamics, resulting in changes in animal diets and possibly reduced nutrient availability for animals.

Adaptation measures in this sector include the following:

Policy and Institutional mechanisms - to enhance adaptation of livestock production systems to climate change and variability with long-term climate change adaptation planning addressing current livestock-based livelihood systems in the region that are best suited to climate change adaptation and provide food security and employment (e.g. promotion of poultry activities amongst young livestock keepers).

Implement climate-smart livestock management practices - that improve productivity or the efficient use of scarce resources to potentiate benefits with respect to food security.

Implement technical and management options for mitigation - in the livestock sector, leading to a reduction of greenhouse gas (GHG) emissions from livestock, e.g. sector efficient livestock feeding systems, such as drought-tolerant millet/sorghum, balanced feed rations and efficient manure management, composting and biogas utilization.

Develop/strengthen Livestock Sector Institutional Policies - for trans-border livestock control to prevent the emergence, spread and distribution of climate change induced livestock diseases via pathways such as increase in frequency of temperature heat waves, affecting developmental rate of pathogens or parasites, shifts in disease distribution that may affect susceptible animal populations, and effects on the distribution and abundance of disease vectors.

Promote youth centred "Spin-off" SMMEs for development of climate resilient value chains - Strengthen agricultural value chains (crops and livestock), while simultaneously enhancing rural mobility, product certification, and market expansion targeting the tourism industry (e.g. goat cheese production using renewable solar energy based cooling rooms, biogas production for household fuel use, animal waste based composting and fertilizer production, etc.).

Forestry

Further degradation of vegetation cover is taking place through freely moving cattle (transhumance) and small ruminants. Rapid population growth and urbanisation, for example in the Brikama area, have placed increased demand on forests for new settlements and/or expansion of existing ones, agricultural production, fuel wood, timber for construction and other forest produce. Cattle production is constrained by scarcity of feed and water during the long dry season, and aggravated by rampant bush fires that consume most of standing hay, crop residues and by-products to feed cattle. The Forestry sub sector could arrest and reverse degradation of lands along river banks and mangrove areas and protect others at risk of degradation from erosion, and in the process, expand land availability for increased rice production from tidal irrigation, and short cycle cash crops from uplands. Forestry could also increase the efficiency of the value chains of livestock, especially increasing off-take and processing of cattle in the rangelands of the country.

Adaptation options in this sector include the following:

Implement long term ecosystem-based resilience and good agricultural practices - Support and scale up ecosystem based adaptation (EbA), linked to community based adaptation programmes to arrest and reverse riverine and coastal mangrove degradation, linked to: (i) Sustainable increase in tidal rice and short-cycle cash crops; (ii) Restoration of the buffering ecosystem surrounding the coastal dunes and riverine bank areas to control of traditional wildlife (hippos) grazing areas; (iii) Promotion of fast growing species for supply of household fuel material; and (iv) Promotion of Efficient cook stoves using animal manure (dung) and or agriculture (rice husk) forest (debris) waste.

Develop Land Use and Land Use Management Plans - at Regional and Municipal level to: (i) Address the need of more properly demarcated grazing-based systems, with sufficient access to drinking water points to avoid further encroachment of forest and farming land; (ii) Update soil map, to serve as an input into climate-resilient land use planning and strategic environmental assessment (SEA).

Implement long-term Monitoring and Management National Mechanisms – supported by: (i) Establishment of a National Climate Change Centre for Information and Risk Management (CC- CIRM); (ii) Provision of a strong a robust Remote Sensing Unit (equipped with appropriate advanced GIS (ArcGIS 9.2 or higher and Spatial Analyst Extension) to serve all the various Government Agencies dealing with Climate Change Vulnerability and Risk assessment/management and mapping; (iii) Establish an operational mobile innovative system using drone-based GIS technology to undertake detailed mobile mapping for real time monitoring purposes, which can significantly lower costs and reduce worker safety risk and assure repetition in time. This methodology can also be used in risk and

vulnerability assessment, allowing for resource savings and a more accurate result in areas of forest management related to encroachment, forest fires, coastal monitoring including sand mining and planning; (iv) Sufficient trained remote sensing operators and researchers; (v) Training and equipment of National Forest Guards in each of the regions for monitoring/ enforcement of all forest management guidelines regarding encroachment, fire, logging, etc.; (vi) Motorized mobility (motorcycles); and (vii) Community sensitization on climate change impacts and mitigation/adaptation measures.

Policy driven promotion of ecotourism facilities to enhance forest management - These ecotourism initiatives will benefit from fiscal incentives for attaching to them small-scale Village Centres for Agro-Forest Resources Transformation (Village CARTs), and physical and logistic infrastructures to allow the functioning of CARTs sector activities in each of the regions, for example (i) Creation of art crafts workshops; (ii) Construction and maintenance of the low-cost community infrastructures including facilities and equipment for production of native fruit jam; (iii) Support to establishment of beekeeping and honey production facilities; (iv) Support for establishment of native fruits liquor production facilities; (v) Construction and maintenance of the low-cost community infrastructures for small ruminant and poultry breeding; (vi) Mushroom farming and dry mushroom processing; and (vii) Poultry farming and egg production.

Water sector

Projections in The Gambia are for an increase in temperature, resulting therefore in an increase in evaporation and evapotranspiration. While there are large uncertainties on the impact of climate change on precipitation, models converge in predicting more variability in rainfall patterns, with increased occurrence of extreme events like intense precipitation or longer periods of dry weather. These two factors will contribute to disruption of the water cycle in The Gambia, which will affect the soil water holding capacity, leading to longer periods of water deficit and more frequent floods. This will affect rainfed farming, through increased variations in river runoff and groundwater recharge, as well as livestock feeding and watering. (FAO, 2013a). Any action that reduces sensitivity and exposure to these hazards, or increases the capacity to respond or react, will have a positive impact on resilience of the Gambian farming communities.

Adaptation initiatives in this sector include the following:

Establish a National Master Plan for Irrigation and Drainage Network for Riverine Areas to implement sustainable provision and usage of irrigation water to farming communities - to accommodate water discharge management after the Futajalow Dam is built - which, supported by Land Use and Land Use Management Mapping, should include the construction of irrigation infrastructure, water harvesting structures, and training of farmers in efficient water use at the plot level, taking into account the expected limitations on groundwater recharge from projected climate change impacts.

Increase adaptive capacity to strengthen resilience of the water sector - by: (i) Creating national mechanisms to lessen the projected change in river salinity regime due to climate change, through implementation of a flow regulation system and by implementing water use regulations particularly related to the sustainability of the tourism Industry; (ii) Increasing adaptive capacity to lessen the projected drop in the underground water column, due to constrained groundwater recharge by climate change, through a cross-sectoral development strategy associated with a climate change-integrated River Basin Management Plan (surface and groundwater); (iii) Developing small-scale

rainfall capture and water storage through rainfall water harvesting infrastructures (with maintenance and management plans) at community level, capitalizing on the projected increase in extreme rainfall events; and (iv) Developing an integrated flood protection plan based on a technical assessment and on the climate change scenarios for rainfall projections, as well as a national flood risk map; combined with implementing a Flow Regulation System, either by instituting a diversion method to direct part or all of the river flow in the Gambia River Basin, or through the construction of protection dikes as an adaptation approach, particularly for rice cropping areas.

Establish and scale up effective integrated drought, flood and ground water early warning systems - to enable effective risk reduction for both farmers and communities, as well as for protecting public health and safety, and infrastructure; Establish a groundwater based “Early Warning System” to monitor the status quo of the ground water, both in terms of quantity and quality of the various aquifers.

Parks, wildlife and biodiversity sector

The natural resources base of The Gambia has been subjected to a wide variety of adverse human-induced impacts. Consequently, natural resources have degraded considerably to their present undesirable state. The three most persistent threats to protected area resources (National Parks and Nature Reserves) are logging, infrastructural developments, and land conversion. Unregulated and illegal hunting practices are also common throughout the entire country. Climate change impacts this sector particularly through the increasing dryness and high temperature contribution to wild forest fires. In addition, climate change-induced sea level rise and unsustainable utilization practices, including mangrove cutting as an alternative for fuel wood in much of the Greater Banjul area and for fencing and roofing purposes in the North Bank Region, points to a grim future for biodiversity and its dependent human populations.

Adaptation efforts in this sector must be of an integrated nature due to the interlinkages with other sectors. These should be geared towards:

Expansion of protected area boundaries - by establishing connectivity habitats around protected areas, into which species affected by climate change can disperse or migrate.

Implementing sustainable commercial and non-commercial use of non-timber forest products and other biodiversity resources.

Raising awareness - on the importance of biodiversity and ecosystem services for climate-resilient development.

Conducting an inventory of biodiversity, wildlife and biomass to be able to plan towards: (i) Addressing the human and wildlife conflict; (ii) Exploring the potential of marine turtle beach nesting for ecotourism; and (iii) Developing the ecotourism potential of the River Gambia.

Fisheries sector

In order to contribute to food security and foreign exchange revenues, as well as build resilience to climate change through adoption of adaptive and mitigation measures, the sustainable management of fisheries resources must be assured. This may be accomplished through:

Sustainable adaptive management of fisheries resources - through: (i) Strengthening the resilience of the resource base through sustainable management of fisheries, including avoiding endangered

mammalian species and by-catches using appropriate fishing methods; (ii) Strengthening the Fisheries Department to integrate climate change risks into planning, and to improve its database on the issue of the different species available as well as their value, assessing the maximum sustainable yield versus maximum economic yield, under changing climatic conditions; (iii) Increasing collaborative research and information exchange among national and international research institutions to support a national inventory to map and assess various dimensions of the fish stocks and the impact of climate change on these; (iv) Promoting awareness of climate change risks and capacity building and strengthening of fishing communities in best practices such as co-management and a Code of Conduct for Responsible Fisheries; as well as participatory research and monitoring in the face of climate change impacts; (v) Developing response measures to deal with the impacts of increased wind and storm conditions, including through a seaworthiness and safety programme for fishing boats, and upgrading onshore fishing infrastructure to withstand more severe weather linked to climate change; and (vi) Promoting access to micro-finance facilities for artisanal operators constrained by high interest rates of loans, to increase the resilience against climate change impacts of industrial and artisanal fishermen and young women processors engaged in the sector.

Strengthening the resilience of the Fisheries infrastructure against climate change impacts by: (i) Upgrading all national Fishing Landing Points and Fish market and cold chain structures; (ii) Establishment and operationalization of post-harvest value chain units at each landing site including transportation means, fish handling and processing section, cold room, ice making plant, rodent-free store for smoked fish, smoke ovens, training hall with the availability of water and hygienic facilities; and (iii) Upgrading smoke ovens to modified altona oven which requires considerably more capital investment than the traditional banda system but uses approximately 40 per cent less fuel and only one fourth the labour required by the banda per unit of fish processed.

Community Livelihoods

Establishment of Centres of Excellence for Skills and Product Development in the following sectors: (i) Natural Resources Management; (ii) Fisheries; (iii) Food processing, including oyster production processing and certification; and (iv) Renewable energy (solar installation and maintenance).

Establishment of Waste Management Plans at Municipal Level – National Recycling Training Programmes for youth.

1.6.3 ICZM and River Gambia

Coastal zone management in The Gambia has been undertaken on an *ad hoc* basis to date, with no formally recognised national plan. Prior to 2000, various local coast protection works were undertaken in response to specific flood and erosion problems. Between 2000 and 2004 the international consultancy Royal Haskoning undertook an extensive study that resulted in preparation of a Coastal Zone Management Handbook and several major engineering interventions, although with no consideration of future climate change. Recommendations for ongoing management activities were not picked up by the government, for various reasons, and as a result a further decade has passed with little progress towards a national plan. Aid projects undertaken through the UNDP, GCCA and others have considered climate change and have proposed broadly similar policy level actions to develop coordination between various government bodies and other stakeholders, but again with no significant government progress. The only coastal activity that has proceeded is the very recent

(March 2017) UNDP/GEF funded commencement of work to provide short term protection to the Senegambia frontage, once again on an *ad hoc* basis with inadequate consideration of the wider implications for coastal zone management and the potential for more sustainable methods to achieve future coastal resilience.

Insufficient coastal process or geomorphological information is available to guide the development of coastal zone adaptation responses. The work of Haskoning (2000 and 2004) and the subsequent GCCA review by Coates and Manneh (2015) remain the most authoritative sources relating to the full open coast. In addition, NIRAS (2015) undertook modelling studies specific to the proposed engineering intervention at Senegambia on behalf of UNDP. Although useful, these reports do not provide the depth of information needed to support a coastal zone management plan for the open coast and certainly do not provide adequate information for the coastal stretch of the River Gambia.

As a starting point the following are required:

- Detailed topographic survey of Banjul including the highway and the Bund Road
- Definition of topographic contours for the full coastal zone (open coast and River Gambia) to determine areas at risk from flooding due to sea level rise
- Bathymetric survey for the full open coast and the river
- Tidal elevation, tidal current, river flow, water quality, wave and wind monitoring for several points up the river and at least two points along the open coast (purchase of some monitoring equipment and two inshore survey vessels, plus staff training, has been funded by UNDP, but as yet no field monitoring has been undertaken)
- Nearshore wave monitoring for two points along the open coast and one in the river mouth
- Wind monitoring for two points along the open coast and one at the port (existing but not consistently recorded or analysed)
- Tidal current measurement for the approaches to the River Gambia using drogues and point measurements
- Sediment distribution and geophysical survey of the full open coast and the lower reaches of the river
- Detailed sediment transport modelling for the approaches to the River Gambia, encompassing the coastal area from Bakau in the south to the Senegal border in the north
- Bi-annual beach and backshore monitoring, preferably using miniature drone technology (November and May)
- Land use and habitat survey of the backshore to a distance of at least 150 m or the 3 m GD contour, whichever is the greater, for the full open coast and River Gambia
- Survey of existing coast protection structures along the open coast.

As with all acquired geographical data, there is a requirement to store, analyse and distribute the results from these various surveys and monitoring campaigns using a well set up and accessible GIS (Geographical Information System) combined with reporting of the analysed results. . Ideally the GIS would be a national system under a central control, with well-defined quality and compatibility

standards for receiving and distributing information from and to stakeholders. It is noted that at present there are insufficient resources and capacity in The Gambia to upgrade or replace existing systems.

Beyond the requirement for field information, there is an urgent need to derive cross-sectoral policies and practices for ensuring future coastal resilience based on principles of sustainability, cost effectiveness and best practice within the Gambian context. Existing policies and practices are either outdated or do not exist at all. They need to be agreed and implemented across all relevant stakeholders and Ministries, giving due consideration to the needs of transport, infrastructure, waste management, tourism, mining, fisheries, agriculture, forestry, aquaculture / oyster culture, wildlife management, local culture, public recreation, etc.. Importantly, any proposed engineering interventions along the coast need to be considered holistically to ensure that funding is well directed for the long term benefit of the country and not to support individual stakeholders on an *ad hoc* basis; the principle of **managed coastal realignment** should always be considered as a preferable alternative to building costly defences. Managed realignment is the deliberate process of allowing the shoreline to find a new dynamically stable alignment, rather than attempting to control erosion or flooding by engineering interventions at specific sites. This approach to coastal management may cause the loss of property and assets along the shoreline, but will result in improved long-term sustainability and resilience, as well as re-establishment of a natural foreshore and backshore for the benefit of coastal habitats, tourism, local beach traders (mainly women) and informal public recreation (mainly urban young people with few alternative for open space).¹⁷

A notable gap in future management of the River Gambia is the lack of international agreement on water discharge from the Sambangalo Dam. Although reports from the dam developers OMVG¹⁸ make note of the potential for controlled wet season releases to flood farmland beneficially along the river edge, there does not appear to be any detailed definition or agreement of the management process, and specifically there is no discussion of potential climate change impacts which may include prolonged drought periods when water in the dam will be prioritized to favour electricity production over agriculture or aquifer recharge. A key OMVG assumption for the dam operation is that there is a trend towards longer rainy seasons and more evenly spread rainfall, which is at odds with more generally accepted views of climate change that anticipate longer droughts, shorter rainy seasons and more intense rain storms.

1.6.4 Infrastructure

Waste management

While a number of studies carried out over the years have made numerous recommendations, waste management continues to be a major challenge. From collection, storage and disposal, all aspects of waste management are poorly managed, whilst existing dumpsites including the Bakoteh disposal site are public health hazards as well as being eyesores.

¹⁷ Managed realignment is appropriate in situations where the economic, environmental and social costs of providing a viable engineered solution are not justified by the benefits. The practice has been internationally recognised as an important coastal management method for over 25 years.

¹⁸ Organisation pour la Mise en Valeur du fleuve Gambie (the Gambia River Basin Development Organization)

Poor management of the sector is due to a large extent to inadequate capacity of municipalities to address the problem. Urgent financial and human resources development, together with a substantial financial investment, is required to improve the sector.

Both Bakoteh and Mile 2 Dump sites are no longer capable of handling the volume of waste they were intended to handle, whilst Bakoteh has been rendered unhealthy and ineffective by the uncontrolled urban development and encroachment around it. It is therefore necessary to identify a new site, using multiple socially acceptable criteria that factor in climate change projections, which can replace both Bakoteh and Mile 2.

Apart from the formal sites, a number of illegal dumpsites exist, some of which are located on waterways. These should be completely eradicated, based upon improved waste collection strategies that maximize entrepreneurial opportunities. Improved integrated waste management is inextricably linked to updating and enforcing land use planning in the GBA, and indeed throughout the country. For an enhanced urban environment, existing environmental and physical planning laws and regulations should be enforced, to eradicate inappropriate developments on waterways, amongst other issues.

In order to address adaptation and mitigation deficits, the following are proposed:

- Closure of existing sites such as Bakoteh, which are no longer serving their useful purpose;
- Take appropriate measures against illegal and clandestine dump sites – these need to be cleared, including blocked waterways especially those in the periphery of dwellings;
- Establish comprehensive waste collection procedures and carry out ongoing sensitisation of the population on these procedures, as well as climate change and health related impacts.

Water supply and sanitation

Water supply in rural Gambia is the responsibility of the Department of Water Resources, while NAWEC operates the urban water supply systems. In addition to these, water supply is such a major cross-cutting activity that a number of other stakeholders are involved in its management, necessitating an integrated approach to water resources management strategy. Recent developments have resulted in a more supportive legal and institutional framework, as there is now an IWRM Policy, Strategy and Road Map. There is an evolving institutional framework that includes water user groups. However, all of this is project based, with no dedicated budget lines for reliable and ongoing support to institutions, which means they are not able to carry out their institutional mandates effectively.

The Banjul sewerage system currently suffers from both infrastructure and operational problems. These include blockages in the system, infiltration of rain water and sand through manhole covers, intermittent mains power supply to the two pumping stations and regular overflows to the environment chiefly at the pumping station.

The Kotu system on the other hand, suffers from discharge of raw sewage into the Kotu Stream due to defective sewer pipes, a lack of overflow storage capacity during pump/power failures, lack of an alarm system to alert operators that there is a problem with the pumps, and intermittent mains power supply to the pumping stations. In addition to these, fundamental equipment needed to adequately maintain and repair failures in the system is lacking.

Apart from these problems, some of them significant, the Banjul sewerage system is generally fulfilling its primary function of collecting and discharging sewage to the sea outfall. However, this in itself is undesirable, and without intervention to maintain the system to a satisfactory level its performance may continue to deteriorate.

It is anticipated that greater sewage flows will be generated through the introduction of an improved and more reliable water supply for the TDA. Even without this, the satisfactory collection and disposal of sewage from existing and future development of the TDA has always been an issue of significance for the tourism industry.

While not yet well understood in The Gambia, there are concerns that the impact of climate change on drinking water supply and wastewater management will have significant public health consequences, in the absence of adaptation responses. An immediate adaptation measure is to identify and take appropriate measures for wells, particularly those in coastal areas, which are at risk of, or affected by, saline contamination.

Roads and drainage infrastructure

In light of the relevant analysis in section 1.4, it is clear that the current practices adopted by various municipalities in dealing with drainage problems in the GBA and the growth centres are not sufficient to address the problem.

Today, the design of any project, especially road infrastructure, should no longer be done on the basis of the classical assumptions, namely traffic flows, axle weight, etc. Rather, all infrastructure should be designed to accommodate climate projections, using a low regrets approach. Although the National Roads Authority (NRA) runs a road maintenance unit, maintenance schedules are irregular and often carried out when significant damage has already been done. Due to its technical nature, capacity of road maintenance staff needs to be enhanced for maximum results.

An appropriate drainage facility should be an integral component of any road or bridge. Drains protect roads and bridges from damage due to storm water and run-off particularly during the rainy season. Unfortunately, most road and bridge constructions in the GBA do not include drain facilities.

Drainage challenges relate to lack of effective planning and management. Existing facilities are limited to a network of drains facilities that may be required to convey storm water to a receiving water body as well as drainage channels built to serve some of the major roads. In both cases, operation and maintenance of such drainage facilities is the responsibility of the relevant local government authorities. However, due to the acute budgetary constraints that characterize these institutions, maintenance activities are generally limited to minor structural repairs and removal of sand and debris blocking the drainage system. To achieve the optimal from the drains, it is important to sensitise the general public on the purpose of the drains and the need to utilise them and avoid throwing waste into them. The drains should be adequately maintained at frequent intervals.

In areas where there are no drainage channels, significant ponding of water in streets occurs. To avoid the inconvenience and damages that accompany water ponding, local councils will need to put in place strategies that will ensure construction of sufficient drainage facilities.

An environmental impact assessment should be prepared for drainage projects where this is required in accordance with the 1999 EIA procedures and the 1999 EIA Guidelines, to comply with the National Environmental Management Act (1994).

The sustainability of road infrastructure must meet an unequivocal standard for climate resilience. Investments may therefore be costly both in terms of new work and maintenance; best practices must be taken into account, without being exhaustive. These include:

- an accompanying drainage system in the design and implementation of road projects; and
- expedite road maintenance to reduce the rate of deterioration between the preparation of tender documents and awarding maintenance contracts.

Energy infrastructure

Energy Infrastructure in the Gambia suffers from numerous constraints resulting in a highly erratic power supply. This is due to various factors including ineffective planning of both maintenance and repair operations, leading to unreliable and unmanageable machines. Immediate plans to replace existing aged generators should be explored. This is essential to reverse the current drop in power supply capacity.

Human resources development together with a substantial financial investment is required to improve the sector. A clear replacement policy for generators, transmission and distribution networks and associated equipment should be developed and implemented urgently.

With respect to vulnerability to climate change, critical issues lie in the adverse environmental effects, with knock-on effects for climate resilience, created by the heavy reliance on fuel wood. This is exacerbated by inadequate investment in renewable energy options and the current lack of interconnection with the West Africa Power Pool. The production of biogas energy will require investment to ensure appropriate skills development for this technology, and collecting sufficient quantities of appropriate waste presents a challenge.

1.6.5 Land use planning and uncontrolled urbanisation

The sections above focused predominantly on urban and peri-urban infrastructure with respect to waste management, although many of the issues are common to the rural areas as well. With respect to waste management and drainage, the situation is exacerbated by the uncontrolled urbanisation and haphazard land allocation noted in section 1.4.6. The claims and needs for land and the expansion of residential properties tend to be in conflict with other requirements for land; despite a comprehensive legislative and institutional environment for land use planning and land administration, significant social, health and environmental risks abound, related to urban sprawl into valuable agricultural land, depletion of mangroves and forests, and pollution of the riverine areas. Uncontrolled dumping in the riverine areas and drainage channels is already exacerbating increased flooding that is linked to climatic change. These risks have been significantly increased recently with the informal closure of the Bakoteh waste disposal site. Controlled utilization of the available land resources is urgently required, to promote environmental sustainability, human health and climate resilience. To achieve the equitable use of such resources, policy guidelines for future urban development and an administrative machinery to implement them became imperative.

1.7 Policies and strategies

[After integration of comments from stakeholders and the external reviewer, this section will be summarised to provide a shortened version here, while the full text will be placed in an Annex.]

This section examines the legislation, policies and strategies in place in The Gambia that directly or indirectly impact on climate change and climate resilience. The conclusion of this section is that the policy and legislative framework is in need of significant updating. Important next steps would be to formalise the draft National Climate Change Policy, and to deepen the integration of climate change and environmental sustainability into the draft PAGE II, not least by providing sufficient resources for implementation of mainstreaming actions. Much relevant sectoral legislation does not reflect the realities of climate change risks; even where legislation refers to “the environment” this tends to be seen in a more narrow environmental impact assessment context, rather than in the context of preparing for climate change. Many of the policies and strategies contain provisions that work against climate change (see Box 2 below), and there is a lack of policy coherence, which may cause conflict between portfolios, and work against equitable, efficient, effective and sustainable governance, particularly within the context of moving towards greater climate resilience in The Gambia. New legislation is pending – particularly as regards water resources management – which addresses climate change risks, but which has been held up pending the establishment of new democratic structures following the change in government of January 2017.

As an overarching statement in terms of mainstreaming climate change and sustainable development into national development planning and into the policy framework of The Gambia, the draft PAGE II states that it mainstreams the Sustainable Development Goals (SDGs), the African Union Agenda 2063 and the Istanbul Plan of Action to ensure the achievement of sustainable inclusive growth and prosperity. While this is positive, the ability to achieve this mainstreaming in concrete terms will depend on the nature of the sectoral policy and legislative framework, as well as its implementation and enforcement. The draft National Climate Change Policy represents a significant step forwards, with many progressive and necessary provisions designed to ensure a coherent and effective approach to reducing vulnerability to climate change and building adaptive capacity and resilience. Implementation of the NCCP, after it is formally approved by Cabinet, will require considerable investment and effort – and indeed this is the central subject of this SPCR

An examination of the sectoral policy and legislative framework reveals a situation in which much remains to be done to mainstream climate change, within a sustainable development approach. Existing legislation, where it mentions environment, mostly focuses on conservation and environmental impacts, with no mention of climate change (e.g. **Fisheries Act** of 2007; **Biodiversity and Wildlife Act** of 2003; **Renewable Energy Act** of 2013, **Minerals Act** of 1953, **Mines and Quarries Act** of 2005. The Mines and Quarries Act is particularly relevant, as the quarrying/sand mining in the coastal zone has direct and immediate impact on the area in question as well as, potentially, all along the coastal zone – particularly as this Act “extends to the land beneath the territorial sea, and the sea bed and the sub-soil of the continental shelf of The Gambia” (Section 2.1). The focus of the Act is more on the licence fee and permits than on environmental impact, let alone climate change. The **Petroleum Act** of 2004 and the **Petroleum Products Act** of 2016 limit themselves to environmental impact assessments, and obligations to avoid damage to “the environment”. The **Public Utilities Regulatory Act** of 2001, the **PURA Enforcement Regulations** of 2009, and the **Information and Communications Act** of 2009 make no mention either of the environment or of climate change, even

though the utilities covered by the Act cover “provision and supply” of electricity, petroleum, gas and water; and “regulated public services” include, for example, energy services, water supply and sewerage. The only provision relating to climate is that the Authority must have regard to: “The need to make the best use of any natural resources of the Gambia (Section 24, sub-section 4.a)”, without further specification.

The **Renewable Energy Act**, while it does not explicitly discuss climate change, does have as its principle objectives to promote and enhance the use of renewable energy resources, which, if carried out in a sustainable fashion, would be expected to promote climate resilience. However, the Act does not discuss the impacts of continued use of biomass (including on forest cover; and health impacts) on climate change, but rather focuses on the use of biomass as a renewable energy resource. The Act calls for the adoption of a strategy for the sustainable use of biomass energy sources (a “**Biomass Strategy**”) with one year of the coming into force of the Act. Lack of technical and financial resources in the Ministry responsible have, thus far, stood in the way of the implementation of activities necessary to prepare this Strategy.

Environmental Acts, such as the **Environmental Quality Standards** of 1999, **Hazardous Chemicals Act** of 1994, **Plant Importation Act** of 1936, and even the **National Environmental Management Act** of 1994 focus on conservation, pollution control, and environmental impact studies, rather than incorporating any aspect related to climate change

Significant efforts have been made to mainstream climate change into three policies of the ANR sector: (i) the **Forestry Sub-Sector Policy** (2010-2019), noting the “inadequate consideration of climate issues in the policy design”, was updated in 2013 to highlight the impacts of ongoing climate change on forests, and the critical need to reduce deforestation and enhance ecosystem resilience, in the face of climate change; (ii) the **Agriculture and Natural Resources Policy** (2009-2015), which was revised in 2013 to integrate climate change issues systematically, including highlighting risks to food and cash crops, as well as livestock, from future climate change effects, as well as negative impacts to natural ecosystems, with mangroves and grasslands being negatively affected; and (iii) the Climate Change-Integrated **Fisheries Strategic Action Plan** (2012-2015), which was reviewed to place more emphasis on anticipated climatic impacts on fisheries, and to propose a number of adaptation response measures. The **Education Policy**, discussed below, also includes significant reference to climate change. The SPCR team was informed that a new ANR policy was being drafted which would continue the systematic integration of climate change; but no drafts of this were available on which to comment. Significantly, although women and female-headed households are the main work-force in agriculture and should be a key focus of “rural resilience” efforts, gender is not significantly mainstreamed into the existing ANR policy’s sub-sector policies and strategies, even though in its discussion on cross-cutting issues the Policy does recognize a number of key constraints facing women: access to land and land rights; lack of collateral to access credit, limited access to formal markets, lack of market information and access to inputs, etc.

More recent programmes within the agriculture and natural resources sector have started to specifically address both women and youth, as well as climate resilience, for example:

- **Strengthening Climate Resilience of the National Agricultural Land and Water Management Development Project (ASAP) – Chosso**; under the IFAD-initiated National Agricultural Land and Water Management Development Project (Nema). Nema seeks to reduce the rural

poverty of women and young people by increasing their incomes from improved productivity based on sustainable land and water management practices.¹⁹

- **Building Resilience to Recurring Food Insecurity in The Gambia** (the Islamic Development Bank's), which does focus specifically on women, on youth and on building resilience to Climate Change and enhanced food security.²⁰

Tourism

The **Gambia Tourism Board Act** of 2011 repealed the **Tourism Authority Act**, established the **Gambia Tourism Board** (GTB) and provided for the **Tourism Development Areas (TDAs)**. The Act includes provisions in relation to licensing of hotels, nightclubs, casinos and restaurants, as well as for the designation and demarcation of TDAs, but makes no mention of any environmental responsibilities – whether by the GTB or by a leaseholder – and is completely silent on climate change. The Regulations accompanying the Act of 2011 make mention of building plans but these constitute no obligation neither do they mention climate-secure building codes. However, the Regulations mention both the responsibility of the Department of Physical Planning (Sections 7 and 8) in approving plans (in accordance with Physical Planning Regulations) and the obligation that projects within the TDA be connected to the underground water and sewerage system provided by NAWEC, and that pipe sizes and materials be in accordance with NAWEC recommendations and regulations (Section 39). Therefore, changes in Physical Planning regulations and NAWEC regulations would also apply to future building and construction works. The regulations do specify requirements pertaining to erosion control and drainage (Section 13) but only to “stabilise ground surfaces at the risk of wind, runoff or wave erosion”, and to maintain major drainage channels “in conformity with public health regulations”. No requirements for environmental impact assessments are included in the Regulations; and no mention is made of climate proofing (whether related to sea-level rise, extreme weather events, flooding, etc.).

The **Tourism Policy** (undated – but presumably from around 1996) recognizes the need for review of tourism-related legislations as these “are either rendered obsolete by current exigencies or are too numerous and unwieldy, under the administrative authority of non-tourism Ministries and agencies”. However, the laws referred to are those dealing with taxation, service fees, expatriate employees, business registration, auditing and land rates, with no mention of climate change. The Policy draws attention to the need to eliminate the haphazard planning of the coastal area, landscape erosion, indiscriminate sand mining on the beaches, and environmental pollution by refuse dumping and control stray live-stock. In addition, the Policy notes that critical evaluation will be made by the Tourism Area Development Board to assess the environmental impact of new hotel building investments, so as to better control the spread and quality of structures that are being implanted in the TDA to safeguard environmental aesthetics. However, no mention is made of climate-change related issues such as, for example, sea-level rise, which would have a major impact on all tourism-related infrastructure along the coast.

Equally, the **Tourism Development Master Plan** (of 2006) focuses more on product development in a more-or-less static “business-as-usual” situation rather than on developing a sector resilient to climate change. The challenge at the time was seen as one of maintaining The Gambia’s tourism potential “by preserving and restoring key natural resources to as pristine a condition as possible”. The Master Plan

¹⁹ IFAD Design Mission February 2015

²⁰ IDB Project appraisal report 2013

notes that there are opportunities to use tourism to leverage funds for environmental investment and management, not just for the industry, but for improved living conditions throughout the country. However, the Policy also notes that while: “The basic legal and institutional instruments for effective environmental management are mostly in place. (and) The same can be said of the laws and institutions that control forests and wildlife habitats. (However) The need for action arises mainly from the inability of concerned institutions to carry out their assigned functions” (p.64). No mention is made of climate change, its potential impact, or the need to make plans for the potential impact of climate change on what is one of The Gambia’s main economic sectors.

Box 2 Policy provisions that work against climate resilience

Much of the legislation in The Gambia pre-dates climate change awareness. The sectoral silos have hampered mainstreaming climate change, with the tendency to leave everything to do with environment and climate change to the MoECCNAR, without necessarily seeing these challenges as being cross-sectoral. While climate change is now being addressed in new draft legislation (e.g. water resources) and in strategies (e.g. agriculture and natural resources; forestry), existing legislation – where it addresses the topic at all – is mostly restricted to environmental impact assessments of a very limited nature. Changes in this would require changes in the National Environment Management Act and its associated regulations to move from a requirement that an environmental impact assessment determines whether a project will have “any adverse impact on the environment” to a requirement to specifically address climate change as part of the long-term, multi-sectoral impacts of an intervention, and to include provisions for enforcement. For example, there are presently numerous user conflicts between different stakeholders with respect to the management of coastal resources such as fisheries, mining of minerals (sand, ilmenite), agriculture and forestry. The Mines and Quarries Act focuses on licences and royalties with only one-sub-clause to “protect the environment of The Gambia” and another “requiring the restoration of land on which mining or quarrying operations have been conducted”. There is no sand mining master plan; no legal framework to protect the remaining mangroves and critical coastal habitats; no provision in land-use planning to keep vulnerable areas free of construction; a Minerals Act (1953) and Rules (1963) which still allows the holder of a mining right, to “deposit in the watercourse tailings from mining operations”.²¹ but only prescribes “reasonable measures for the prevention or reduction of soil erosion”.

The same applies to the integration of Disaster Risk Management – even though provisions are included for the NDM Act to have “over-riding effect”, this provision is more likely to be used during the management of a disaster than as an ongoing principle in disaster preparedness, anticipation and mitigation.

As highlighted in the PAGE Mid-Term Review, the lack of favourable enabling environment with a well-defined and elaborated consistent policy framework predicated on seeking national interest is significantly reducing effectiveness of development in the Gambia. Unless a strong policy framework is put in place, all gains would ultimately be unsustainable.

Health

The health sector is regulated by the **Public Health Act** of 1989 which has no specific environment or climate change focus, although a certain number of provisions in the Act relate to the environment, and potentially also to climate change (purity of water supply, waste removal, control of mosquitos and other insects, inspection of the sanitary condition of beaches and, in general, the prevention, treatment, limitation and suppression of disease. The **National Health Policy** (2012-2020) equally does

²¹ See also: Concept Note: Identification of Development Program Priority Needs in terms of DRM, Urban Flood & Climate Resilience.

not integrate either environment or climate change as a cross-cutting issue, apart from mentioning the potential effects of the environment on socio-economic growth, and making the link to the **National Environment Management Act** (of 1994). However, the MoH&SW is expecting funds shortly in order to revise the National Health Policy, specifically to incorporate climate change issues. The potential health impacts of climate change such as vector-borne and zoonotic diseases (malaria, yellow fever, dengue, etc.), water-borne diseases (cholera, schistosomiasis, etc.) and weather-related morbidity and mortality (as a result of extreme weather events) are not integrated into policy. The updated **Health Sector Emergency Preparedness and Response Plan Related to All Hazards** (2017-2019) does not mention climate change specifically, but does address a number of climate related hazards as well as underlining the cross-sectoral cooperation in addressing health sector hazards (drought, floods, bush fires, windstorms, locust invasions, environmental degradation and epidemics), many of which could be construed as being climate-change related.

Education

Education, at Basic, Secondary and Tertiary level falls under the Ministry of Basic & Secondary Education and of Higher, Education, Research and Technology. The most recent strategic plans and policies are contained in the **Education Sector Strategic Plan** (2014-2022) and the **Education Sector Policy** (20156-2030). The strategic plan clearly underlines the challenge that The Gambia is facing regarding the education of women and girls - for example, while representing 51% of the country's population, they represent only 31% of students enrolled in public tertiary and higher education. Traditional norms, early marriage, teenage pregnancy, sexual harassment, etc. all impact on this. As a consequence, the **Education Policy** (2016-2030) aims at *"improving access to quality education for all, particularly girls, for greater gender equity"* (Section 2.2.4). As regards Science, Technology and Innovation, the Strategic Plan aims at focussing all potential capacities of science, technology and innovation to address *"poverty reduction, competitiveness, sustainable environmental management and industrial growth"*. A major element seen here is the recognition of The Gambia's climate dependency, the need to better exploit available energy resources, including renewable energy, thus tackling the effects of deforestation. However, the Strategic Sector Plan does not really address climate change nor the environment (apart from the passing reference to deforestation).

By contrast, the Education Policy is much more emphatic on the subject of environment and climate change, devoting a whole section on this topic, and underlining the emerging environmental issues that require educational sector intervention. The Education Policy calls for provision to be made to integrate environmental education into school curricula, among other legal frameworks for environmental planning, management and decision-making. The Policy (Sections 7.30) notes that:

There is urgent need for young people to be equipped with the necessary knowledge, skills and attitudes to be able to address the challenges triggered by climate change resulting to global warming and sea level rise; coastal and marine degradation, loss of biodiversity, and issues of waste and waste management.

Considering the need to prepare the youth for adaptation to the effects of climate change, and to engage them with a view to a proactive, conscious and relevant response to the profound changes taking place on the West African coastline, the education sector will partner with the relevant stakeholders to push forward environmental education, including its integration in school curricula.

The policy also underlines the need for partnerships with national, regional and international bodies to develop both curricula and pedagogical approaches to address these issues. The policy also focuses on pre-service and in-service training on these subjects; school agriculture as a basis for understanding the importance of agriculture as well as providing inputs into the school-feeding programme, providing technical and vocational training to meet the emerging needs of the labour market, as well as

encouraging and facilitating the universities and other training institutions to develop and offer training courses in the area of natural resources management and other courses that are relevant for improving positive human- environmental interactions. (Section 7.30.7)

The Strategic Plan for Education foresees the establishment of one TVET training institution per region, based on experience from the field, from training institutions (such as the Songhai agricultural training project model) reviewing their experience, and developing a curriculum based on the results of this analysis.

Women

The Education Policy has drawn attention to the gender imbalance in education, and the importance of working towards gender equity. The **Women's Act** of 2010 addresses the legal provisions for the advancement of Gambian women, including enforcement of the UN Convention on the Elimination of all forms of Discrimination against Women (CEDAW), the African Charter on Human and Peoples' Right on the Rights of Women in Africa. In addition to the Act guaranteeing women equality and justice before the law, the Act also recognizes every woman's right to movable and immovable property, underlines Government's obligation to mainstream gender in planning and programming of all activities, and to adopt temporary special measures in favour of women aimed at accelerating equality. The Act further makes special provision regarding the rights of women in rural communities, including the rights of women *to have access to agricultural credit and loans, marketing facilities, appropriate technology, and equal treatment in land and agrarian reform, as well as in land resettlement schemes.* (Section 33.2.e).

In particular, as regards the environment – and by extension to climate change – the Act enshrines the right of every woman to live in a healthy and sustainable environment (Section 51.1) and further:

Section 51.2: *The Government shall take appropriate measures to:*

- (a) Ensure greater participation of women in the planning, management and preservation of the environment and the sustainable use of natural resources at all levels;*
- (b) Promote research and investment in new and renewable sources and appropriate technologies, including information technologies and facilitate women's access to, and participation in, their control;*
- (c) Protect and enable the development of women's indigenous knowledge systems;*
- (d) Regulate the management, processing and disposal of domestic waste; and*
- (e) Ensure that proper standards are followed for the storage, transportation and disposal of toxic waste.*

Nevertheless, despite the gender equality provisions of the Act, civic participation, land ownership, etc., still favours men. Customary biases often mean that women do not exercise their land rights,

neither do they have the financial resources, knowledge, and capacity to go against social norms. Management systems are weak, resources to address gender bias are extremely limited and there is significant community antagonism to women's equal rights. A shift is therefore required in the thinking, attitudes, and understanding of men and women as well as officials and decentralised government structures and traditional authorities. The attainment of gender equity with regard, for example, to land rights (as well as other rights provided for under the Act) consequently depends not only on legal recognition of those rights but also on overcoming social and cultural constraints.²²

Disaster management and DRR

The **Strategic Action Plan for the Disaster Management Programme** (2008-2011) notes, in its introduction that, climate change will have repercussions as it can lead to: *desertification, rising sea levels, rapid shifts in vegetable zones, lower agricultural production and a greater shortage of fresh water*. The Plan notes that the repercussions will affect particularly the poorest who will be worst hit – which includes women and children, the physically challenged, and other marginalised groups. The **Strategic Plan** (2008-2011) has developed an overall vision, as follows: *Assurance of safer and resilient communities in which the impact of hazards would not hamper development and the ecosystem and provision for a better quality of life will be achieved through effective emergency and disaster services;* with, as policy goal: *to ensure a proper and effective mechanism for disaster mitigation and preparedness that will save lives and livelihoods in the country.*

The Strategic Action Plan updates the **National Disaster Management Act** (of 2008) which, while already focussing on “prevention, preparedness, response, mitigation and recovery” did not fully integrate climate change as an ongoing preparatory factor. It is clear that with chronic vulnerabilities and changing risk patterns disaster management strategies will increasingly need to focus on being prepared. As noted:²³

The Gambia is among the most vulnerable countries to climate variability and change due to its geographic location, low deltaic floodplain, and hydro-meteorological influence of erratic rainfall and other extreme climatic events. Each year these flood hazards impact building infrastructure, as well as agricultural crops and result in loss of human lives. Increased risks to severe flooding, more frequent extreme weather events, salt intrusion due to erratic rainfall pattern, increased temperature and a potential sea level rise pose new risks to the urban infrastructure, particularly to the coastal areas. In 2010, the capital city of Banjul and its surrounding, including the Kanifing Municipality (KM) and WCR as well as other major towns in The Gambia experienced extensive severe flooding. Climatic events like flooding have in recent years become less predictable and more severe in terms of impacts and frequency.

In this context, the **National Disaster Management Act** is particularly important because this Act has an over-riding effect on any other law for the time being in force (Section 120) as part of the Government's overall disaster management measures.

The 2008-2011 Strategic Plan, was updated in 2013, as the **Strategic National Action Plan (2014-2017) – Strengthening Disaster Risk Reduction and Management in The Gambia**. This Plan specifically recognized the need to integrate climate change adaptation with disaster risk management, and is committed to develop risk assessment and risk modelling tools, including drawing on technical

²² Source: NAP-GSP Stocktaking Report, 2015. p11.

²³ Source: The Identification of The Gambia's Development Program Priority Needs in Terms of Disaster Risk Management, Urban Flood and Climate Resilience, May 2016

assistance from international partners (World Bank, ECOWAS, ISDR and the Africa Risk Capacity agency and in close collaboration with the private sector and insurance industry) to develop innovative and sustainable strategies of disaster risk financing.

Key areas for intervention in order to promote resilient development include the enforcement of DRR measures in land-use planning and building regulations and standards. At present, these are all inadequate, being based on legislation dating back to the 1990s.

Local government, land and physical planning

Building codes and regulations fall under the Ministry of Local Government and its Physical Planning Department, and are part of a series of measures requiring urgent action to underpin climate resilience. Action to update and climate proof building standards, energy codes, etc., is being undertaken jointly between the Ministry of Local Government and The Gambia's Standards Bureau. However, work has only recently started on this and the process is still in its early stages. The process will need validation as well as integration into legal frameworks such as the **Local Government Act** and the **Physical Planning and Control Act**.

There are three main sources of land law in The Gambia: (i) general law i.e. the English common law; (ii) customary law; and (iii) local land legislation including the Lands (Registration of Deeds), the repealed Lands (Banjul and Kombo Saint Mary's) Act, the Lands (Provinces), the State Lands Act, and regulations, Land Acquisition and Compensation Act and the Physical Planning and Development Control Act.

The rules of land tenure in The Gambia differ between the GBA (Banjul and Kombo Saint Mary area) on the one hand, and the provinces on the other. In the former, the system is influenced to a significant extent by rules of English land law, while in the latter it is based predominantly on traditional norms and practises.

Prior to the enactment of the State Lands Act in 1991, the holding and management of land in Banjul and Kombo Saint Mary's Division was regulated by the Lands (Banjul and Kombo Saint Mary's) Act. The Act gave the Minister the responsibility for making leasehold grants within Banjul and Kombo Saint Mary. Even though the Act did not stipulate the maximum term for which grants could be made, administrative practice had been to grant leases of twenty-one years renewable for a further term of twenty-one years for residential purposes. Grants of land in fee simple i.e. for an unlimited period of time could only be made with the consent of Parliament, except where the State had previously acquired the grantee's freehold land, in which case the Minister could compensate such a dispossessed owner with a similar freehold estate.

There was no provision in Lands (Banjul and Kombo Saint Mary's) Act vesting lands in Banjul and Kombo Saint Mary to the State. However, it made the State the paramount owner of land in the area, even though this operated side by side with lands held under customary tenure and a few freehold titles pre-dating the Act.

While this is a relatively comprehensive legislative environment, there is a need for review to mainstream climate change within the context of sustainable development; and to ensure that provisions and enforcement are in place to control the widespread problems of settlement and illegal waste dumping in drainage channels that are exacerbating flooding in the GBA and elsewhere. The **Local Government Act** (of 2002) and the **Physical Planning and Control Act** (of 1990), together with related legislation (**State Lands Act** of 1990, the **Surveys Act** of 1990, the **Land Acquisition and**

Compensation Act of 1994, and their various regulations), as well as the **Local Government Finance and Audit Act** of 2004, are all essential but completely outdated legal texts. The Local Government Act makes provisions for local government powers and functions, including sections relating to natural resources (environmental protection, protection of forest, fisheries and water resources in their areas of jurisdiction – Section 71) but also as regards geography and demography as sea-level rise has the “potential to change the landmass of The Gambia and this may ... have a bearing on future local government boundaries, and the growth and distribution of economic centres”²⁴.

Thus, the Physical Planning Act provides the legal basis for the Banjul Physical Plan, which was supposed to be updated every 5 years. In fact, only one physical plan was ever made for Banjul, which actually covers the Greater Banjul Area and the TDA, but this plan dates back to 1990, and is completely out of date. The first GBA Land Use Plan has become grossly out of date since its preparation in 1985, due to the unprecedented changes that have taken place since then, including haphazard settlements in the Kombos, often as low density sprawl into agricultural land and riverine areas, exacerbating forest depletion and reducing flood absorption ecosystem services, amongst numerous other significant problems.

The Physical Development Plan itself was not found by the SPCR team, only the 1990 Land Use Map, which, in addition to being out of date, is not very accurate (certainly not reflecting present land-use). The Physical Planning Act makes provision for the designation of planning areas, the establishment of planning authorities and the formulation of physical development plans, which must “ensure a well-balanced environment and good living conditions” (Section 8.1). The Act is silent on environmental impacts and makes no mention of climate change. The Physical Development Plan aimed at controlling urban development of the GBA covers the following areas: the City of Banjul, Kanifing Municipality, Kombo North and Part of Kombo South District. Similar Physical Development Plans were also prepared for the three growth centres including the Municipality of Brikama. These plans require urgent review in order to update and align them with current challenges and demands. The Local Government Act of 2002 does mention local government responsibilities for natural resources: “management, protection and conservation of the environment (Section 71.1.a) as well as addressing and regulating certain environment related activities: environmental education; exploitation of forest resources; conservation of areas with high ecological value; implementing biodiversity action plans; rational use of water resources; combatting soil erosion; etc. (Section 71.2).

Neither the **Local Government Act** nor the **Physical Planning and Control Act** address climate change – and both need to be updated in order to address the requirements for the preparation of a Greater Banjul Land Use Plan. The most recent overview of the Banjul Urban Profile is found in the UN-Habitat study of 2012²⁵. This report, when discussing the Banjul urban profile underlines the importance of the three planning areas: Banjul itself, the Kanifing Municipal Council and Brikama Town in the Western region. This demarcation of the Greater Banjul area underlines both the facts that Physical Planning (as defined by the Act) and Local Government (as defined by the Act) are the determining foundations on which to build a land use plan for the GBA.

In parallel, it may be noted that such considerations equally apply to all other land use planning exercises throughout The Gambia – and underline the importance of revising such legislation to make it more appropriate to deal with present day demands – including the need to mainstream resilience

²⁴ Source: Addressing Sea & River Defence Risk Management – Law and Policy Review. NEA, October 2014. (p.30)

²⁵ Gambia: Banjul Urban Profile. UN-Habitat, 2012

to climate change. The two – urban (GBA and rural growth centres) and rural resilience – are inextricably linked as especially Banjul continues to absorb the influx of rural migrants.

As regards GBA, physical planning is hampered by a number of key factors. Master Plans are outdated, problems exist with regard to land registration and acquisition, and land encroachment has become uncontrollable, despite the existence of the **State Lands Act** of 1990 – equally outdated, with no mention of climate change. (For example, while the State Lands Act provides for 99-year leases, the Act makes no mention of what potential effects sea-level rise could have on the land-areas being leased. Furthermore, while the State Lands Act does reserve to the State the right to enter land for certain purposes, such as “removing stone, soil or other substances for construction or repair” no requirement is put on the State to take into consideration the potential environmental impacts of such – Section 15.1.b – or, at least, not under the auspices of the State Lands Act.)

Physical Development Plans were supposed to be introduced to ease land administration, with zoning for different purposes (e.g. residential, commercial, agricultural), however the last revision of these maps took place in 1989. Land use plans are necessary not only to allow for the provision of basic urban services (electricity and water supply, roads, drainage and sewerage, etc.) but also to control encroachment and illegal land allocation (by, for example, traditional authorities) into the wetlands, mangroves and swamps included in and surrounding GBA – areas which will be the first to be impacted by any sea-level rise.

The 99-year **Tourism Development Area (TDA) Lease** (signed 11th June 2015) granted to the Gambia Tourism Board for the “parcel of land situated at Kombo Mary Division, Kombo North District and Kombo South District of West Coast Region..... etc., ... containing an area of four thousand, one hundred and twenty hectares, or thereabouts” (First Schedule of the Lease) borders the area known as the GBA. As such, the area also needs to form part of the necessary Land Use Planning exercise for the GBA as a matter of urgency. Even though the Lease is from 2015, no mention is made in the lease of potential environmental impacts, of impacts on the coastal zone as a result of climate change, sea-level rise or coastal engineering works. The Lease was granted in accordance with the **State Lands Act** of 1990; no other legislation, environmental or otherwise, is referred to in the Lease – virtually the sole environmental provision contained therein is “to preserve existing trees as much as possible” (Paragraph 12, Second Schedule).

Water resources

Presently The Gambia’s water resources are covered by outdated legislation, such as the **National Water Resources Council Act** of 1979. Under this Act (Section 10), provision is made, amongst others:

- *To promote the centralised inventory and management of all water resources in the country*
- *To promote the most rational use of the available water resources, including the abatement of its harmful effects such as flooding, soil erosion, siltation and salinization*
- *To promote the preparation of sectoral water plans, sub-basin plans, basin and master water plans to serve as terms of reference for allocating sectoral uses of water,*
- *Etc.*

Three new Draft Bills awaiting formal approval and enactment have been prepared which address The Gambia’s water resources within the context of climate change. These Acts will, at the same time, repeal and replace the **National Water Resources Council Act**. The principal piece of legislation will

be the new **Water Act**, and will be supported by a **National Water Resources Management Authority Act** and a **Meteorological Authority Act**. The Water Resources Board (Section 9 – functions and powers) will be: *the principal body for water resources management, development, conservation and protection in The Gambia*; and will, amongst other responsibilities: *ensure water resources management activities in the country including projects at all levels from village, municipal, regional to national and transboundary are properly integrated and coordinated*.

Following on from a repeal of the Act of 1979, a Meteorological Authority shall be established which will be: *the principal body responsible for the establishment, maintenance and operation of equipment and systems for the collection of meteorological information in The Gambia* (Part II, Section 2). The Board will be: *an independent public enterprise ... for the provision meteorological services of an internationally recognized standard to government, the public and the private sector* (Part I).

The **Water Act** will provide for the enabling environment for Ministries and Government agencies: *to collaborate comprehensively in safeguarding the waters of The Gambia within a common legal framework with guiding principles*. The Act will ensure protection and management of the nation's water resources, look to the needs of future generations and promote the efficient and sustainable use of the resource for the future. The Act will enshrine the polluter pays principle, the equal treatment of women, and public participation in decision-making

The Act also includes provisions relating to transboundary waters, notably the international agreements concerning The Gambia River, and the United Nations Convention on the non-navigational uses of International Watercourses.

The management of The Gambia River is governed by a convention signed between The Gambia, Guinea and Senegal (signed in 1978) and updated to include Guinea-Bissau. In the Convention, the river is declared a river of regional interest within the national territories of the riparian states. The convention is also clear that: *No project which is likely to bring about serious modifications on the characteristics of the river's regime, on its navigation conditions, the agricultural and industrial exploitation of the river, the sanitary state of the waters, the biological characteristics of its fauna and its flora, as well as its water level, will be implemented without the prior approval of the contracting States* (Article 4).

The Convention does not mention climate change, and has been criticized for giving weight to navigation to the detriment of other types of water use. Thus, the Convention does not seem to apply to groundwater connected to the basin's surface waters and fails to incorporate substantive obligations related to harm prevention and equitable use. In addition, the convention does not codify and detail a data-sharing obligation and contains no provisions on environmental protection. Furthermore, the OMVG Convention establishes a mandate for the Permanent Water Commission to allocate water rights only in regards to agricultural, industrial and transportation water uses. In so doing, the convention ignores that allocation decisions should also take into account environmental flows necessary for maintaining in-stream water uses, in addition to other types of water utilization.²⁶

The discussion is particularly pertinent now given the major infrastructural works planned for The Gambia river – notably the Sambangalo Dam. The Sambangalo Dam will impact on at least two major areas related to The Gambia's response to climate change. Firstly, the provision of renewable energy through hydroelectricity, and the connection to the West Africa Power Pool, will reduce The Gambia's

²⁶ Source: Amidou Garane: UN Watercourses Convention: Applicability and Relevance in West Africa, 2008

reliance on fossil fuels to produce electricity. Secondly, the potential to regulate water flow from the dam will have impacts downstream on irrigation and flood control regimes, including potential recession of the saline front during the dry season, as well as impacts on the mangrove swamps and downstream wetlands. There are also potential impacts on tourism, notably in relation to the Niokolo-Koba National Park (in Senegal) and hence on transboundary tourism. Within this context, the OMVG Convention may require updating so that institutional arrangements are put in place to manage the downstream environmental impacts (irrigation, flood control, river flow, etc.).

Strategic environmental assessment

The Gambia has taken steps to introduce strategic environmental assessment (SEA) as an integral part of environmental and climate policy, with the drafting of a National SEA Policy (2017-2021) with accompanying Guidelines and Procedures. The SEA Policy is aligned with and falls under the framework of the National Environment Management Act, (NEMA) 1994, and the Environment Impact Assessment (EIA) Regulations, 2014. The great advantage of an SEA approach is inclusiveness and participation in decision-making. Going forward, this will be one of the key aspects of the enabling environment developed by the SPCR, in terms of ensuring ownership, understanding and involvement of all relevant stakeholders. In addition to transparency, the SEA Policy would ensure that environmental considerations are incorporated at early stages of planning and decision making, and that alternative scenarios and interventions are considered at an early stage.

As with the water resources legislation discussed above, approval of the Draft Policy, together with its guidelines and regulations, have been delayed as a result of the change in government, and are awaiting formal approval. The need for the application of SEA in the national planning processes is becoming increasingly important as pressures on the environment and natural resource base multiply.

The specific objectives of SEA in The Gambia are to:

- Promote sustainability at national and regional levels in all sectors
- Ensure linkage between environment, social and economic considerations at all levels of decision making
- Ensure potential environmental impacts of strategic actions are critically analysed from the inception stage to allow ease in change
- Address limitations of project level environmental impact assessments that are carried out before implementation and mostly tied to mitigation than prevention
- Ensure that all relevant stakeholders are involved in the decision-making process, from the executive members of government to the general public
- Promote compliance to the National Environment Management Act, 1994, that requires the “integration of environmental considerations, in all development strategies and related activities”
- Control trans-boundary environmental issues such as climate change and shared natural resources like water bodies.

The SEA Guidelines and Procedures apply to all policies, plans and programmes in the country that fall within the scope of the SEA Policy, and have a legal basis in terms of the NEMA and the EIA Regulations. The NEMA established the NEMC as the principal policy-making body for the environment and natural

resources management; created the NEA as its executing arm and empowered it to instruct the seizure or closure of an activity which negatively affects the environment, as well as to carry out inspections, studies, and monitoring to ensure compliance with established environmental legislation and conventions.

However, for various reasons, including lack of capacity at NEA and no sitting of the NEMC since 1994, most sectors have been not been complying with the Act. The SEA Policy proposes a number of concrete actions, including capacity building, to address this. Steps will also need to be taken to revitalise the NEMC and ensure it can fulfil its mandate.

1.8 Institutional assessment

The Gambia is emerging from two decades characterised by state repression and human rights violations. At the level of the civil service and government agencies this was characterised by arbitrary dismissals, corruption and circumventing of procedures. As a result, confidence in Government and in the rule of law needs rebuilding. Towards this, The Gambia has undertaken to establish a Truth and Reconciliation Commission, based on the South African experience, in an attempt to rebuild confidence and heal wounds.

There is a lack of confidence within the public service as a result of two decades of public servants trying to keep out of the firing line of the ruling cliques. In parallel, there is a perception by the general public that instances of public sector corruption negatively affect the provision of basic services and the adjudication of tenders. It is a major task for the new government to tackle these perceptions through a more open and transparent form of government. Building confidence requires efforts towards systematic transformation of institutions, together with policy change. The impact will be assisted through prudent implementation of the Financial Management Act and support to cost-effective and efficient implementation of the Integrated Financial Management Information System (IFMIS), which is a tool launched by the public sector for managing public funds.

Although not directly related to the challenges faced by officials in the performance of their functions, the **Mid-Term Review of the Istanbul Programme of Action** noted a number of challenges, obstacles and constraints faced by government institutions as a result of an absence of policy coordination, overlapping mandates, poor inter-sectoral coordination – and weak institutional capacity. The Review noted that: *poor inter-sectoral or institutional communication is systemic and this lack of capacity needs addressing for need of more effective overall development planning and implementation coordination.*²⁷

According to the (Draft) PAGE 2, the multiplicity of ministries, agencies, departments and functions has led to a bloated civil service and an absence of sufficient linkages and coordination between institutions and leadership. In addition, the size of the civil service has also continued to expand. Excluding the security sector, civil service size increased by 40% between December 2011 and April 2015 (p45; sections 179 – 180). This has fiscal implications on overall government spending. This, combined with a decrease in development partner contributions and access to concessionary funding as a result of an unstable foreign policy, resulted in a civil service that was neither properly resourced nor properly remunerated. It will be up to the new government to review and implement a civil service

²⁷ Comprehensive High-Level Midterm Review of the Implementation of the Istanbul Programme of Action for the LDCs for the Decade 2011 -2020 – The Gambia

restructuring programme to build a leaner and more efficient civil service. In parallel, the positions of the many civil servants who were arbitrarily dismissed and even jailed by the former regime, and who had had their rights violated (including, for example, pension rights, etc.) will need to be tackled.

Regarding effective coordination and implementation of climate change-related interventions, the NAP Stocktaking Report (2015) noted as significant gaps the following: outdated policies, gaps in knowledge, weak mainstreaming into line ministry spending plans, weak capacity to plan and oversee implementation, high fragmentation of mandates, weak coordinating structures and weak knowledge management.²⁸

The Independent Institutional Assessment carried out as part of the GCCA support project to The Gambia identified a series of institutional challenges relating to the array of institutions with overlapping roles, responsibilities and legislations dealing with climate change. The current institutional framework for climate change was seen as lacking policy guidance, lacking ownership by key sectors, as it was still seen as sectoral rather than cross-cutting and, at the time, not having achieved high-level buy-in and participation. Roles, responsibilities and relationships between different institutions still need clarifying – and in their absence – this leads to overlaps, duplication of efforts, and conflicting mandates. Moreover, although the size of the civil service may have expanded, human resource capacity remains very limited in those line ministries and institutions where climate integration is necessary.²⁹ The lack of professionally qualified staff in the different sectors, capable of identifying and implementing a more mainstreamed climate change/climate resilience approach, is compounded by the lack that climate change is not taught either in the school curricula nor as part of university undergraduate courses. Neither are there many opportunities for research, training, education and scientific support in specialised fields related to climate change. Capacity gaps at the sub-national level are even more dramatic, making it difficult to channel untied climate finance to the local level.

At the national level, institutional arrangements are still guided by legislation that does not incorporate current climate change risks and the need for coordinated responses to these. Although the (Draft) NCCP, the (Draft) Water Bill, and the (Draft) SEA Policy have all moved towards updating institutional arrangements, the NEMA Act of 1994 still remains one of the central pieces of legislation dealing with the environment. The NEMA established the National Environment Management Council (NEMC), which reportedly does not meet frequently, as well as the National Environment Agency (NEA), which is, by law, the principle body responsible for the “management of the environment”. Of course, as is well recognised, the ambit of climate change must of necessity go far beyond the reach of environmental matters, to encompass an overarching sustainable development approach, into which climate risks are integrated. In order to enhance coordination of the far-reaching climate change functions, a Climate Change Secretariat has been established in the MoECCNAR. The National Climate Committee (NCC) continues to function, and has a number of sub-committees and working groups. The NCC meets on a quarterly basis when support is available from projects, particularly the National Communications to the UNFCCC. With the establishment of a climate change secretariat at the MoECCNAR, a special budget line needs to be created for effective and efficient operationalization of the NCCP that requires the timely meetings of the NCC.

²⁸ NAP Stocktaking Report, 2015. P.1

²⁹ Independent institutional assessment for climate change in The Gambia. GCCA, 2015 (Anju Sharma); pp. 12-13

Disaster management and enhancing disaster risk reduction (DRR) are closely linked to efforts to mainstream climate change adaptation; climatic events such as droughts, floods and other forms of extreme weather are often climate-change related events. The National Disaster Management Agency (NDMA) has as its mission as defined in the Act to set up a formal structure for integrated and coordinated disaster management, focussing on prevention, preparedness, response and mitigation. Three of these four responsibilities are a form of mainstreaming climate resilience while only the responsibility for response is exclusively focussed on managing a state of disaster. Notwithstanding, the Act has overriding effect over other Acts, making the NDMA an extremely powerful body. A National Platform on Disaster Risk Reduction and Climate Change Adaptation was established several years ago, and is currently being revitalised. The Platform is the technical arm of the National Disaster Management Council and its key mandate is to ensure that DRR and climate change interventions mutually reinforce each other. This necessitated the review of the National Disaster Management Act of 2008 and harmonising the National Disaster Policy and Strategy. The revised Bill if enacted will align the legal and institutional framework of DRR with the National Climate Change Policy.

Institutional arrangements at the sub-national level are equally important as the NCCP prioritises decentralised approaches to planning, implementation and monitoring, recognizing that climate impacts are likely to be extremely localised, and will require place-based and contextualised solutions. The Ministry of Local Government and Lands oversees local government affairs. There are three tiers of local government: eight councils, 144 ward development committees (WDCs) and 1,500 village development committees (VDCs). Councils are advised by Technical Advisory Committees (TACs), and WDCs are advised by Multi-disciplinary Facilitation Teams (MDFTs). WDCs direct the preparation of ward plans with assistance from MDFTs, and pass them on to the area council for approval. Although there are no formal institutional arrangements for climate change at this level, some capacity building of TACs and MDFTs has taken place through workshops and training. Local-level committees exist for sectors such as natural resources, public health, agriculture and infrastructure.

To enhance coordination of the climate change function at the local level, and towards creating an enabling environment for community based adaptation, the draft NCCP proposes a number of local level planning and institutional arrangements to promote climate change mainstreaming and implementation of climate-resilient development activities. These arrangements are to be consistent with the Local Government Act 2002, which designates area councils as the planning authorities that 'may plan and implement any programme or project for developing the infrastructure, improving social services, developing human and financial resources and for the general upliftment of the community.' These plans are required to include ward development plans, which in turn are composed of village and sub-ward development plans.

The Technical Advisory Committee (TAC) chaired by the Governors of the regions coordinates all development issues at the regional level. The decentralisation of climate change interventions at local level will require strengthening the capacity of the TAC and enhancing the skills of the MDFTs for effective and efficient implementation of climate change programmes at regional level. Further capacity building and awareness raising is also needed at Ward and Village level to enhance community-based adaptation measures.

At the programme / project level, project steering committees include a wide range of stakeholders, reflecting the cross cutting nature of the local development and climate change mandates. For example, the project implementation structures of the Nema/Chosso programme, and of the IDB

project 'Building resilience to recurring food insecurity in The Gambia', include a broad range of stakeholders, co-opting producer organisations and private sector, as well as government stakeholders, including the Ministry of Youth and Sports, as well as the Ministry of Environment, Climate Change, Water and Wildlife.

Finally, even with the development partners involved in supporting and mainstreaming climate change, a certain amount of over-lapping of mandates exists. This is partly related to the over-lapping mandates of different government agencies working on climate-change related interventions, who receive support from different development partners with, as a result a certain amount of what was seen by some informants as encroachment. This arises when donors provide funds to implementing agencies such as FAO, UNICEF, WFP etc. to implement projects without adequate communication at all levels. Sectors are normally represented by focal persons and lack of proper communication within sectors and projects leads to overlap in interventions. One example provided to the SPCR team was with respect to the FAO / Nema seed multiplication support in CRR. Such issues can lead to confusion at the intervention level when approaches to implementation and to what may constitute climate resilient development vary.

The biomass value chain and the clean cooking stove debate is another area of policy and implementation overlap and confusion, with a number of governmental and non-governmental institutions involved but pulling in different directions. In The Gambia over 90% of households use biomass, in the form of wood (from forests or mangroves) or charcoal, for cooking. The Global Alliance for Clean Cook stoves estimates that 78% of households use wood for cooking, and 13% use charcoal – while the use of clean cook stoves (whether for firewood or charcoal) is low. By contrast the incidence of disease as a result of household air pollution is significant. Officially, charcoal production is banned and deforestation in The Gambia is seen as a major climatic factor – while it is clear that cutting of timber for fuelwood and charcoal is still ongoing in The Gambia, biomass value chains also extend into Senegal – making this a cross-border, trans-boundary value chain.

Attempting to reduce deforestation and reduce mangrove removal without addressing the growing demand for biomass in cooking will have little chance of success – yet continued negative impacts on the mangrove resource impacts directly on The Gambia's sea and river defences. Principal government ministries responsible here would be the Ministry of Agriculture and the MoECCNAR. However, introduction of improved cook stoves falls under Community Development in the Ministry of Local Government; while the development of a Biomass Strategy falls under the portfolio of the Ministry of Energy. In addition, decentralised local governments also have responsibilities for the sustainable management of forest resources. In parallel the Gambia Renewable Energy Centre (GREC) supports renewable energy research; while the Ministry of Energy is looking at LPG as a long-term solution to household energy, despite the dangers of transporting LPG inland. Meanwhile the Ministry of Health is also involved because of the morbidity related to household air pollution. And finally, female-headed households in the rural areas, who are primary users and managers of biomass, will bear the brunt of climate change impacts. There is thus an imperative for a coherent approach to sustainable management and use of biomass, from several perspectives.

Women are more likely to lack identity numbers making them difficult candidates for, for example, index-based insurance in case of crop failure, land acquisition (because of traditional norms) and difficulties obtaining collateral necessary for investments.

Land administration and physical planning issues provide another area in which greater institutional effectiveness is required. The UN-Habitat Banjul Urban Profile (2012) noted as major challenges for the implementation of basic urban services in the Greater Banjul Area:

- Corruption by City Council officials
- Tax evasion by business owners resulting in revenue shortages

As well as uncontrolled land encroachment, including encroachment into wetlands, numerous problems exist in relation to land administration, outdated maps and the absence of a physical plan. While records of land acquisitions are kept, these are not related to maps or an urban cadastre. In addition, many plots are not registered at all, to avoid paying registration costs, and are usually allocated by traditional leaders who cannot obtain documentation for the land “sold”; many of these plots encroach not just on wetlands, but on rights-of-way, urban drainage systems, and areas where waste is deposited illegally.

The main actors in land administration in The Gambia comprise of both formal and informal institutions. The formal Institutions include the Ministry of Lands and Local Government (and the Technical Departments under it), the Gambia Tourism Board, and the Local Government Authorities, whilst the informal institutions comprise of the District Authorities and the Village Heads (Alkalos). The Ministry of Lands and Local Government is the final approving authority for all planning and land transactions undertaken and processed by its technical departments. The Land Administration Board reports to the Minister through the Director of Lands and Surveys.

The Department of Lands and Surveys is responsible for the day-to-day administration of the State Lands Act, the Survey Act, the Land Acquisition and Compensation and the Rating and Valuation Act. The Department is mandated to: (i) demarcate all layout plans; (ii) prepare lease plans; (iii) maintain the National Geodetic Survey Framework; (iv) prepare cadastral (registration) plans for adjudication on land titles; (v) prepare base maps for valuation purposes; (vi) prepare various types of thematic maps; and (vii) carry out property valuations for rating and compensation purposes. The Department acts as the secretariat of the Land Administration Boards and processes all applications for land, leases and assignments.

The Department of Physical Planning and Housing is responsible for (i) the preparation of physical development and land use plans at national, district and local levels; (ii) control of land development at national, district and local levels; (iii) control and coordination of land use at national, district and local levels; (iv) implementation of the National Housing Policy; (v) approval of all applications for development permits; and (vi) acts as the secretariat of the six Divisional Planning Authorities as well as the National Planning Board. The Offices of the Commissioners processes and prepares all applications for leases within their jurisdiction, with the Governor being the chairperson of the Regional Physical Planning Authority. The Local Government Authorities are not directly involved in any form of land administration other than the maintenance of a register of all properties in their jurisdiction for rating purposes. Since its establishment by the Gambia Tourism Authority Act, the Gambia Tourism Authority, now the Gambia Tourism Board, took over the mandate to process and approve all applications for land in the Tourism Development Area (TDA) for tourism and other tourism related purposes.

Concerning customary land management institutions, according to the Lands (Provinces) Act, customary land is vested in the District Authority (District Tribunal), which is chaired by the District

Chief, and approves all applications for conversion of customary tenure to leasehold. It also considers and approves all applications for transfer of ownership of land within its jurisdiction. The District Tribunal presides over all cases relating to land disputes and ownership. The Alkalo (Village Head) oversees the management of all customary land in the village on behalf of the District Authority. In addition to allocating village land, the Alkalo also approves all allocation and transfers made by Kabilo heads, and collects land rates on behalf of the Council. Given that the majority of properties fall under this category, the Alkalos perform significant land management functions in the country.

With the enactment of the Lands Commission Act in 2007, the Land Administration Board was dissolved and any of its functions and responsibilities not included in the functions of the Commission transferred to the Department of Lands and Surveys. The Physical Planning and Development Control Act provided for the setting up of a National Physical Planning Board, as well as a Regional Physical Planning Authority for Banjul and Kombo Saint Mary and for each Region.

Despite the comprehensive institutional environment for land administration, growing problems with land allocation were encountered. In recognition of this, and by provision of the 1997 Constitution of The Gambia, the Land Commission Act was enacted in 2007 to provide for the establishment of the Lands Commission to mitigate the problems of land allocation and improve land administration in the Gambia.

Considering the complexity of challenges such as those posed by the growing biomass problem, as well as those related to land administration, the need for not only integration of climate change resilience into institutional mandates, but also an alignment of policies, mandates and interventions all pulling in the same direction is apparent.

The importance of communicating messages is underscored by every project, programme and institution involved with promoting climate resilience in The Gambia. Communications is an area regulated by the Public Utilities Regulatory Authority (established under the PURA Act of 2001). The Authority regulates and licences information and communications through the Information and Communications Act of 2009 – covering broadcasting services, Internet and fixed and mobile networks, etc. However, the Authority may in some cases be more reactive than proactive, more focussed on responding to complaints than on ensuring that access to information is improved. Cellular network coverage is a case in point. Cellular phone ownership is extremely high in The Gambia, with figures quoted of 119 cell phones per 100 households. However, these figures may be misleading as many Banjul residents own three cellular phones because the three main networks all have zones of poor coverage, even in the urban areas, while many rural areas have very poor coverage from even one network. There is an opportunity here to focus on improving communications to the public rather than on regulating providers – for example requiring that they use the same infrastructure to provide stable nation-wide coverage (and then competing on rates and services). Stable nation-wide coverage would provide a solid information-sharing platform available to all Gambians. In October 2016, PURA launched its Quality of Service Monitoring Network, through the West African Regional Communication Infrastructure Project (WARCIP). This system is designed to help PURA improve quality of services of the priority areas of mobile coverage and Internet services.

A stable information sharing platform could also provide the basis for mobile phone-based money transfer, financing and micro-financing services (following the example of M-Pesa from East Africa). Branchless banking services, through M-Pesa, provide access in rural areas, opening up micro credit opportunities to women and have been used in the successful M-KOPA Solar programme connecting

(rural) homes with affordable solar power. Recent research in West Africa (AFL/DFID/BRACED, 2017) has shown that herders in the livestock value chain in West Africa all had cell-phones, using these for market and grazing information, keeping in touch with relatives, etc. In addition, even for those alphabetically-challenged, the levels of skill for numeracy as well as literacy were rather high (the later aided by an SMS-literacy app).

Well thought-through public private partnerships, focussed on developing climate resilient approaches in all sectors, would require a regulatory authority that supports this, and government institutions that link, coordinate and show leadership. Legislation (Acts and regulations) will need to be updated to support this, particularly to ensure nation-wide coverage and compliance with fiscal regulations pertaining to branchless banking services.

A similar situation exists with the other major utilities regulated by PURA, particularly NAWEC. Neither PURA, nor the line ministries, nor the local authorities, nor the GTB are rising to the challenge to make water supply, sewerage and electricity more climate resilient – or even enforce existing regulations. The opportunities that exist for developing public-private partnerships in renewable energy are making slow headway in the face of reluctance from NAWEC to lose a quasi-monopoly position, with PURA appearing to focus more on the politically-sensitive issues of consumer tariffs rather than on developing climate-resilient approaches.

Civil society and private sector

As recognised in the NCCP, there is substantial interest from NGOs in The Gambia to engage the government and work with the private sector to implement projects and finance capacity development, which has yet to be mobilized and harmonized in the country's efforts to respond to climate change. There is a potential role for non-government organisations to become more involved at national and sub-national level to implement climate change responses on the ground, focussing on livelihood diversification as an approach to spread climate change risks and to empower climate vulnerable groups, and using their position to advocate on behalf of these groups. There is an ongoing role of advocacy and sensitisation, both influencing policy and building awareness and knowledge of communities on climate change. This should also be accommodated in the national response to climate change, institutionalising partnership and dialogue between government and non-government. A stronger role for civil society could also create strong accountability mechanisms that can be used to measure implementation.

A number of NGOs and CBOs in The Gambia have gained valuable experience in piloting climate change projects, which can be assessed and built on. Entry points include umbrella organisations like TANGO (The Association of Nongovernmental Organizations), but also, for example NACOFAG (the National Coordinating Organisation of Farmers Associations) and FANDEMA (working with women in skills training), as well as international NGOs active in the Gambia (such as Action Aid). Youth represent a vitally important sector in the response to climate change, and youth organisations are vocal in calling for their meaningful participation in planning and implementation of climate change responses. As recognised in the NCCP, youth entrepreneurs and leaders should be engaged in policy development and review initiatives, as well as in capacity development, monitoring and tracking progress.

The private sector in The Gambia is a valuable potential partner for effective climate change response actions, including developing low-carbon technologies, products and services, and in providing green jobs. While a number of private sector organisations are engaging with a level of proficiency in these

matters, in general increased awareness is required of how climate change affects profits, and how best to engage with what may be complex concepts for carbon markets. A critical issue for the GoTG in the further development and implementation of the SPCR will be how best to forge and maintain effective partnerships with business and industry, to ensure that their capacity is harnessed in driving the transition to a climate-resilient, equitable and internationally competitive, lower-carbon economy and society. Some legislation already exists, for example the Renewable Energy Act provisions for fiscal incentives (e.g. exemption from corporate tax; exemption from VAT; exemption from import tax); these can be built upon and replicated in other sectors to support a transition to a low-carbon climate-resilient economy. An important partner here is the Gambia Chamber of Commerce and Industry (GCCCI), in terms of facilitating business development and trade promotion.

The NCCP notes that strong partnerships for implementation and monitoring are required between local institutions, including local administrations, local government, membership organisations, cooperatives, service organisations, and the private sector. This SPCR will include provisions to promote the achievement of such partnerships. An important further linkage will be the new institutions and mechanisms that build safety nets for vulnerable groups and poor people at the local level, which the National Social Protection Policy states will be encouraged and incentivized. These include cooperatives, insurance products, self-help groups, and microcredit institutions and insurance products tailored for the poor.

1.9 Financial issues

The Gambia is a heavily taxed economy constrained by inadequate budget, dependence on donor funding, limited resources and over-stretched by ambitious development plans. The Gambia's climate change priority action plan for 2012–2015 and the National Climate Change Policy 2016, require in excess of an estimated US\$1.35 billion in climate financing by 2030. At the moment, available climate financing targets adaptation and resilience, while mitigation will need more financial resources in both the medium and the long run. In order to address financial constraints, remove financial barriers and bridge financial gaps, the government continuously draws down on public sources and public investments supplemented by donor funding, which has been shrinking. This has compelled the government to work harder to initiate innovative financing mechanisms with potential to leverage private sector investment and provide incentives to support mitigation projects. However, this downward trend is likely to reverse given recent political transformation, with the new democratic leadership engaging with donors on the renewal of bilateral support. Early in March 2017, the EU indicated renewal and expansion of financial support to the country. More donors are expected to reconsider their support and help to bridge financial gaps in the country. The institutional transformation is enabling policymakers and practitioners to design elements of the financial landscape necessary to fund the country's transition to green, low emissions climate-resilient and sustainable development. Initiatives by UNDP, IFAD and the Green Climate Fund do embrace elements of green economy and climate resiliency, which could be expanded.

1.9.1 Financial Constraints

The Gambia's financial constraints are inherent in budgetary considerations dependent on public sources and public investments, and dependence on donor funding. The donor funding has been shrinking in the last decade as a result of political risk, poor governance and ineffective financial management systems. The financial constraints have largely impacted the country's public funds and

main sources from international, multilateral, bilateral and national investments. The financial constraints have also affected the Multilateral agencies such as the United Nations and the European Union that play major roles in mobilising resources, with many projects funded from the Least Developed Countries Fund (LDCF) and GEF Trust Fund. The financial constraints also result from high inflation, depreciating value of local currency and economic breakdown. However, international public finance will continue to be the main source of climate financing in the Gambia in both the medium and long-term. At the same time, the aim is that the financial constraints will be resolved in the near future, with support from the private sector tapping into the carbon market to finance low emission climate resilient sustainable development and green investments. The country is diversifying sources of financing, encouraging private sector participation, and providing limited incentives for private sector investment.

According to the Commonwealth Local Government Forum (undated), there is very little revenue sharing or transfer from central to local government despite the devolution of core services such as health, education and roads. Despite the legal framework for decentralisation stipulating that 25% of a Council's budget should be in the form of transfers from central government to local government, there is no general policy of revenue-sharing and the specific grants are very small, making only 0.1% contribution to local government revenue overall. Local governments are by and large expected to raise their own resources through local taxes. Any funding that is channelled to the village level tends to be project-based and already tied to sectoral goals, leaving little flexibility for planning and decision-making at the local level. According to officials in the Department of Development Planning in MoFEA, discussions were underway on a formula to determine the share of allocations for each Council (Sharma, 2015).

1.9.2 Financial Barriers

Financial barriers in the Gambia are intrinsic in a heavy tax economy regime that limits provision of financial incentives to the private sector. The private sector requires tax breaks, tax holidays, and tax rebates in order to lower costs and realize high profit margins. However, the country's dependence on tax as a source of public revenue prevents an adequate flow of funds and limits incentives for private sector participation. In addition, the most common financial instrument used in the Gambia is the grant, with most of the country's climate change interventions financed through grants from the Least Developed Country Fund. These are tied funds and do not offer incentives for the private sector. Other financial instruments include co-financing from national funds and concessional loans with limited private sector engagement. The country has experienced a deepening current account deficit, resulting in the government increasing taxes to generate revenue, and thus setting in place a recurring financial constraint. The emerging financial instruments to be supported by the SPCR and others will play a key role in creating mechanisms that will remove financial barriers and enhance potential opportunities to leverage private sector investment in climate change projects. The removal of financial barriers requires the government's support to policy incentives such as feed-in tariffs for renewable energy, tax incentives and clean energy subsidies, and risk management instruments such as insurance and guarantees to help mitigate the risk associated with low carbon emissions and climate-resilient investments.

1.9.3 Financial Gaps

Financial gaps in the Gambia are experienced in budget support, programmes and projects. Regardless of comprehensive planning and provisional budget and resource allocation, funding sources continue

to be inadequate and limited. Most key economic sectors including agriculture, fisheries, livestock, tourism, water, education and energy have lacked adequate funding, resulting in poor and or inadequate provision of basic services. In order to bridge the financial gaps, the International Fund for Agricultural Development (IFAD) and African Development Bank (AfDB) have supported livestock and horticulture development with a US\$15.9 million grant (amongst other IFAD investments over the past 10 years); the AfDB financed a US\$7.92 million loan for a rural water supply and sanitation project. Government agencies and departments often support multilateral and bilateral intermediaries through co-financing, disbursing resources and implementing projects. The Department of Water Resources implemented the US\$2.6 million grant AfDB funded national water sector reform project. Private sector intermediaries to some limited extent bridge the financial gaps by operating within the climate finance landscape to access funds for investment in carbon saving and sustainable development. Examples include solar power and cooking stoves investments, with the Gambia Green Vision International looking into promoting green buildings, and several NGOs working with communities to diffuse improved cooking stoves. GreenTech Vision successfully completed a project supported by the UNDP Small Grants Programme to introduce and spread briquettes, fuel efficient stoves and alternative fish smoking technologies in the communities of Tanji, Sanyang and Gunjur. Further, financial gaps can be bridged through partnership between the government with the tourism industry supporting Carbon Offset Service and Serenity Holidays.

Thus a private company, drawing down the voluntary carbon market to invest in tree planting initiatives, biomass cooking stoves and solar projects could generate revenues to bridge financial gaps. In addition, climate smart agriculture, climate resilient initiatives and adaptation will generate additional revenues, since they have potential to be leveraged by donor funding. The financial gaps can also be perceived as a result of the country's lacking both the finances and the technical knowledge it needs to adapt to the changing environment. As a result, the financial gaps can be bridged through the Gambia seeking assistance from the development partners to provide technical expertise and fund climate change projects, and through an expanded and coherent capacity development programme for addressing climate change.

Micro finance, small- and medium-scale financial institutions operate as non-bank financial institutions under Section 41 of The Central Bank of The Gambia Act No.14 of 2005, which allows them to provide services by undertaking non-bank financial intermediation and raising capital, deposits and advancing credits and loans from and to the public.

Micro finance objectives are to provide financial advisory services, products and information services to Gambians, in particular those with low income and working at the lower end of the economic pyramid. Key targets are women with small businesses such as selling vegetables in the market, farmers, fishermen, small retailers in commercial services such as cement, builders, tailors, and taxi drivers, amongst other small business owners and operators, as supported by the Nema/Chosso programme.

The accessibility, convenience and flexibility of micro finance have led to a growing footprint that has potential to change the lives of local people, improve social and economic livelihoods and maximize potential for growth and development. Globally, micro finance is considered to be an important enabler of resilience and adaptation for poor people, and thus has a role to play in the SPCR.

1.9.4 Summary of Financial Issues

The Gambian government has started a review of climate public expenditure and institutions. This will provide a key building block for developing a climate fiscal framework to assess the demand and supply of climate funds and available domestic and external sources of funds. This will support national efforts to enhance climate change planning and budgeting. To prioritise climate change interventions appropriately, the government needs to allocate part of the national budget to climate change financing. This should flow via a national climate change fund as stipulated in the 2016 National Climate Change Policy (NCCP), which will serve as a national intermediary and provide the opportunity to scale up resource inflows and leverage or complement international and private sector sources. Also on the positive side, the Ministry of Finance has recently been accredited as the National Designated Authority (NDA) for the Green Climate Fund, and actions have been initiated to develop readiness in this regard, supported by a grant from the GCF.

As noted in the PAGE II, it is Government's intention to create an enabling business environment and to improve access to low cost financing, to promote the catalytic role of the private sector for sustainable and inclusive economic growth and development. Public private partnerships (PPPs) are to be created, especially in the priority areas of agriculture, tourism, telecommunications, infrastructure and manufacturing. As the PAGE II notes, PPPs could promote "sustainable inclusive growth using a number of growth nodes from agriculture to trade, private sector development, climate change, ICT, etc., as well as addressing some of the bottlenecks in transport and energy that impinge the development of the private sector to grow and create jobs." The potential for PPPs to play a role in enabling climate resilient development in The Gambia is a fertile area for consideration in the SPCR.

1.10 Monitoring, evaluation and reporting

The Gambia has lacked a coherent M, E and R system for climate change response in the past. The MoECCNAR does prepare and distribute an annual report at Cabinet retreats based on the annual work plan. However, the report superficially touches on climate change interventions by projects under the Ministry, as opposed to a holistic approach that addresses climate change issues across all the sectors. Mainstreaming climate change into sectoral policies and strategies will enable the MoECCNAR to develop an M, E and R system that responds to climate change with SMART indicators (i.e. indicators that are specific, measureable, available/achievable, relevant, and available in a timely manner). The MoECCNAR has recognised the importance of developing such a system, and the NCCP contained several provisions to achieve this. These have not yet been implemented, and will be the subject of a component of one of the SPCR's investment programmes.

A key gap in terms of an overarching response to building climate resilience in the past was that sectoral expenditure on climate change related responses was not tracked; this will be overcome through the introduction of a climate resilience budget coding and tracking system under the SPCR. A further gap was with respect to a system that could bring together the climate change related results of donor-funded and NGO programmes.

Regarding the status of national development M & E and reporting, the PAGE 2012 – 2015, which was the successor to the Poverty Reduction Strategy Paper II (PRSP II), included a monitoring system based on tracking indicators included within the Result Measurement Framework (RMF), as well as the

requirement for Annual Progress Reviews (APRs). The RMF was to go beyond conventional M & E to also identify and track the causes of success or failure of PAGE implementation.

Moving forward, the Draft PAGE II M & E system outlines a result framework with clear outcome indicators. This will be used to measure performance and results achieved against targets. The M & E system will be institutionalised by an Act of Parliament, setting out the required structures, policies and regulatory instruments and standards. Section 2.6 sets out proposals to enhance M, E & R of actions to build climate resilience, within the overarching national development framework.

PART 2 Country driven strategic approach to climate resilience

2.1 Long-term vision to achieve climate-resilient development trajectory

The SPCR of The Gambia is a comprehensive transformational adaptation and mitigation investment plan, designed to reduce and manage the country's high vulnerability to climate variability and change, and in so doing, to secure catalytic financing from the PPCR and other international and national climate financing sources. This is a building block in The Gambia's quest for a successful transition to a low-emissions climate-resilient development pathway.

The programmatic approach of The Gambia's SPCR entails a long-term, strategic arrangement of linked investment projects and activities to achieve large-scale, systematic impacts and take advantage of synergies and co-financing opportunities. As such, its starting point is the National Climate Change Policy developed in 2016, which represents The Gambia's determined and systematic response to the interlinked climate threats to sustainable development, wellbeing and ecological integrity, as set out in Part 1.

Accordingly, the Policy defines the following long-term vision for The Gambia:

Achieve a climate-resilient society, through systems and strategies that mainstream climate change, disaster risk reduction, gender and environmental management, for sustainable social, political and economic development.

The vision suggests that an effective Gambian climate change response requires economic, social and environmental interventions that integrate mitigation and adaptation elements within a developmental framework. This is the meaning of climate-resilient development, in the Gambian context.

The long-term vision of the NCCP, and thus of the SPCR that will provide the mechanism and investments for implementation of the NCCP, was developed through a strongly consultative process, and represents a consensus achieved across the range of stakeholder groupings, at national and sub-national levels, across the regions of the country.

The **goal** of the Policy is, by 2025, to achieve the mainstreaming of climate change into national planning, budgeting, decision-making, and programme implementation, through effective institutional mechanisms, coordinated financial resources, and enhanced human resources capacity. In this regard, the SPCR defines a comprehensive programme for further enhancing the enabling environment that directly responds to the goal of the NCCP.

The Gambia's response to climate change is furthermore guided by eleven policy **principles**, as set out in the NCCP, which are consistent with the existing national policy framework, aligned to the United Nations Framework Convention on Climate Change, and which have been informed by relevant international best practice. These principles were used, together with key requirements of the PPCR, to develop criteria through which the emerging investments for the SPCR were assessed and prioritised.

As the implementation strategy for the NCCP, the SPCR promotes mainstreaming of climate resilience, nested within national development goals and strategies. This is the main thrust of the NCCP, which

was developed to reflect national priorities in the Programme for Accelerated Growth and Employment (PAGE) 2012-2015; these revolved around sustainably exploiting agriculture, tourism, infrastructure and other natural resources; and consolidating and extending the gains registered in the health and education sectors. Climate change was included within the PAGE as a crosscutting issue, together with environment, disaster risk reduction and gender equality.

Moreover, the Policy was designed so that its implementation, which will be via the SPCR, would contribute to the realisation of the Vision 2020 goals, which aim to develop a well-educated, trained, skilled, healthy, self-reliant and enterprising population, while guaranteeing a well-balanced ecosystem and a decent standard of living for everyone under a system of government based on the consent of the citizenry.

The SPCR programme objective and activities are additionally aligned with the relevant provisions on mainstreaming climate change and environmental sustainability in the draft PAGE II, currently under development, and would contribute to the realisation of the priorities identified in the National Adaptation Programme of Action (NAPA) and the Intended Nationally Determined Contribution (INDC), which in themselves are reflected in the policy provisions of the NCCP.

2.2 Programmatic approach to building climate resilience

2.2.1 Approach to the SPCR

The Strategic Program has been designed to enable the implementation of the **government's long-term vision to achieve a climate resilient development trajectory**, and a critical path to accomplish it. This includes consideration of vulnerable economic sectors and social groups (including women, youth, indigenous peoples, and local communities), and ecosystems. The SPCR is seen as the **next step in developing the strategy that is needed to implement the National Climate Change Policy**. It has therefore been seen as an opportunity to develop the systemic and systematic approaches that all stakeholders of the NCCP preparation process agreed were needed, to move away from project-by-project activities that have limited potential to effect national or sector wide transformations. The SPCR builds on all related relevant efforts and programmes, past and ongoing, as discussed below.

In line with the draft PAGE II (2017-2020), the SPCR provides for several climate resilient development pathways to achieve sustainable and inclusive growth, reduce poverty, reduce inequality and attain prosperity. This clearly needs to be within the ecological boundaries of The Gambia's natural environment, as specified in the legislative framework. The SPCR aims to contribute to the implementation of the PAGE II by ensuring efficient and effective management and use of resources.

The inter-linked challenges of reducing poverty, supporting sustainable livelihoods, and tackling climate change in The Gambia require a move away from doing business as usual, to a more transformative approach. This means moving away from the *ad hoc* project-based approach that has predominated in the past, to one in which Gambians across all sectors are able to co-create and implement sustainable and climate-resilient pathways. The first step was taken with the collaborative development of the long-term vision, as set out in the NCCP. This collaborative approach to defining the country's climate resilient development trajectory has been continued and extended by means of the extensive national and regional consultations carried out to develop the SPCR, as detailed in section 1.2 of this report.

Given the vision set out for a climate-resilient society in The Gambia, the SPCR further adopts the strategic approach set out in the NCCP, and which is implicit within the Policy Objectives:

- **Contextualised and decentralised**, promoting appropriate responses and national capacity and ownership;
- **Sustained and systemic**, promoting institutionalisation and coherence of climate change responses;
- **Evidence-based and innovative**, harnessing indigenous knowledge, science, research and technology for resilient and environmentally friendly solutions;
- **Opportunity-oriented**, viewing climate change as not only a threat to humankind, but also as an opportunity for sustainable agriculture, climate investments and innovations, resilient human settlements and clean energy;
- **Developmental**, prioritising responses that also have significant economic growth, job creation, public health, risk management and poverty alleviation benefits; and
- **Transformational**, favouring climate resilience measures that promote the transition to a lower-carbon, efficient, job-creating, equitable and competitive economy.

2.2.2 Scope of the SPCR and key challenges addressed

The holistic programme of the SPCR has been developed to build on the findings of the Gap Analysis set out in Part 1 of this report, and to develop synergies and scale up existing programmes, as will be detailed below. The SPCR of The Gambia covers rural and urban resilience and their interlinkages, includes key land use planning and related coastal resilience activities, and develops the enabling environment for climate resilient development as set out in the NCCP. As such, the coverage is nationwide, and reaches across all sectors. A transformational arc, as further discussed below, connects the key investment areas, which have been derived from the thematic areas identified by means of stakeholder consultations, vulnerability assessment, gap analysis, and expert judgement.

Through the discussions with the Technical Team, it was proposed to use the policy principles as set out in the National Climate Change Policy as the criteria to prioritise investments, as these were developed through consultation and by consensus in the process to formulate the NCCP in 2015 / 2016. These criteria are set out in Annex 4. The requirement for transformative and catalytic investments was a further overriding criterion, as was the ability to integrate the agreed cross cutting areas of gender, youth, health and tourism.

Insert diagrammatic representation here of scope of the SPCR

The SPCR holistic programme has been designed to address the following key challenges:

- **Incomplete and/or outdated enabling environment for climate resilience:** Despite positive developments concerning policies and institutions to promote climate resilience, and project-

based efforts to develop capacity and skills to respond to climate change, numerous critical aspects with respect to coordination, review and harmonisation of the policy and legislative framework, systematic capacity development and research for low carbon and climate resilient development, as well as enhancement of climate observations and services, remain to be dealt with. A number of recently developed laws, policies and strategies that do integrate climate change considerations and aim to actively promote, coordinate and facilitate implementation of climate resilient development remain in draft form. There are many areas in which enforcement of existing Acts and policies is required. And there remains the urgent need to communicate the realities of climate change to Gambians. A comprehensive and ongoing communication programme to make all Gambians aware of the issues, as well as their role in addressing them, is needed. In addition, significant resource mobilisation to address the country's high levels of vulnerability to climate variability and change, as well as to build adaptive capacity and resilience. Systems to deliver reliable and consistent funding and resource allocation are needed.

- **Outdated land use planning, and inadequate mapping and information systems to support climate resilient land use planning and management:** The Gambia, like most nations, has undergone substantial and accelerating social, economic and environmental change. Rural-urban migration, population growth, commercial development, tourism, vehicle use and habitat degradation have radically altered the fabric of the country. Unfortunately, the government has not kept pace with the changes, resulting in uncontrolled urban sprawl into valuable agricultural land, severe problems of waste management, inadequate infrastructure, uncontrolled depletion of limited natural resources, loss of public open space, strains on water resources and loss of natural habitat. Effective policy guidelines for future development and the administrative machinery to implement them are imperative for national development; the need for resilience to the impacts of climate change adds a level of urgency given The Gambia's position as the 10th most at-risk nation and the expectation that the capital city, Banjul, will be effectively lost to erosion and flooding due to sea level rise within a generation. These issues, apart from sea level rise, were recognized in the 1980s, and resulted in the Physical Planning Act of 1984 and an urban Land Use Plan (for the Greater Banjul Area, Brikama, Basse and Farafenni) produced in 1985 with the technical assistance of GTZ (German Agency for Technical Cooperation). It was intended that the Plan and the associated maps should be extended and updated on a rolling five-year programme, with substantial revision every fifteen years. The Plan was reviewed in 1989 following a period of public consultation. No further reviews were undertaken, and the Plan is now completely out of date and effectively obsolete despite a revision of the Act to become the Physical Planning and Development Control Act of 1990. The urgent need for climate-integrated Land Use Planning is highlighted in the National Development Plan (PAGE II, 2016 Draft) and the National Climate Change Policy (2016 Draft), as well as in sectoral policies such as Agriculture and Natural Resources (2009), Tourism Development Master Plan (2007), Fisheries Strategic Action Plan (2012), Forest Policy (2010), Biodiversity and Wildlife Act (2003), Disaster Risk Reduction Strategic National Action Plan (2013) and others.
- **Lack of climate resilient infrastructure, sanitation and solid waste management:** Waste management poses a major challenge in the Greater Banjul Area (GBA), and elsewhere in the country. Waste is collected and temporarily stored at community dumpsites from where it is

eventually transferred to permanent dumpsites. This process is however inappropriate, *ad hoc*, reactive, and unsystematic. Inadequate waste management in the GBA is exacerbating flooding problems, as drainage channels located are generally poorly maintained, with waste dumped into them, leading to blockage of the channels and accumulation of stagnant water. With increasing temperature and rainfall, this scenario is potentially a source for transmission of diseases such as malaria and cholera. Water resource management problems that are essentially climate-induced include saline intrusion due to increased extraction; and insufficient recharge due to runoff. Many roads and bridges are vulnerable to sea level rise, and previous interventions have proven unsustainable. Energy Infrastructure in the Gambia suffers from numerous constraints resulting in a highly erratic power supply. This is due to various factors including ineffective planning of both maintenance and repair operations, and insufficient investment in renewable energy.

- **Multiple challenges to resilience in the rural areas, with linkages to urban vulnerability:** Drivers of rural vulnerability include the absence of capacity to overcome the impacts of climate change, particularly the increasingly shortening of the growing period with late onset and early cessation of rains; the growing migration flux of young people, the main workforce, towards the urban centres and abroad, enlarging the number of women headed households; and the deficient technical support to adopt adaptive options that would enhance resilience to the shortening of the growing period. As it is, frequent dry spells in the middle of the rainy season limit farming activities such as ploughing, sowing and planting before the arrival of the dry spell. The Multidisciplinary Facilitating Teams (MDFTs), which are essentially extension services, are presently monovalent, with an extension/farmer ratio of 1: to over 3,500, and not cost effective in their delivery performances; and lack technical knowledge about climate smart farming techniques for erosion protection and improving soil structure and fertility. Soils in the Gambia are generally poor in organic matter and chemical fertility, requiring high inputs of manure and fertilizers to increase yields and quality. Concerning forestry and land management, the current Forest Policy envisages that 30% of the total land area should be covered by forests, and that 75% of this should be sustainably managed by communities. While the policy target for the area has been surpassed, the sustainability of this management approach is questionable. Communities are increasingly struggling to ensure multiple use of forests and forest resources/products for food and nutrition security, incomes, employment and investment. In addition, forests are under severe attack with widespread cutting of trees both for commercial purposes and charcoal or other household fuel purposes. There is regular encroachment into forests and virgin lands when the fertility of farming grounds is exhausted, mostly through inadequate land use and lack of technical knowledge on soil improvement, use of composting and mineral fertilizers. Further degradation of vegetation cover is taking place through freely moving cattle (transhumance) and small ruminants. Rapid population growth and urbanisation, for example in the Brikama area, have placed increased demand on forests for new settlements and/or expansion of existing ones, agricultural production, fuel wood, timber for construction and other forest produce. Cattle production is constrained by scarcity of feed and water during the long dry season, and aggravated by rampant bush fires that consume most of standing hay, crop residues and by-products to feed cattle. The Forestry sub sector could arrest and reverse degradation of lands along river banks and mangrove areas and protect others at risk of degradation from erosion, and in the process, expand land

availability for increased rice production from tidal irrigation, and short cycle cash crops from uplands. Forestry could also increase the efficiency of the value chains of livestock, especially increasing off-take and processing of cattle in the rangelands of the country.

To address these challenges, the following pillars, corresponding to the SPCR investment programmes, have been identified:

Pillar 1: Developing the 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

The objectives of each of these pillars of the SPCR have been designed to address, in a strategic and catalytic way, the priority climate resilience and sustainability challenges identified:

Pillar 1: Developing the enabling environment for climate resilience in The Gambia: The project development objective is to put in place an enhanced enabling environment for achieving low emissions, climate resilient development in The Gambia, through review and development of key policies, legislation, and institutions; and initiating and/or developing coherent systems and strategies for climate finance, capacity development and research, climate services, and a national system for M, E&R of climate resilience.

Pillar 2: Climate-resilient land use mapping, planning and information systems: The project development objective is to put in place the necessary steps 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 development. The Plan would specifically address the relocation of the government functions currently within Banjul.

Pillar 3: Developing climate resilient infrastructure, services and energy systems: The project development objective is to put in place a series of steps and develop systems to promote climate resilience in the urban areas of The Gambia, through actions to make systems and infrastructure for waste management, roads and drainage, water supply and sanitation, and energy resilient to current and future projected climatic changes.

Pillar 4: Developing integrated approaches to build rural climate resilience in The Gambia: The project development objective is to develop systems and integrated approaches to promote climate resilience in the rural and peri-urban areas of The Gambia, through developing climate resilient small-scale agriculture and livestock, community-based approaches to forest and natural resource management, and promotion of livestock and agro-forestry value chains and markets.

These are described in greater detail in section 2.2.4. Concept Notes for each of the pillars have been developed, and are contained in Volume II.

2.2.3 A transformational and catalytic programme

The implementation of low-carbon, climate resilient development in The Gambia requires a transformational and paradigm shift. This transformational shift is required because despite uncertainty on the exact nature of some of the impacts of climate change, “business as usual” is no longer an option to yield results under an increasingly variable climate. Such transformation requires necessary linkages with learning, leadership, empowerment and collaboration within and across groups, sectors, organizations and institutions. The new institutions proposed under the NCCP, and adopted as necessary under the SPCR, will further this agenda – in particular the multistakeholder National Climate Change Council and the Inter-Ministerial Committee on Climate Change.

Paradigm shift is essential for the key economic and productive sectors of the country to be transformed to a low-carbon climate-resilient development pathway. The realization of this transformation is feasible due to the new political dispensation in the Gambia. The political buy-in is critical because it is at the political level where decisions, rules, regulations, agreements, incentives and priorities are discussed, negotiated and decided.

While the successful implementation of the SPCR relies to some extent on technical measures such as infrastructure and technological innovations, the soft policy measures such as climate services, behavioural changes, improved soil, water and crop management, ecosystem restoration and improved extension services will be key drivers of the transformational change required.

Some of the main expected catalytic effects of SPCR can be summarised as follows:

- Climate-integrated land use planning, within a coherent National Land Policy, will underpin and guide all future development in The Gambia in a manner consistent with climate resilience.
- Assistance to develop national mapping and GIS systems, as well as national capacity for climate-integrated SEA, will further the reach of this systemic investment.
- The operationalization of the Gambia Climate Change Fund will be catalytic in the sense of leveraging in additional resources to address climate change, and through its provision of climate finance to the local level.
- Investment to close the gaps in climate observations and develop user-oriented climate services will ensure a sound basis for Local Climate Change Action Plans.

The transformational nature of the investments and will support The Gambia’s vision and goals of moving to a low emissions and climate resilient development path, as outlined in the NCCP.

Synergies with related programmes

The SPCR has been designed to optimise synergies between the proposed investment programmes and other ongoing or planned investment activities by the government, development partners, and non-state actors.

There are three overarching climate change-focused programmes with which the SPCR would have tight integration and synergies: the Low Emissions Climate Resilient Development Strategy (LECRDS); the National Adaptation Plan (NAP) process; and the Technology Needs Assessment (TNA).

An important current initiative central to the work of the SPCR is the UNDP-funded process to develop a **Low Emissions Climate Resilient Development Strategy (LECRDS)** for The Gambia. When developed

and implemented, the expectation is that this would assist to move The Gambia from its brown development pathway to a green growth path, particularly with respect to the planned urban and rural electrification and transport sector modernization. The **LECRDS** would also assist The Gambia to achieve the objectives of the Nationally Determined Contributions submitted to the UNFCCC under the Paris Agreement. Since the development of the LECRDS Background Paper, The Gambia was selected to be one of the second round of countries to prepare a SPCR. Given the overarching mandate for the SPCR, it is critical that the LECRDS forms part of, and is synergistic with, the strategy and investment programmes that will be designed for the SPCR. To this end, the SPCR team has collaborated with the LECRDS coordinator to refine the ToR for the LECRDS assignment, so that this is synergised with the SPCR. Thus the LECRDS will be a focus on the identified priority brown development aspects not covered in the SPCR investment programmes. These are still to be fully determined, pending review and validation of the SPCR. The focused LECRDS roadmap that is developed would form part of the ongoing and integrated process to implement the SPCR in The Gambia.

The process to develop a **National Adaptation Plan (NAP)**, with funding from UNDP, was initiated in The Gambia in 2015. A **NAP** roadmap was developed based on discussions with key stakeholders, which covers a two-year implementation period that aims to address capacity and capability gaps along the whole spectrum of policy planning, review, development and outreach. Given that the SPCR has been designated by the GoTG as the overarching strategy for the implementation of the NCCP, and covers both adaptation and mitigation planning and development, it is essential that the NAP is further planned and implemented under the umbrella of the SPCR, and not as a parallel process. Preliminary discussion have been held between the SPCR team and the NAP coordinator, and further details on the specific elements to be covered within the NAP, to feed into the SPCR implementation, will be agreed.

Towards the end of 2015, The Gambia embarked on a project for **Technology Needs Assessment (TNA)** for mitigation and adaptation, with the final documents expected in 2017. The SPCR already includes a number of relevant technology enhancement measures, such as support to renewable energy and entrepreneurial opportunities in that regard; it would need to further integrate key findings of the TNA, during detailed planning of the specific investment programmes.

In addition to the above, the SPCR is directly supporting the implementation of the NAMA and the INDC, by including several of the planned actions of those initiatives.

There are also existing sectoral programmes and projects, as well as new investments in the pipeline, with which the SPCR is developing complementary linkages. Some of these initiatives are:

- The GCCA+ programme 'Climate Resilient Coastal Zone Planning for The Gambia', with which there will be many synergies;
- Green Climate Fund Programme 'Ecosystem-based Adaptation in The Gambia River Basin': As the SPCR will intervene to develop value chains for various products, there is an obvious linkage with component b) of the EbA programme. When the relevant SPCR CN is being developed into the detailed funding proposal, further discussions will be held with the EbA project, to determine most synergistic areas of intervention in markets and value chain development.

- The *Chosso* project - Strengthening of Climate Resilience of the National Agricultural Land and Water Management Development project (NEMA): detailed complementarity and supportive actions between this and the investment reflected in the SPCR's rural resilience Concept Note 4 will be developed.
- Integration with Disaster Risk Reduction: The rural and urban resilience interventions being developed under the SPCR would ensure that climate change adaptation is integrated into DRR in accordance with NCCP and revised National Disaster Policy.
- Several energy sector instruments geared toward promoting low carbon development and reducing carbon emissions for sustainable social and economic development, including renewable energy and energy efficiency, including (i) Renewable Energy Initiative for Africa; (ii) Feed in Tariff; (iii) Renewable Energy Policy; (iv) Green Mini Grid (AFDB); ECREE Strategic Investment Plan; and Rural Electrification NAMA and PPP for Solar PV.

Please see Annex 8 for further details on key complementary programmes and the way in which the SPCR will build on previous achievements, fill gaps, or develop synergies in implementation.

Community based adaptation

The NCCP recognised that creating a strong enabling environment for community-based adaptation would need to be a cornerstone of The Gambia's concerted response to climate change. It is well recognised in Africa that secure land tenure and access rights are essential for enabling community-based adaptation, as well as harnessing any related mitigation co-benefits. The NCCP called on the GoTG to initiate a process to identify and act upon key constraints to community-based adaptation, including land tenure and access rights. This process has essentially begun during this SPCR preparatory phase, underpinned by extensive regional consultations. Multiple lines of support for community based adaptation are included in the SPCR investment programmes. In summary, some of the most important interventions to support CBA are:

- Enabling of participatory Local Level Adaptation Plans, as included in Concept Note 1
- Strengthening the understanding of and ability to support CBA of local government and key boundary agents such as NGOs and CBOs, as included in the capacity development interventions in Concept Note 1
- Provision of climate finance to the local level through the Gambia Climate Change Fund, as included in Concept Note 1
- Support to increased and diversified livelihood options, as covered in Concept Note 4
- Enhanced and user-friendly provision of climate services to user groups, as covered in Concept Note 1

Local Climate Change Action Plans

The SPCR will support the formulation, implementation, monitoring and regular updating of ward- and village-level Local Climate Change Action Plans, as envisaged by the draft NCCP, and in line with international best practice. The planning, implementation, monitoring and updating processes will be community-led and driven, to promote better integration and more sustainable, long-term outcomes, while national and local government will play a supportive and facilitative role.

Funding for the Local Climate Change Action Plans (LCCAPs) will be channelled from the Gambian Climate Change Fund (GCCF) to the Council level. The SPCR will support piloting of the LCCAPs in two of the regions, to assist with developing the procedures for channelling of and access to the funds from the GCCF, as well as the process through which national and local governments will ensure that the content of the plans is reflected in policies and plans at other levels, including in climate change-integrated regional development plans. The SPCR will support investigation and implementation of an agreed mechanism, such as a sub-committee at the ward, sub-ward and village levels, through which the local governments may become custodians of the funds channelled from the GCCF.

As recognised by the climate change-integrated Forestry Strategy, such local plans provide a mechanism for integrating local people's livelihood strategies into the design and review of development plans, sector-specific and spatial planning, environmental and climate assessments, as well as into project development and proposal formulation.

Capacity development

As noted in Concept Note 1, this is required across the board and at different levels. Particular effort is required at the local level, in order to develop the enabling environment for community based adaptation. As identified in the draft NCCP, additional capacity building efforts will be necessary for Area Councils, Ward Development Committees (WDCs), Sub-Ward Development Committees (SDCs), Village Development Committees (VDCs), Technical Advisory Committees (TACs) and Multi-Disciplinary Facilitation Teams (MDFTs), and for Regional, Ward and Village-level Disaster Management Committees, to enable them to facilitate the planning and implementation of the Local Climate Change Action Plans, and to meet their responsibilities as set out in the NCCP.

2.3 Underlying investment programmes

The SPCR describes a sequence of steps and phases to continue and deepen the process used by the Ministry in developing the NCCP, in order to develop the NCCP implementation strategy. This is complemented by specific investment proposals to attract funding from other sources, including the Green Climate Fund (GCF), in addition to any resources that may become available in the PPCR.

The SPCR consists of four main underlying investment programmes:

Pillar 1: Developing the enabling environment for climate resilience in The Gambia: The project development objective is to put in place an enhanced enabling environment for achieving low emissions, climate resilient development in The Gambia, through review and development of key policies, legislation, and institutions; and initiating and/or developing coherent systems and strategies for climate finance, capacity development and research, climate services, and a national system for M, E&R of climate resilience.

The integrated programme under Pillar 1 includes policy review and legislative development; further development of institutional coordination mechanisms at different levels; putting in place mechanisms to promote mobilisation of climate finance, including through the operationalization of the Gambia Climate Change Fund; support to a coherent programme on climate change capacity development and communication; furthering climate services investments; and developing the monitoring, evaluation and reporting (M,E&R) systems for climate resilience.

Note: Once the SPCR investment programmes have been finalised in broad terms, based on the review and validation process, additional detail from each of the four revised Concept notes will be brought in to this section, to provide a clear picture of what each project component covers.

Pillar 1 consists of five main components:

Component 1: Policy, legislative and institutional review and development

Component 2: Enhanced mobilisation of climate finance

Component 3: Climate change research, capacity development and communication

Component 4: Furthering climate services investments and systems

Component 5: Developing the climate resilience monitoring, evaluation and reporting system

Please see Concept Note 1 in Volume II for additional information, and the project logical framework.

Pillar 2: Climate-resilient land use mapping, planning and information systems: The project development objective is to put in place the necessary steps 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 development. The Plan would specifically address the relocation of the government functions currently within Banjul.

Pillar 2 consists of seven main components:

Component 1: Data gathering to inform climate resilient land use planning

Component 2: Establish a central information management system based on GIS

Component 3: Preparation and publication of national land use and cadastral maps at a range of appropriate scales based on the existing situation

Component 4: Development and publication of a National Land Policy and overarching Act to guide land ownership, planning, management, development, and governance

Component 5: Cross-sectoral updating, development and publication of relevant Policies and Acts taking account of climate resilience in addition to other national development objectives

Component 6: Preparation and publication of a national land use plan, including definition and legal recognition of implementation, monitoring and enforcement procedures and creation of capacity to enact

Component 7: Ongoing review and updating of the policies, plans and maps to respond to future changes in social, economic and environmental conditions

Please see Concept Note 2 in Volume II for additional information, and the project logical framework.

Pillar 3: Developing climate resilient infrastructure, services and energy systems: The project development objective is to put in place a series of steps and develop systems to promote climate

resilience in the urban areas of The Gambia, through actions to make systems and infrastructure for waste management, roads and drainage, water supply and sanitation, and energy resilient to current and future projected climatic changes.

Pillar 3 consists of five main components:

Component 1: Climate-resilient integrated waste management

Component 2: Climate-resilient Water and Sanitation

Component 3: Climate resilient Drainage Infrastructure

Component 4: Climate resilient Road Infrastructure

Component 5: Climate resilient energy infrastructure

Please see Concept Note 3 in Volume II for additional information, and the project logical framework.

Pillar 4: Developing integrated approaches to build rural climate resilience in The Gambia: The project development objective is to develop systems and integrated approaches to promote climate resilience in the rural and peri-urban areas of The Gambia, through developing climate resilient small-scale agriculture and livestock, community-based approaches to forest and natural resource management, and promotion of livestock and agro-forestry value chains and markets.

Pillar 4 consists of four main components:

Component 1: Enhancing the resilience of small-scale farming against future climate impacts

Component 2: Reverting the “Sahelization” of ecosystems in The Gambia to support resilience of small-scale farming, livestock and wildlife sub-sectors

Component 3: Supporting the planning, rehabilitation and management of buffering coastal ecosystems to build the resilience of fisheries and tourism development in The Gambia

Component 4: Private sector involvement for promoting and strengthening the resilience of communities’ livelihoods in The Gambia

Please see Concept Note 4 in Volume II for additional information, and the project logical framework.

2.4 Financing Plan

In the context of a limited government budget that is largely dependent on the tax economy, alternative financial sources are inevitable for The Gambia to finance the SPCR. Therefore, the use of market mechanisms as well as enhanced resource flows of international climate finance, as stipulated in the National Climate Change Policy (2016), will be required to promote investment in climate-resilient and low carbon development. In view of the SPCR programmes and indicative costs for the implementation stated above, and to support priority actions under the implementation of the NCCP, an adequate financing plan is required to ensure a proactive and effective approach to implementation.

The four main pillars of the SPCR investment strategy are: (i) Developing the enabling environment for climate resilience; (ii) Climate resilient land use mapping, planning and information systems; (iii)

Climate resilient urban infrastructure and development; and, (iv) Developing integrated approaches to build rural climate resilience. The financing plan provides some indicative cost estimates for the SPCR programme implementation. This costing is broken down in Table 2 below according to these pillars, for the short, medium and long term.

Table 2: Short, Medium and Long Term Cost Estimate for Financing SPCR

Programme Components / Pillars of the SPCR	Total Cost (US\$)	Short Term (US\$) (0-5 years)	Medium Term (US\$) (6-10 years)	Long Term (US\$) (11-25 years)
Pillar 1: Developing the enabling environment for climate resilience	28,850,000			
Pillar 2: Climate resilient land use mapping, planning and information systems	45,000,000			
Pillar 3: Climate resilient infrastructure, services and energy systems	164,000,000			
Pillar 4: Developing integrated approaches to build rural climate resilience	73,000,000			
Total Financing costs:	310,850,000			

The Gambia's need for climate financing as an addition to the ordinary development financing is necessitated by the threat that climate change poses to both development and environmental sustainability. The adverse effects of climate change constitute a significant risk to lives and livelihoods of people, particularly the poor and the vulnerable; these effects could reverse any economic progress made. Thus adequate and sustainable financing needs to be mobilised for the country to move forward along a sustainable and resilient development path. The estimates provided in this strategy are considered minimal compared to the apparent needs of the country. The estimates provide a critical starting point that will open the door to more accurately establishing the real needs in the unpredictable environment of climate change.

Some of the strategic interventions identified in this strategy build upon existing development interventions with funding from the government, as well as development partners such as the Green Climate Fund (GCF), IFAD, UNEP, UNDP and others. In order to effectively address the identified strategic interventions, substantial amounts of additional funding will be required in the long term, given the significant existing adaptation deficits identified in the gap analysis. Climate change will exacerbate existing challenges resulting from fragile and degraded ecosystems, poor planning and insufficient environmental governance. The major mechanisms through which the necessary additional funds may be obtained include the following:

- **National budget:** The mainstreaming and integration of climate change issues into the national development agenda means that national budget allocations are necessary to support the implementation of existing climate change policy priorities. These national budget allocations will be used to leverage the finances originating from external sources to cover the additionality related to climate change.
- **Dedicated funding from bilateral and multilateral sources:** The available sources of external funding for adaptation and mitigation are diverse and expected to increase, resulting from positive donor responses to recent political changes, and include for instance: the EU Global Climate Change Alliance Programme; the World Bank's Carbon Funds and Facilities; the Least Developed Countries Fund (LDCF) of the UNFCCC/GEF; the United Nation's Reduced Emissions from Deforestation and Forest Degradation (UN-REDD) Programme; Climate Investment Funds (CIFs) of the World Bank; the Special Climate Change Fund (SCCF) of the UNFCCC/GEF; the Adaptation Fund (AF) of the Kyoto Protocol (with secretariat at GEF and World Bank acting as Trustee); the Green Climate Fund (GCF); and the Scaling up Renewable Energy in Low Income Countries Programme (SREP). In addition to those, numerous bilateral development partners have either set up their own climate change bilateral funds and programmes, and/or are mainstreaming climate change support into their development cooperation programmes.
- **Private sector finance and foreign direct investment (FDI):** Private sector players (both domestic and international) can provide investment mainly in the energy and forestry sectors, as well as industry in manufacturing and transport. Private sector sources may be supplemented by public-private partnership (PPPs) funds and grants or soft loans from multilateral financial institutions (MFIs).
- **Carbon markets:** Market-based mechanisms such as the Clean Development Mechanism (CDM) and the REDD+ Mechanism, as well as voluntary carbon market schemes, can provide funds for mitigation.
- **Payments for ecosystem services (PES):** PES, also known as payments for environmental services (or benefits), is the practice of offering incentives to farmers or landowners in exchange for managing their land to provide some sort of ecological service, conservation agriculture, ecotourism, land easement or lease. PES programmes promote the conservation of natural resources in the marketplace. This can include, for instance, the integration of various innovative financing and payment schemes or incentives through appropriate taxes, polluter-pays principle, levies and tariffs.

Annex 6 provides a summary of some of the financing sources and mechanisms.

Operationalizing the Gambia Climate Change Fund, as discussed under Pillar 1 and in the associated Concept Note 1, is a critical and early step in further developing the resource mobilisation strategy for the SPCR.

The New Delhi Work programme recognizes the need for adequate financial and technical resources to ensure effective implementation of activities of Article 6 of the UNFCCC. Since The Gambia contributes very little to greenhouse gas (GHG) emissions but is highly vulnerable to climate change impacts, more resources are allocated to adapting to climate impacts in the short and medium term. In the long-term, the country will need to allocate more resources to mitigation because with the high level of development, population growth and oil extraction and use, GHG emissions will be higher.

The Gambia's climate change priority action plan for 2012–2015 and the National Climate Change Policy 2016, require in excess of an estimated US\$1.35 billion in climate financing by 2030 (approximately US\$ 113 million per annum) over the next 15+ years to address climate change concerns, in addition to the existing interventions, in a country with a GDP of USD 914.3 million (2013). The climate change financing represents approximately 12% of the country's Gross Domestic Product (GDP) per annum over the next fifteen years (GDP at market prices as of 2013). Of this financing, adaptation costs will account for approximately 10% and mitigation costs for 2% of the annual GDP. It should be noted up front that a significant share of these estimated financial resource needs will be required and channelled at the local level, where a majority of community members are vulnerable to climate change effects. Priority actions under the SPCR strategy will materialize, following the National Climate Change Policy principle of community-based actions to address climate change and its impacts, and the requirements for the Gambia Climate Change Fund to channel at least 50% of all climate finance received from national and international sources to local communities, with an initial focus on capacity development.

The cost estimates are above the range of the average projected adaptation estimates for the Sub-Saharan Africa countries (at 1.7%–1.8% of their GDP per annum) and are also more than the World Bank (2006) estimates range of 2-10% of Gross Domestic Investment (GDI). The mitigation costs were estimated using the Integrated Assessment models (IAMs) - the FUND and PAGE models that estimate that the mitigation costs will range between 1.5 - 10% of annual GDP. The Gambia's mitigation costs are above these averages. However, it should be noted that for some interventions, there may be no clear divide between climate change finances that address purely adaptation and building resilience, or mitigation concerns. This is because some adaptation/resilience and mitigation measures are mutually reinforcing and deliver co-benefits for adaptation, resilience and mitigation. For example, adaptation measures in sustainable land management can mitigate climate change if they include conservation agriculture and forestry.

The costings are only indicative of the direction the country needs to take in implementing the NCCP through the SPCR Programme. It is likely that, owing to the unpredictability of the impacts of climate change and the existing gaps in financial data for the country's climate change needs, the required financial input might be higher than projected to transition the country onto a sustainable climate-resilient development path. Attaining climate-proof and climate-resilient development requires much more than poverty alleviation. Apart from the existing deficits in addressing the poverty problem, the country faces some unpredictable future impacts as a result of changes in climate that cannot yet be precisely predicted.

2.5 Implementation arrangements for the SPCR

This section considers the institutional arrangements for implementation of the SPCR with a particular focus on (a) mainstreaming, (b) embedding to the extent possible implementation into current institutional arrangements of the country's NCCP; and (c) institutional arrangements and capacity building measures. Arrangements for resource mobilization were set out in section 2.4 above, which sets out the Financial Plan for mobilising the necessary investments to fund the SPCR components.

Given a certain amount of flux in the country at the moment, as a result of recent political changes, combined with an existing dynamic institutional environment, additional steps will need to be taken

in order to fully develop the implementation arrangements for the SPCR. Thus, in the interim (i.e. the next four to six months), high-level oversight will be provided through the multi-stakeholder Technical Team set up to oversee the SPCR preparatory process. The GoTG would as a priority need to formalise the draft NCCP, in order to have a concrete basis for initiating the institutional arrangements envisaged in the NCCP for enhanced coordination of climate change planning and responses, as set out in section 1.8 above. In the interests of mainstreaming, it would be most appropriate for those institutional mechanisms to provide final direction on optimal oversight of the SPCR. An initial step would be for the MoECCNAR to develop and submit a Cabinet Paper to motivate for consideration and approval of the draft NCCP. Additional details on project-level oversight of the SPCR investment programmes would be developed once the NCCP was formalised and the key institutions – the National Climate Change Council (NCCC) and the Inter-Ministerial Committee on Climate Change (IMCCC) – were in place.

It will be necessary for the MoECCNAR to have a recurrent budget line to fund regular sittings of the NCCC, the IMCCC and the existing National Climate Committee (NCC), to move away from the frequently experienced situation, across different sectors, in which institutional mandates cannot be effectively achieved, as institutions have been reliant on ad hoc project funding.

The draft NCCP sets out the rationale for, and respective functions and attributes of the different institutions mentioned above. Thus the NCCC is tasked with governing the GCCF, which according to the NCCP shall be housed in the Ministry of Finance and Economic Affairs (MoFEA).

The GCCF will play a central role in the implementation arrangements for the SPCR. Thus an additional critical step, to be taken at the first meeting of the National Climate Change Council, would be to establish a sub-committee to manage the GCCF. A key task for that committee, with technical assistance of an international expert who has been involved in establishment of other national climate change funds, would be to set in motion the process to operationalize the GCCF without delay.

As set out in the NCCP, the main objective of the GCCF shall be to integrate national and international sources of funding; *facilitate the use of national systems and institutions in channelling resources, and in planning and implementing climate change responses*; and in funding nationally-owned and driven programmes, that are consistent with Vision 2020 and other national development strategies. The GCCF further provides the means to attract and channel appropriately the resources needed for implementing the mitigation commitments as set out in the INDC and the NAMAs, as well as the country's adaptation needs as initially prioritised in the NAPA, expanded on in a range of plans and documents, and, as envisaged in the NCCP, to be 'collated and developed into costed and time-bound programmes through the National Climate Change Response Strategy and Action Plan process'. The SPCR defines the significant costed and time-bound investment programmes that will be put in place in The Gambia, in order to implement the NCCP, and as such, is in fact being seen as the National Climate Change Response Strategy and Action Plan for The Gambia.

The TACs and MDFTs at regional and district level are key institutions that will be involved in SPCR implementation and monitoring, through their role as planners and facilitators of the development process at sub-national levels. They will thus play a critical role in facilitating community-based adaptation in The Gambia, which will be the major mechanism for scaling up enhanced adaptive capacity and resilience. Ongoing, comprehensive and adequately resourced climate change capacity development for the TACs and MDFTs is thus a priority. In addition, as the NCCP requires, steps will need to be taken to enhance the ability of NGOs to play a stronger role in supporting community-

based adaptation. An important step in developing the Long-Term Climate Change Capacity Development Strategy (LT-CCCDs) that forms part of the SPCR programme to enhance the enabling environment for climate resilience (Concept Note 1) will be to discuss and agree the goals and activities of these capacity development interventions with NGO and CBO stakeholders; discussions will also be convened on how to establish effective public-private-civil society partnerships for implementing climate-resilient development. The private sector, including the hospitality industry, will be important targets for climate change capacity development; specific directions and modalities for this would be developed during elaboration of the LT-CCCDs.

As noted above, once the NCCC and the IMCCC were initiated and the GCCF in operation, additional details on project-level oversight of the SPCR investment programmes would be developed. For example, in the areas of land use mapping and planning within the coastal zones (which forms part of the climate resilient land use mapping, planning and information systems investment set out in Concept Note 2), the management structures, policies and procedures for coastal zone management have already been recommended by previous funded projects, as have many of the required field survey programmes, modelling studies and GIS requirements; these areas are the responsibility of the National Environment Agency (NEA) with support from the existing Coastal and Marine Environment Working Group (CMEWG). Land use mapping and planning, including the coastal zone, is the responsibility of Ministry of Lands and Regional Governments and the Department of Physical Planning and Housing, who will need to work closely with the NEA regarding data management and mapping using GIS. Essential and early tasks will include identifying, recruiting and training a significant number of staff at all levels from ministerial leadership to administrative support, acquiring office space and identifying appropriate equipment from work stations to survey vessels.

Each of the four investment programmes of the SPCR would undergo similar stakeholder and institutional mapping to formulate the optimal implementation arrangements required, under the umbrella of the national-level institutional framework for coordination of climate change responses that has been spelled out in the NCCP.

2.6 Results framework, monitoring, evaluation and reporting

The SPCR includes an overall results framework, consistent with the requirements of the CIF-PPCR, which summarises outcomes, including both transformation impacts as well as expected results.

The results framework, which covers the totality of the four planned SPCR investment programmes, is contained within **Annex 10**. As the more detailed planning of the SPCR proceeds, in terms of developing the Concept Notes into detailed project proposals, the results framework will need to be updated, in line with revisions to the logical frameworks contained in each of the Concept Notes.

The results framework is a critical tool for monitoring the achievements of the SPCR. This section of the SPCR further contains provisions for a Monitoring, Evaluation and Reporting (M, E&R) system to support the implementation of the SPCR and mainstream climate resilience into the overarching systems of The Gambia, and to report on the results of the investment programme and the effectiveness of its financing.

In view of the importance of integrating a rigorous monitoring, evaluation and reporting system as a means to measure performance to realise the desired targets, the Draft PAGE II M & E system outlines a result framework with clear outcome indicators. This will be used to measure performance and

results achieved against targets. An Act of Parliament, setting out the required structures, policies and regulatory instruments and standards, will institutionalise the M & E system.

It is imperative that the Monitoring, Evaluation and Reporting Framework of the SPCR is aligned with the M & E system of the PAGE II to provide a clear link between the National Development Plan and the climate resilience programme. This will also enable the planning unit of MoECCNAR to put in a place a climate change programme monitoring and evaluation framework for reporting to the Directorate of Planning responsible for the national development planning process.

The NCCP calls for a robust and participatory climate change monitoring and evaluation system to be developed, to undertake regular monitoring and rigorous evaluation of climate change programmes and other responses. The purpose of this would be to monitor progress towards the delivery of policy objectives, and to identify the impact of implemented actions. Design of the Climate Change Monitoring and Evaluation System should take into account the need for integration with the proposed national monitoring and evaluation system, as well as harmonisation with the evolving social protection M & E frameworks, which seek to understand the degree to which social protection measures are building beneficiaries' resilience to different kinds of risks, including climate risks.

Component 5 of Concept Note 1: Developing the enabling environment for climate resilience in The Gambia would result in the development of a multi-level M, E & R system for climate resilience, linked to the National M, E & R System, in line with the PAGE II systems. PAGE II envisages a legal and regulatory framework guiding planning and M & E activities, senior-level commitment and the means to engage all sectors within government. The SPCR M&E would fit into this system developing both a results framework – with the preliminary one provided in Annex X - as well as an M&E reporting system supporting the SPCR and mainstreaming climate resilient development. In addition, specific government budget lines where climate change interventions are identified would allow for budget tracking, tagging and coding. Effective linkages would be developed between the climate change M, E & R system and the climate change budget coding and scoring system.

Climate change indicators will be formulated to track resilience and measure progress with adaptation and mitigation over different time scales and at different administrative levels. Disaggregated indicators and outcomes will be tracked, including age- and gender-disaggregation, to ensure correct targeting and to guide responses towards assisting the poorest and most vulnerable people and groups.

The National Climate Change Council has responsibility for monitoring overall progress, and making mid-course corrections where necessary. To this end, an institutionalised learning mechanism shall be established, to close the feedback loop between M&E and implementation, to promote adaptive management and action learning.

It is important that the M, E & R process is driven by the capacity and ability of key stakeholders to participate, assess and even set the parameters of the M & E system. The Planning Unit in collaboration with SPCU of MoECCNAR will ensure that all climate change related projects and programmes submit reports in line with the M, E & R system to be developed.

An efficient reporting system will be designed to allow for transparency and civil society engagement, as well as for international reporting. It is envisaged that annual reports be prepared on SPCR progress, together with a summary brochure that can be translated into local languages, with further dissemination of key messages through the means of traditional communicators, radio and television.

This will be an important part of the expanded and systematised National Climate Change Communication Strategy and Awareness Campaign (NCCCS&AR), located within the MoECCNAR, and included as a project component in Concept Note 1: Developing the enabling environment for climate resilience in The Gambia.

As the NCCP notes, there is an important potential role for civil society and the private sector in monitoring, evaluation and reporting on the achievements of the SPCR. Umbrella organisations such as the Association of Nongovernmental Organizations (TANGO) and the Gambia Chamber of Commerce, Industry, Agriculture and Employers' Association (GCCCI), as well as individual NGOs and enterprises with expertise in the field could take the lead in tracking climate change expenditure in the national budget, when budget tracking, tagging and coding systems are established by the Ministry of Finance. Such roles should be implemented with a strong focus on gender equality and informed inclusion of women, and should furthermore ensure optimal participation of youth in tracking progress with the SPCR.

PART 3 Concept Notes

Four Concept Notes (CNs) have been developed, one for each of the integrated investment programmes defined for The Gambia under this SPCR. Each CN uses the template set out below, and specifically provides for credible opportunities to mainstream gender, youth, health and tourism issues into project activities.

- 1. Title and brief summary of the investment**
- 2. Background and justification**
- 3. Project development objective**
- 4. Link to national adaptation and /or mitigation objectives**
- 5. Project components and activities**
- 6. Implementation arrangements**
- 7. Estimated cost and provisional financing plan**
- 8. Logical framework**

While the ToR included the request to include a brief cost benefit analysis in the CNs, if feasible, this was firstly not possible within the condensed timeframes of the SPCR preparatory process in The Gambia, and secondly was not considered feasible for a number of the components. Cost benefit analyses could be included in the full project proposals that would be developed by the GoTG at a later stage, as a requirement for more detailed planning and resource mobilisation.

The four Concept Notes, with their associated logical frameworks, are contained in Volume II of this SPCR report.

Part 4 Additional analytical studies and way forward

4.1 Additional analytical studies

The SPCR team has defined a workable set of additional analytical studies, based on our discussions with MoECCNAR, the Technical Team, and others stakeholders consulted. In response to the ToR, and consistent with the Technical Proposal, the focus of the additional studies is on research, study and assessment required to complete the SPCR process. While it was initially proposed that some priority activities would of necessity be undertaken during the strategy preparation, and the remainder during the SPCR implementation, the shortened time of the SPCR preparation phase has meant that this was not possible.

The following key additional analytical studies, highlighted through the gap analysis process and defined by the consultations, have been identified:

1. Development of Climate Change Scenarios for The Gambia, based on the CMIP-5 and CORDEX-Africa data sets
2. Comprehensive analytical study to understand climate change impacts on health in The Gambia, using the Health Management Information System (HMIS) and climate data available in the country
3. Feasibility study to assess best available options for managing excess runoff and preventing flooding in The Gambia
4. Review of Climate Finance and Establishment of Emerging New Innovative Financing Mechanisms including: Payments for Ecosystem Services (PES), mechanisms to implement the Polluter Pays Principle, REDD+ and Carbon Finance to Attract Private Sector Participation in SPCR

Study 1, which will develop an updated set of climate scenarios for The Gambia, should be completed first, and without delay, as this is an essential input into Studies 2 and 3, and will provide valuable background for Study 4. A Terms of Reference is provided for each the four studies in **Annex 7**.

The additional studies should be seen within the context of the proposals in the NCCP, which have been taken up in Concept Note 1 of this SPCR, to develop a National Research Framework on Climate Change, to guide research efforts in a coordinated and systematic manner, and to develop scientifically sound and policy relevant knowledge.

4.2 Way forward

Following the programming phase, the SPCR will be submitted for approval and endorsement of the investment plan, after which work will shift toward implementation and making the projects a reality. As indicated in section 2.5, the institutional arrangements envisaged in the NCCP for enhanced coordination of climate change planning and responses would most appropriately provide overarching oversight of the SPCR, and would furthermore need to provide final direction and agree on the more detailed oversight arrangements for the SPCR investment programmes. The GoTG would as a priority need to formalise the draft NCCP, in order to have a concrete basis for initiating the required

institutional mechanisms that will oversee the SPCR, as a comprehensive step in mainstreaming climate risks and responses into planning and development at different levels.

The next steps therefore include:

- The MoECCNAR to develop and submit a Cabinet Paper to motivate for consideration and approval of the draft NCCP.
- Obtain Cabinet approval of the NCCP, ideally before June 2017, so that this can be included in discussions of budget allocations for sitting of the key institutions, *inter alia*, for the 2018 financial year.
- Establish the key institutions of the National Climate Change Council (NCCC) and the Inter-Ministerial Committee on Climate Change (IMCCC), under the NCCP.
- At the first meeting of the National Climate Change Council, establish a multi-stakeholder sub-committee of no more than 12 people with clear Terms of Reference to manage the Gambia Climate Change Fund (GCCF).
- Operationalise the GCCF and begin resource mobilisation through this mechanism.
- GoTG to adopt the climate-integrated SEA policy and guidelines, so that SEA procedures are in place for use in the legislative and policy review actions of the SPCR.
- MoECCNAR to commission the additional analytical studies identified in the SPCR without delay, so that these can be inputs into further SPCR planning and early implementation.

In the interim (i.e. the next four to six months), high-level oversight will be provided through the multi-stakeholder Technical Team set up to oversee the SPCR preparatory process, and discussions should continue with all stakeholders, including civil society, the private sector and development partners, on fine-tuning the SPCR and the Concept Notes. Initial discussions with potential funders on supporting aspects of the SPCR should be an immediate priority. The specific role of the NAP process in supporting a sub-set of planning-related interventions in the SPCR should also be clarified in the interim.

References

AFL/DFID/BRACED (2017)

African Economic Outlook (2013) Economic Outlook for 2012: Country Note for The Gambia.

Bojang, L., Jallow, A.O., Mbye, B., Loum, M.K., 2005. Country study on assessment of vulnerability to climate change in the forest and woodlands ecosystem and to propose adaptation options Consultancy Report Prepared for NAPA Project LDL 2328 2724 4699. Banjul, 21p.

Brown, S., Kebede, A. S., and Nicholls, R. J. (2011) Sea Level Rise and Impacts in Africa, 2000-2100. School of Civil Engineering and the Environment, University of Southampton. 215pp.

CBG (2015) Central Bank of The Gambia Annual Report 2013. Banjul, 92p.

Darboe, F.S. (2002) Fish species abundance and distribution in the Gambia estuary. Final Project. The United Nation University. Fisheries Training Programme. P.O. Box 1390, Skulagata 4. 120 Reykjavik, Iceland.

FAOSTAT (2015) Forestry data extracted from FAOSTAT at http://faostat3.fao.org/browse/F/*/E (3.12.2015).

Future Climate for Africa (2016) Africa's climate - helping decision makers make sense of climate information. November 2016.

Gianluca Ragusa. 2014. Overview of the Fisheries Sector in The Gambia. Short Communication. Fish Aquac J 2014, 5:3. <http://www.omicsonline.com/open-access/overview-of-the-fisheries-sector-in-the-gambia-2150-3508.1000107.pdf>

GoTG (2003) First National Communication under the UNFCCC. Department of State for Fisheries, Natural resources and the Environment., Banjul the Gambia., 94p.

GoTG (2006) The Gambia Tourism Development Master Plan. Department of State for Tourism and Culture, Banjul, 34p.

GoTG (2007) Gambia National Adaptation Programme of Action (NAPA). Department of State for Forestry and The Environment, Banjul, 97p.

GoTG (2009) Disaster Risk Reduction and Climate Change Adaptation Programme for The Gambia. Prepared by Sahel Invest Management International in collaboration with UNISDR, for the National Disaster Management Agency, Banjul.

GoTG (2010) Gambia National Agricultural Investment Plan (GNAIP) - 2011 – 2015.

GoTG (2011) Nationally Appropriate Mitigation Actions. Ministry of Forestry and the Environment, Banjul, 35p.

GoTG (2012) The Gambia's Second National Communication under the United Nations Framework Convention on Climate Change. Ministry of Forestry and the Environment, Banjul, 113p.

GoTG (2014a) The Gambia National Social Protection Policy 2015-2025. Department of Social Welfare, Banjul, 38p.

GoTG (2014b) The Fifth National Report to The Convention on Biological Diversity. May, 2014. Wildlife Management Headquarters, Abuko, The Gambia.

GoTG (2015a) Intended Nationally Determined Contribution of The Gambia. Ministry of Environment, Climate Change, Forestry, Water and Wildlife, Banjul, 24p.

GoTG (2015b) National Energy Efficiency Action Plan (NEEAP). Ministry of Energy, Banjul, 68p. Developed with technical assistance of ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE).

GoTG/Ministry of Forestry and the Environment (MoFEN) (2010) National Forest Assessment 2008-2010 – The Gambia.

GoTG/UNDP (2015) Gambia National Adaptation Plan Process. Stocktaking report and a road map for advancing Gambia's NAP process. Draft final report: 20 July 2015. A joint UNDP-UNEP Initiative.

GPA (2014) Corporate strategic plan (2015-2019). Ministry of Works, transport and Infrastructure, Banjul, 17p.

IPCC (1990) Climate Change: the IPCC Impacts Assessment. Report prepared for the IPCC by Working Group II. WMO and UNEP, Australian Government Publishing Service, Canberra, 296p.

Izrael Yu. A. 1991. USSR: Climate Change Impact Study: IPCC Working Group II Report.

Jaiteh, M.S. and B. Sarr (2011) Climate Change and Development in The Gambia: Challenges to Ecosystem Goods and Services. Available at http://www.columbia.edu/~msj42/pdfs/ClimateChangeDevelopmentGambia_small.pdf

Ministry of Energy / TNC (2015) The inventory of greenhouse gas emissions from the energy sector under the Third National Communication. Banjul, The Gambia.

Ministry of Finance and Economic Affairs (2011) Programme for Accelerated Growth and Employment 2012-2015 PAGE Priority Action Plan. Banjul: The Government of The Gambia.

National Nutrition Agency and UNICEF (2013) National Nutrition Survey in The Gambia. Banjul: NaNA.

Niang, I., O.C. Ruppel, M.A. Abdrabo, A. Essel, C. Lennard, J. Padgham, and P. Urquhart (2014) Africa. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1199-1265.

Njai, S.E. & Njie, M. 1998. Overview of artisanal fish processing in The Gambia. Fisheries Department, The Gambia. pp 1-10. Unpublished.

Njie, M. (2002) Second Assessment of Climate Change induced vulnerability in the Gambian Water Resources Sector and Adaptation Strategies. Consultancy Report for National Climate Committee (The Gambia), Banjul. 71p.

Njie, M. (2015) Gap Analysis 2: Low emissions and resilient economy. Consultancy report prepared for the process to develop the National Climate Change Policy, as part of Component 2 of the EU-supported GCCA programme in The Gambia. December 2015. Banjul, 39p.

ProPAG (2013) Analytical Note on 2014 Budget laid before the National Assembly of the Gambia. PPAG/SER/AN/GMB Budget/01, Pro-Poor Advocacy Group Publications, Bakau Newtown, 29p.

Queensland University of Technology (QUT) (2010) Impacts and adaptation response of infrastructure and communities to heatwaves: the southern Australian experience of 2009. Report for the National Climate Change Adaptation Research Facility, Gold Coast, Australia.

Sharma, A. (2015) Independent Institutional Assessment for climate change in The Gambia. Expert study carried out for the process to develop the National Climate Change Policy, as part of Component 2 of the EU-supported GCCA programme in The Gambia. December 2015. Banjul, 37p.

Stoorvogel et al., 1997. The nutrient input by Harmattan dust to a forest ecosystem in Côte d'Ivoire, Africa. *Biogeochemistry* 37(2):145-157.

The Gambia Bureau of Statistics (2010) Integrated Household Survey Validation. PPP. Kanifing: The Government of The Gambia.

WAIS (2015) National Energy Policy (2015 – 2020): The Gambia. Consultancy report prepared for the Ministry of Energy, Banjul, 56p.

World Bank (2015) THE GAMBIA: Policies to Foster Growth. Volume II. Macroeconomy, Finance, Trade and Energy. May 19, 2015, 59p.

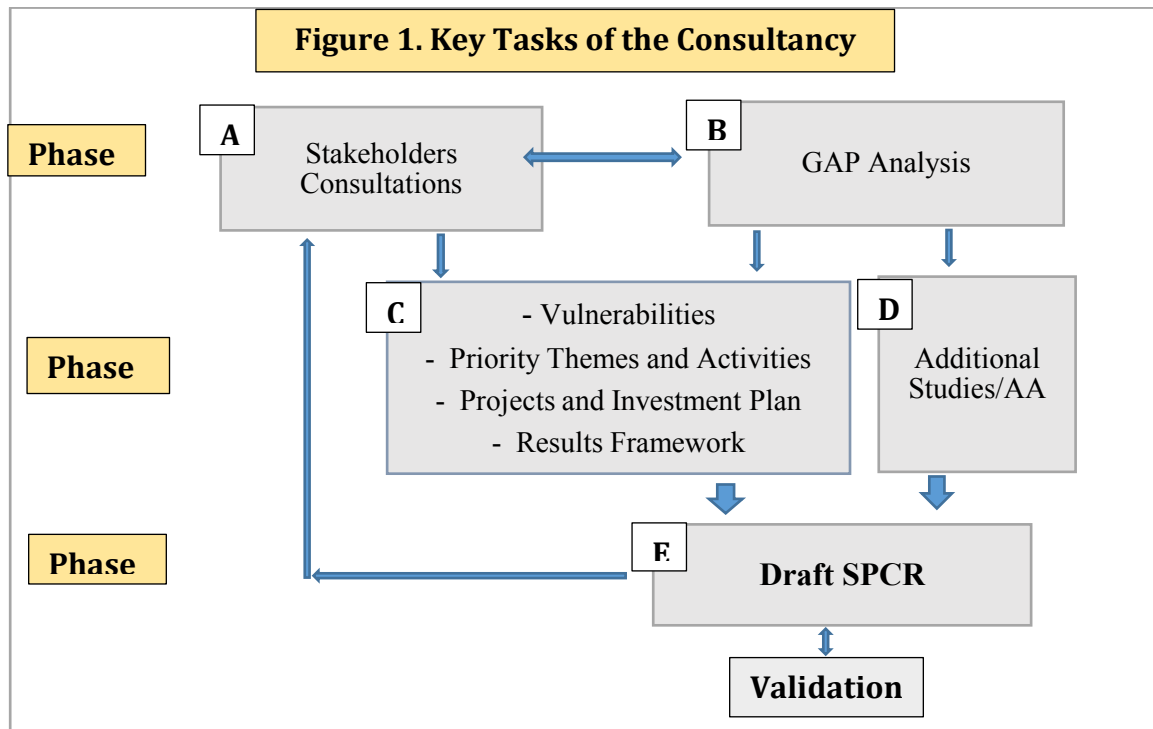
World Food Programme (2012) Emergency Operation – The Gambia 200421. Project Report.

Annex 1 Aide Memoire for the First Joint Mission

Annex 2 Additional information on stakeholder consultation

Having been closely involved in the NCCP preparation process, AGRER and its team were able to provide a participatory and workable approach to the SPCR preparation process, reflecting international best practice as well as being tailored to the needs and capabilities of the country.

Figure 1 summarises the key tasks of the consultancy, as set out in the TOR and in Agrer’s Technical Proposal.



Additional information will be provided, drawn from the SCP and subsequent developments in stakeholder consultations. This will include lessons learned on the consultation process.

Annex 3 Stakeholders consulted in the GBA

The following is the list of stakeholders consulted during March and April 2017 in the Greater Banjul Area, for the SPCR Phase 1 process.

NO	NAME	SEX	INSTITUTION	DESIGNATION	MOBILE	EMAIL
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MALE = 102

FEMALE = 38

Annex 4 Principles set out in the National Climate Change Policy

As stated in the National Climate Change Policy (2016), the Gambia's response to climate change is guided by eleven principles, which are consistent with the existing national policy framework, aligned to the United Nations Framework Convention on Climate Change, and have been informed by relevant international best practice.

- i. *Equity and social inclusion*: striving for a balance and fairness for all stakeholders, taking into account the need to address disproportionate vulnerabilities, capabilities, responsibilities and disparities, in a way that promotes social cohesion.
- ii. *Inter-generational equity*: responding to climate change for the benefit of the present and future generations of Gambians.
- iii. *Cooperation*: promoting a supportive and enabling system for participation and ownership by all stakeholders.
- iv. *Precautionary and preventive*: minimizing the known causes of climate change and offsetting predicted impacts through risk-averse approaches.
- v. *Polluter pays*: those responsible for emitting pollutants that affect the climate system should pay the costs for remedying such pollution and supporting consequent adaptive responses.
- vi. *Sustainable development*: recognizing the developmental needs of The Gambia and encouraging sustainable growth that does not adversely affect the environment.
- vii. *Environmental justice*: addressing social inequalities, particularly relating to gender, age, infirmity and socioeconomic status, which would be aggravated by climate change, and enabling access to justice for all.
- viii. *Informed participation*: enabling stakeholder participation in decision-making and enhanced action at all levels, through capacity building and enhanced communication of climate change impacts and responses.
- ix. *Evidence-based*: climate change responses should be guided by proactive planning that is based on credible scientific information.
- x. *Innovation*: research and technology for innovative and effective responses will be prioritised.
- xi. *Duty to maintain a decent environment*:³⁰ emphasizing the inter-linkage between environmental integrity and climate resilience

These guiding principles inform the National Climate Change Policy, which underpins the country's overarching legal framework for responding to climate change. The principles should thus be taken into consideration in any future sectoral policy review processes.

³⁰ Principle drawn from National Environment Management Act (1994)

Annex 5 Summary of climate change projections studies for The Gambia

In order to provide the greatest possible clarity at this stage on climate projections for The Gambia, a summary has been developed of most of the climate change projections (excepting those in earlier IPCC Assessments than the AR5) developed to date for country.³¹ In general the number of models used to derive the projections surveyed has increased over time, the greatest number being in the IPCC AR5. Thus, of all assessments summarised, there is no doubt that the richest source of information lies in the projections made for the IPCC AR5, a source still to be examined in detail for The Gambia.

In the following bullet-point notes are provided for most climate change projections (excepting those in earlier IPCC Assessments than the AR5) for The Gambia in order of publication. One of the uncertainties lies in future anthropogenic emissions, and in this regards various scenarios have been used widely. As a summary below, those labelled RCPn.n are from the IPCC AR5, the others from earlier IPCC Assessments:

- RCP8.5 is a high emissions scenario roughly equivalent to A2 (note that, until the last few years, observed emissions were closely represented by A2 and RCP8.5, but recent decreases have moved the observed curve closer to RCP6.0)
- RCP6.0 is a lower emissions scenario, roughly between B2 and A1B
- RCP4.5 is lower still, roughly equivalent to B1, the lowest emissions scenario used in the IPCC AR4 and earlier
- RCP2.6 is the lowest emissions scenario used in the IPCC AR5, and the main one according to the IPCC that offers an opportunity to meet the Paris Agreement

First National Communication to the UNFCCC (2003)

- Used the earliest approach to modelling climate change through running the models to equilibrium at historic levels of atmospheric CO₂ and at double those concentrations and comparing results
- Used 5 models at versions available around 1990, but rejected one on the basis that the remaining 4 better simulated the climate of The Gambia
- Temperature to rise by 2075 by between 3°C and 4.5°C
- Rainfall projections for 2100 compared to 1961-1990 cover -59%, -17%, -15%, +15% and +29%
- Little change in solar radiation
- Sea level rise values quoted from the IPCC AR1, using a baseline of 0.2m, and projected values by 2100 of 0.5m, 1.0m and 2.0m (presumably from different models/assumptions).

weAdapt.org (2009, updated 2016)

- Provide charts of monthly projections for 2046-2065 for an unspecified area, presumably the entire country
- Use a number of unidentified climate models (presumably as prepared for an IPCC Assessment)

³¹ This summary was developed by Dr. Michael Harrison.

- Temperature increases in the range 1.0°C to 4.0°C
- Rainfall seasonality unaffected
- In June little change or decrease in rainfall, in July “moderate” increase, possible increase in October, otherwise disagreement on sign of change

Second National Communication to the UNFCCC (2012)

- Used 13 climate models with outputs then processed through the MAGICC/SCENGEN models to extract further details, but used only those 3 climate models with best correlation to historical Gambian climate to produce the final projections
- Emissions scenarios used not identified
- Annual temperature increases by 2100 according to the three selected models are 3.1°C, 3.9°C and 3.4°C
- Projections of annual rainfall listed at about 20-year intervals from 2010 to 2100 for the three selected models are 0% becoming -2%, -4% decreasing to -54%, and -1% to -9%, with decreases most notable in JAS
- Similarly, for potential evapotranspiration the three selected models project +3% to +19%, +7% to +45%, and +2% to +15%
- No projections of sea level rise given

McSweeney et al. (2012)

- Uses all models (about 20) as per the main body of results in the IPCC AR4 with emissions scenarios A2, A1B and B1, but does not differentiate results between the emissions scenarios
- Projects temperature increases between 1.1°C and 3.1°C by the 2060’s and between 1.8°C and 5.0°C by the 2090’s, with a range across each emissions scenario of 1.0°C to 2.0°C
- Faster warming inland than near coast
- “Substantial” increases in the numbers of “hot” days and nights, more so in the east than the west, and concomitant decrease in the numbers of “cold” days and nights
- Rainfall projections vary in sign but with a bias towards reductions; range of -23% to +18% by 2090’s, with main changes in JAS of -53% to +74%
- Increased proportion of rainfall in “heavy” events, mainly in rainfall season, but wide spread of values across models
- Sea level rise along coast by 2090’s compared to 1980-1999 projected as 0.13m to 0.43m under B1, 0.16m to 0.53m under A1B, and 0.18 to 0.56m under A2

Climate System Analysis Group, University of Cape Town (recent for the IPCC AR5 models but date not given)

- Two sets of projections by month for stations with adequate historical data (Banjul/Yundum only in the case of The Gambia), one for 10 of the climate models as per the main body of results in the IPCC AR4 using statistical downscaling and emissions scenarios A2 (highest) and B1 (lowest), the second those in the IPCC AR5 using numerical downscaling and emissions scenarios RCP4.5 and RCP8.5 (highest)
- For the IPCC AR4 the rainfall-only projections results are displayed in the form of monthly histograms illustrating the 10-90% range together with lines for each individual model (unidentified), for 2046-2065 and 2081-2100, but interpretation is left to the viewer with no

overall statistics provided; both increases and decreases are present, with perhaps a stronger bias towards decreases under A2 and greatest changes in general at the height of the rainfall season and in the later period

- For the IPCC AR5 projections the display is similar, covers 2040-2060, but includes many more variables, too numerous to cover in detail here:
 - Perhaps rainfall decreases are greater under RCP4.5 than RCP8.5, with all models suggesting decreases in numbers of wet days during the height of the rainfall season, although perhaps a third of the models overall suggest increases in rainfall will occur
 - As is to be expected all models suggest increased temperatures, most so in winter, although with a spread of values

The IPCC AR5 (2013)

- The IPCC provides a number of details of ensemble means and distributions for several parameters of projections from about 16 climate models (RCP2.6 and RCP6.0) to up to nearly 40 models (RCP4.5 and RCP8.5), but with no specific information for individual countries
- As a general rule projected temperatures increase more with higher emissions (RCP2.6→RCP8.5) and later in time, reaching over 7°C in the ensemble mean for interior Gambia by the end of the century under RCP8.5 (less than 1.0°C under RCP2.6)
- For rainfall under RCP8.5 the main pattern in the ensemble means is for decreases except in SON

PARCC Policy Brief (uses UKMO projections) (2016)

- Downscaling by RCM of projections from 5 GCMs (unspecified) to end of Century
- Temperatures to increase in the range 3.0°C to 4.5°C, greatest inland
- Low confidence in rainfall projections but suggests a range of decreases of 40% to 60%, but to be used only with caution

Summary

In summary, there is consensus that temperatures will continue to increase, although only broad ranges can be offered as to the magnitude of any changes. Certainly the lower the emissions the less the temperature increase is likely to be, with success under the Paris Agreement limiting increases to perhaps around 1°C according the IPCC AR5 ensemble mean. Failure of the Paris Agreement probably may expose the country to larger increases. Almost certainly other temperature-related parameters will adjust accordingly, including increases in the numbers of “hot” days and nights and the length of heat waves.

For rainfall the picture is less certain, with models projecting both increases and decreases without evident consistency; greatest changes are not necessarily under the highest emissions and do not necessarily increase through the century. There are suggestions that days/periods of higher rainfall may produce increased rainfall, and hence a higher flooding risk, but not all projections accord; both increases and decreases in drought frequencies are foreseen, with perhaps a slight bias towards increases.

Note on downscaling, The Gambia and Senegal

The physical size and shape of The Gambia limits the ability of Global Climate Models, with their grid spacing typically of order 100km, to resolve the country. Naturally downscaling might be considered

a valuable approach to providing improved spatial (and temporal) detail, and has been used in the Second National Communication, CSAG and PARCC assessments reviewed above. Numerical downscaling through Regional Climate Models (RCMs), as used in most of these assessments, is still challenged in terms of quality by empirical downscaling, as used in the earlier CSAG assessment. In both cases the quality of any downscaling is directly related to the quality of the GCM projections used as inputs for the downscaling. The view presented in the IPCC AR5 is that the RCMs are still in developmental stage, but may provide additional information in regions of marked orography (not relevant in The Gambia) and near coastlines (possibly relevant). The experience of the consultant in contrasting projections from the CMIP5 (GCM) and CORDEX (RCM) data sets (as used in the IPCC AR5) in a *limited* number of regions, some over Africa, is that the RCMs add little in terms of temperature projections, whereas questions have been raised regarding the rainfall projections from the RCMs, including over one area of marked orography. That is only a single view and ideally requires further research to provide confirmation.

An alternate approach, consistent with the size of The Gambia and with the resolution of the GCMs, is to consider a larger area, a first logical step being to consider Senegal alongside The Gambia in a single analysis. In that context it is useful to note the projections as used in the Third National Contribution to the UNFCCC of Senegal (2015). Based on the high emissions A1 family of scenarios (A1FI – fossil fuel intensive generation, A1T – technologically-driven, i.e. renewables, generation, and A1B – balanced generation between fossil fuels and renewables), with downscaling via an RCM, temperatures will increase particularly in the latter part of the century by up to 6°C in July in the interior, while rainfall will be reduced by mid-century by up to 2.5 mm/day, and more so later on.

Annex 6 Innovative and emerging financial mechanisms

Finance Mechanism (Multilateral/ Bilateral/ Other)	Adaptation, Resilience and/or Mitigation Focus
Climate Investment Funds (CIFs) World Bank (PPCR, SREP, CTF, FIP)	The CIF includes the Clean Technology Fund (CTF) – which supports the rapid deployment of low-carbon technologies - and Strategic Climate Fund (CTF), which includes the Scaling up Renewable Energy in Low Income Countries Programme (SREP) – supporting investments in a few low income countries for energy efficiency, renewable energy & access to modern sustainable energy; Forest Investment Program (FIP) – which seeks to reduce emissions and up-scale investment for reduced deforestation and forest degradation and to promote sustainable forest management, and; finally, the Pilot Project for Climate Resilience (PPCR) – which aimed to integrate climate resilience in national development planning consistent with poverty reduction and sustainable development goals.
INDC (Intended Nationally Determined Commitment)	Intended Nationally Determined Contribution (INDC) in response to decisions adopted at the 19th and 20th sessions of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC); that invite Parties to communicate to the Secretariat their INDCs, towards achieving the objective of the UNFCCC as set out in Article 2 of the Convention. The Gambia’s INDC builds on the participatory multi-stakeholder and cross-sectoral consultative processes during the development of NAPA, 1st and 2nd National Communications at national and sub-regional levels. The contribution will also contribute towards the delivery of the Constitution of The Gambia and the attainment of Vision 2020.
NAMAS (National Appropriate Mitigation Actions)	Bali Action Plan calls for verifiable nationally appropriate mitigation actions (NAMAs) by developing country Parties in the context of sustainable development NAMAs are supported and enabled by verifiable technology, financing, and capacity-building support from industrialized and developed countries; Developing countries submit climate plans (e.g., low-carbon growth strategies) that list their intended NAMAs and associated requests for support NAMAs could be grouped to achieve broader objectives, such as sectoral program goals and reductions from deforestation and degradation (REDD)
REDD+(Reduced Deforestation and Land Degradation)	REDD-plus (‘reducing emissions from deforestation and forest degradation in developing countries, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries’). There has been broad support for a phased approach to REDD-plus, which would start with readiness activities, followed by implementation of policies and measure, finally moving on to performance-based REDD-plus. For example REDD-plus could be funded from voluntary sources (through the World Bank) in the first phase, moving on to a mix of public funding sources and carbon markets in the final phase.
Forest Carbon Partnership Facility (FCPF) World Bank	The fund assists developing countries in their efforts to reduce emissions from deforestation and forest degradation, and support forest carbon stock conservation and sustainable management of forests and enhancement of forest carbon stocks (REDD+). The FCPF is comprised of a Readiness Fund, which aids countries in setting up national systems and arrangements for REDD+, and a Carbon Fund, which is to operationalize the REDD+ programs and deliver results in the form of social and environmental benefits, as well as emissions reductions to financial contributors.
Global Environment Facility (GEF) GEF Secretariat, World Bank, UNEP, UNDP, UNIDO, AfDB	The GEF Trust Fund supports energy efficiency and renewable energy mitigation projects, as well as enabling activities for technical assistance and mainstreaming climate change. The GEF also includes the Least Developed Countries Fund (LDCF) - which funds the preparation and implementation of the National Adaptation Plans of Action (NAPAs) - and the Special Climate Change Fund (SCCF) - which supports projects in adaptation; technology transfer and capacity building; energy, transport, industry, agriculture, forestry and waste management; and economic diversification.
International Climate Initiative (ICI) Private Sector: BMU/German government	ICI funds mitigation, adaptation and climate change projects with biodiversity co-benefits, and places emphasis on climate change projects that catalyse other funding streams, especially from the private sector. For example, the fund’s African Carbon Asset Development Facility (ACAD) seeks to improve financial institutions’ ability to identify, appraise, and transact viable carbon opportunities.
International Climate Fund (ICF) Private Sector: DfID/UK Government], GEF, UNDP, WHO	The fund supports low carbon growth and adaptation in developing countries by demonstrating low-carbon growth, supporting countries with international negotiations, and capitalizing on opportunities for private sector partnerships, innovation, and sustainable development. In parallel the fund seeks to mainstream climate change into the UK’s development aid programming.
ClimDev Africa Programme Special Fund (CDSF) UNECA, AUC, and AfDB	The fund provides assistance for the generation and wide dissemination of climate change information in Africa; capacity enhancement of policy makers and policy support institutions for integrating climate change into development programs; and implementing pilot adaptation practices.
Adaptation Fund (AF) GEF as Secretariat, World Bank, part of funding from CDM CERs]	Established under the Kyoto Protocol, the AF is financed with a share of certified emissions reductions from CDM projects and a limited set of other donors. It funds adaptation activities for communities, countries and sectors, and implementing agencies include national entities approved by the AF Board.
Green Climate Fund (GCF)	The fund began with a Fast Track commitment of US\$ 100 billion by the European Union (EU). The GCF Board is considering the design of the fund in terms of governance structure, procedures, policies, funding mechanisms, potential safeguards and other key elements.
Africa Enterprise Challenge Fund (AECF): Renewable Energy & Adaptation to Climate Technologies (REACT) Private Sector: UK Aid, DANIDA, AusAID, MNFA, IFAD, WFP, FAO, IRENA	REACT is a competitive funding window that provides grants, co-financing, loans and risk management to encourage private sector companies to compete for investment support for their new and innovative business ideas in low-cost, clean energy for rural households and businesses, products and services for rural farmers, and improving access to climate-relevant funding.
ECOWAS and East African Development Bank under UNFCCC-CDM Carbon Market and Carbon Fund	Working in the free-trade area established by ECOWAS in collaboration with East African Development Bank and CDM/UNFCCC, the fund seeks to build capacity and attract investors to purchase carbon offsets from agricultural, forestry and land-use projects; suitable for project developments registered under the CDM.

Annex 7 Terms of Reference for the additional analytical studies identified

Study 1: Development of Climate Change Scenarios for The Gambia

Terms of Reference

Rationale

A number of stakeholders consulted to date in the SPCR Phase 1 planning process, including Department of Water Resources and the Meteorological Services, have highlighted the urgent need to develop updated climate change projections / scenarios for The Gambia, for the near-, medium- and long-term, to inform planning for the SPCR – and indeed all other relevant planning processes. Currently, the scenarios being used are those from the Second National Communication to the UNFCCC (2012), which are based on even older models – from 2002 or earlier.

As there have been significant improvements in climate modelling over the past 15 years, there is an urgent need to develop updated projections upon which to further develop the integrated investments for the SPCR. The updated scenarios will also be of great value for the ongoing development of the Third National Communication (TNC) to the UNFCCC, as the Vulnerability and Adaptation Assessment has not yet been concluded.

Activities of the consultancy

The consultant will develop climate change scenarios for periods centred around 2025, 2055 and 2090 for an area covering The Gambia and, where necessary given the locations of the data grid points on which the scenarios will be based, parts of surrounding Senegal and the Atlantic Ocean.

The scenarios will be based on:

- All projections available within the CMIP5 data set for all of RCP2.6, RCP4.5, RCP6.0 and RCP8.5
- All projections available within the CORDEX-AFRICA data set for both RCP4.5 and RCP8.5 (no projections are available for RCP2.6 and RCP6.0)

The basis of the scenarios will be calculations using self-organising maps (soms) on one of: a) temperature and rainfall projections; b) temperature and rainfall less evaporation projections. Note: limited experience to date suggests that results from both possible approaches are similar, at least when used with CMIP5.

The scenarios will include consideration of up to about 10 pertinent climate extremes of the 27 defined by the IPCC covering both temperature and rainfall. Note: these are available only for the CMIP5 data set.

The consultant will present a comprehensive written report covering the methodology, the results, the recommended scenarios (of which, typically, there are two based on previous similar assessments), and the uncertainties involved in the approach; the report will include also a comparison with the projections produced by the Climate Systems Analysis Group at the University of Cape Town.

Duration of consultancy and envisaged delivery date

The consultancy would require between seven and ten working days by highly qualified climatological experts. Given the highly technical nature of the study, the MoECCNAR will engage in discussions with potential service providers to further develop this ToR, prior to commissioning this analytical study.

The envisaged delivery date would be ideally be in May 2017, in order to be of maximum use to the SPCR and the Third National Communication processes.

Required skills and experience

- Minimum of 10 years of demonstrated experience and knowledge in the developing and analysing climate projections
- Masters or PhD qualification in climatology
- Demonstrable regional African experience in the policy application of climate projections and scenarios
- Language: Excellent written and spoken English

Study 2: Comprehensive analytical study to understand climate change impacts on health in The Gambia, using the Health Management Information System (HMIS) and climate data available in the country

Terms of Reference

Background to the analytical study

While there has been little research into the detailed climate change impacts on health in The Gambia, major concerns relate to climate-sensitive diseases, such as malaria, which is endemic and peaks in the rainy season. Climate change impacts on the environment could alter breeding habitats of disease vectors and vector-borne transmission pathways, and endanger the survival of floristic species essential for traditional/alternative medicine. Heat-related impacts on human health and productivity are projected to be significant in Africa, while changes in nutritional quality of crops may exacerbate malnutrition levels.

As the National Social Protection Policy of The Gambia points out, existing economic, environmental and health risks have translated into high levels of food and nutrition insecurity (GoTG, 2014). Only 18% of Gambian households are considered to be food secure (WFP, 2012), while the national malnutrition prevalence rate of 9.9% verges on emergency level in terms of severe malnutrition (NaNA, 2013). High and persistent vulnerability to health shocks is exacerbated by physical and financial limitations that impede access to healthcare, as well as the limited medical insurance system (GoTG, 2014a). Moreover, differential social vulnerabilities exacerbate the exposure of people to climate risks, as well as to discrimination and poverty. The National Social Protection Policy identifies the following particularly vulnerable population sub-groups: extremely poor individuals and households, vulnerable children, the elderly, people with disabilities, the chronically ill, individuals and families affected by HIV, vulnerable women and youth, refugees and migrants, and prison inmates and their families (GoTG, 2014a).

Tasks

The Gambia SPCR Programme requires the service of an experienced climate change and health vulnerability and impact assessment specialist to provide technical advice and inputs in order to strengthen detailed planning for the SPCR investment programmes, as well as to provide actionable policy relevant information to be integrated into policy and practice in The Gambia.

The main objectives of the consultancy will be to conduct a comprehensive analytical study to develop an enhanced understanding of the likely impacts on health of the population and on the health systems themselves, within the context of existing social vulnerabilities, and the priorities of the social protection and social welfare policy framework.

Specifically, the consultant will:

- Undertake an evidence-based analysis of health vulnerability to recent observed climate trends, including increased temperatures, reduced rainfall, more erratic rainfall regimes, and urban flooding that while it may increasingly have a link to climatic changes, is currently exacerbated by poor urban management and land use planning;
- Use existing climate observations and data from the Health Management Information System (HMIS) to conduct the above;

- Make use of the new climate projections for The Gambia, to be completed under analytical study 1 commissioned by the SPCR, to develop a climate and health impact and vulnerability assessment for future projected climate change in The Gambia; and
- Develop recommendations for best available short-, medium- and long-term adaptation options to reduce the impacts of current climate variability and future climate change on health and health systems in The Gambia, taking into account existing socioeconomic, governance and institutional conditions.

It is expected that the consultant work closely with The Gambia SPCR Programme team, the Planning Department at the Ministry of Health and Social Welfare, and all relevant stakeholders; stakeholder engagement will need to extend beyond the Greater Banjul Area into the regions.

The consultant should ensure that the work carried out and recommendations made are fully consistent with the vision, goal, policy principles and policy objectives of the draft National Climate Change Policy (NCCP), as well as its further contents.

This consultancy, using desktop scoping, detailed stakeholder and key informant methodologies, technical modelling of health and climate change impacts, and expert judgement, will result in a report covering all of the above, with clear and actionable recommendations.

Required skills and experience

The consultancy team would ideally be comprised of two people who between them possessed the following necessary skills and experience;

- Minimum of 10 years of demonstrated experience and knowledge in the field of climate impact and vulnerability assessment.
- Minimum of 10 years of demonstrated experience and knowledge in the field of health systems management and planning, or related field.
- Language: Excellent written and spoken English.

Study 3: Feasibility study to assess best available options for managing excess runoff and preventing flooding in The Gambia

Terms of Reference

TO BE ADDED once sent by DWR

Study 4: Review of Climate Finance and Establishment of Emerging New Innovative Financing Mechanisms including: Payments for Ecosystem Services (PES), mechanisms to implement the Polluter Pays Principle, REDD+ and Carbon Finance to Attract Private Sector Participation in SPCR

BACKGROUND

The Gambia is a country rich in renewable natural resources including water, biodiversity, solar radiation, wind, and fertile soil. The climate resilience and sustainable development of the country will depend to a large degree on its capacity to efficiently and sustainably manage its natural resources - in particular, water, land, and forests - for the benefit of all dependent communities. The replenishment, maintenance, and improvement of these resources will rely on their proper management.

However, funding for measures to improve climate resilience, including the sustainable and equitable management of natural resources, is a significant challenge in Africa in general, and the Gambia in particular. The Strategic Programme for Climate Resilience (SPCR) in The Gambia has identified the need to incentivise and leverage in additional private sector participation (PSP) to assist with resource mobilisation for addressing climate change. There are new and emerging financial innovative mechanisms including: tax breaks, tax holidays and tax relief; Payments for Ecosystem Services (PES); mechanisms to implement the Polluter Pays Principle; REDD+ and Carbon Finance that provide strategic solutions and can attract PSP in the SPCR Programme.

These new innovative financial mechanisms are not yet significantly developed in Africa, although some projects are currently underway. Carbon Finance, REDD+, and PES represent promising financial instruments with the ability to address challenges to sustainable natural resource based development and climate resilience in Africa. The instruments have the potential to help raise new sources of sustainable finance, improve the efficiency of conservation actions, secure the flow of environmental services for businesses and infrastructure that rely on it, and ultimately benefits for poor, rural populations.

For this consultancy, new innovative financial instruments are defined as contractual agreements between at least one environmental service (ES) beneficiary and one ES producer (or an intermediary acting between them), by which the former transfers resources to the latter, providing the ES producer adopts specific practices on the land or resources she/he controls or possesses, to enhance the production of a specific ES.

In SPCR programming, we categorize innovative financing for ES and Renewable Resources into broad-based categories of ecosystem services: watershed services; carbon sequestration and storage; and biodiversity conservation; and energy sources—solar, wind, hydro, and bagasse (methane from waste).

1. A proposed innovative financing instrument is a key step in the ongoing process of identifying financial gaps and barriers and leveraging in additional sources of finance to bridge funding gaps in the SPCR in the Gambia.
2. The proposed objective of a financial mechanism in the Gambia for the SPCR programme will be to address the drivers of natural capital degradation, promote wellbeing to support a number of local communities' projects, and enhance resilience to climate variability and change.

To help increase the success of these two approaches in The Gambia's SPCR, expert advice, input, and solutions are sought regarding the legal, policy, financial, and institutional frameworks relevant to: new emerging financial innovative mechanisms including: tax breaks, tax holidays and tax relief; Payments for Ecosystem Services (PES); mechanisms to implement the Polluter Pays Principle; REDD+ and Carbon Finance. The information generated by the Consultant will be used to contribute to strengthening the Gambia Climate Change Fund and assisting to establish the institutional framework and implementation plan for the SPCR projects.

TASKS

The Gambia SPCR Programme requires the service of an experienced Climate Finance specialist to provide technical advice and inputs.

The main objectives of the consultancy will be to conduct an analysis of the legal, financial, and institutional systems and policy frameworks in The Gambia relevant to: new emerging financial innovative mechanisms including: tax breaks, tax holidays and tax relief; Payments for Ecosystem Services (PES); mechanisms to implement the Polluter Pays Principle; REDD+ and Carbon Finance at the national and sub-national levels, to determine the potential for sourcing funds and attracting private sector participation in SPCR.

The consultant will use the information from the analysis to:

1. Suggest mechanisms by which SPCR program could be initiated within the current legal, institutional, financial, and policy landscapes of both national and regional establishments; and,
2. Recommend avenues by which the climate change policy, institutional, financial, and legal landscape could be improved to increase the sustainability and viability of the new emerging financial innovative mechanisms including: tax breaks, tax holidays and tax relief; Payments for Ecosystem Services (PES); mechanisms to implement the Polluter Pays Principle; REDD+ and Carbon Finance in the Gambia.

The consultant will complement his/her desktop study with the Political Economy Assessment (PEA), or a similar, field research methodology. The PEA methodology is used by donors to explore not simply how things happen in a country but why the outputs of the methodology are a written assessment with recommendations for project design.

It is expected that the consultant work closely with The Gambia SPCR Programme team, all stakeholders, outreach and areas related to the PEA (one anticipated week of stakeholder engagement in the Greater Banjul Area and a second week of stakeholder engagement in the regions).

The consultant should ensure that the work carried out and recommendations made are fully consistent with the vision, goal, policy principles and policy objectives of the draft National Climate Change Policy (NCCP), as well as its further contents.

This consultancy, using both a desktop scoping and the PEA methodology, will result in the following documents:

1. Review of new and emerging financial innovative mechanisms including: tax breaks, tax holidays and tax relief; Payments for Ecosystem Services (PES); mechanisms to implement the Polluter Pays Principle; REDD+ and Carbon Finance

2. Review of legal, institutional, financial, and policy landscape with actionable recommendations for the SPCR in the Gambia.

Given that SPCR Programme is aiming to develop an investment strategy (with potential investors targeted for climate resiliency programmes in The Gambia) and based on the outcomes of the review:

1. The consultant will draw conclusions and formulate strategies for moving forward with new emerging financial innovative mechanisms including: tax breaks, tax holidays and tax relief; Payments for Ecosystem Services (PES); mechanisms to implement the Polluter Pays Principle; REDD+ and Carbon Finance; based on the review, report and the gaps/weaknesses assessment;
2. The consultant will explicitly identify legal, policy, financial, and institutional barriers, constraints and opportunities as they relate to the SPCR Programme; and
3. The consultant will provide actionable advice for overcoming identified financial barriers and constraints and maximizing on opportunities.

EXPECTED OUTPUTS/DELIVERABLES, PAYMENT AND REPORTING

The consultant will provide the following outputs within the proposed phased approach, with final deliverables submitted to the Gambia SPCR Programme by agreed deadline in 2017. Below are the suggested deliverables.

- Inception Report to include work plan and methodology needed for the documents/outputs
- Stakeholder engagement at both national and regional levels
- First drafts of the documents: SPCR Programme team will provide feedback on the reports within agreed business days, which must be incorporated by the Consultant to ensure that the deliverable meets the requirements of the SPCR Programme

Submission of final reports to SPCR Programme Team Within agreed time of receiving feedback from the SPCR

COMPETENCIES

- Demonstrated strategic, technical and intellectual skills in the substantive area of economic valuation of natural resources and ecosystem service and climate finance; familiarity with new emerging financial innovative mechanisms including: tax breaks, tax holidays and tax relief, Payments for Ecosystem Services (PES), mechanisms to implement the Polluter Pays Principle; REDD+ and Carbon Finance; strong understanding of the legal, institutional, and policy landscapes that facilitate successful new emerging financial innovative mechanisms including: tax breaks, tax holidays and tax relief, Payments for Ecosystem Services (PES); mechanisms to implement the Polluter Pays Principle, REDD+ and Carbon Finance;
- Demonstrated ability to engage with stakeholders in one-on-one meetings and to ground truth desktop findings with stakeholders (experience with PEA methodology or a similar field based data collection methodology is preferred);
- Demonstrated ability to facilitate stakeholder engagement in a workshop setting as it relates to new emerging financial innovative mechanisms including: tax breaks, tax holidays and tax relief, Payments for Ecosystem Services (PES), mechanisms to implement the Polluter Pays

Principle, REDD+ and Carbon Finance scoping study (experience with PEA methodology or a similar field based data collection methodology is preferred);

- Demonstrated ability to obtain and distil information from multiple sources into clear, succinct, and logical documents;
- Demonstrated ability to work in an independent manner;
- Demonstrated ability for managing timely and effective delivery of both quantity and quality before the deadlines;
- Sound analytical and organizational skills;
- Excellent writing skills with a demonstrated ability for authoring detailed and extensive deliverables in a short time frame.

REQUIRED SKILLS AND EXPERIENCE

- Minimum of 10 years of demonstrated experience and knowledge in the field of climate finance, environmental economics, payments for ecosystem mechanism development and/or ecosystem service valuation;
- Extensive international experience in and knowledge of the new emerging financial innovative mechanisms including: tax breaks, tax holidays and tax relief, Payments for Ecosystem Services (PES), mechanisms to implement the Polluter Pays Principle, REDD+ and Carbon Finance, legal and policy frameworks that support programmes at the international, national and regional level;
- Language: Excellent written and spoken English

Annex 8 Complementary climate change programmes and activities

Table to be added, under development

Annex 9 Priority research needs identified in the National Climate Change Policy

The draft National Climate Change Policy (2016) identified the following as some of the priority research needs to be included in the National Research Framework on Climate Change, based on the Gap Analyses carried out during the policy development process:

- *Economics of climate change*: a study should be commissioned to understand the economics of climate change in the Gambia. A systematic assessment focused on short- and medium-term priorities at sector and cross sector levels should be implemented to quantify the impacts of climate change, particularly for health burdens, agriculture and food security, water and flood risks, and ecosystem services. Such a study should investigate the impacts and economic costs of climate change; the costs of adaptation; and the potential for low carbon growth.
- *Water*: research to develop a thorough understanding of the river basin hydrology and hydrogeology, to inform systematic control of water abstraction from surface and groundwater sources, as well as impounding above a prescribed minimum volume. This research should be used to develop a River Basin Management Plan that balances available resources with projected demand under a given climate change scenario, addressing also the transboundary issues.
- *Fisheries*: research to understand the fish community structure in the Gambia estuary, as an important tool in the management of the fisheries of the estuary; determine and assess direct and indirect ecological, social and economic impacts of climate change, including sea level rise, on fisheries resources, associated ecosystems, fishing communities and aquaculture; develop multi-species bio-economic models to understand more accurately the realistic impact of climate change on the ecosystem and the fisheries resources; identify and assess localised priority fisheries sector adaptation measures, appropriate at different scales (fishers, fishing communities, and sector-wide).
- *Forests*: enhanced understanding of the impacts of climate change on forest resources; and research and development on alternative socio-economic uses of forest resources (e.g. medicinal trees and herbs).
- *Health*: assessments of the range of potential health impacts of climate change, to provide important information about future impacts on vulnerable areas and populations, and to inform the selection of appropriate adaptation options.
- *Energy*: research on (i) energy consumption patterns and supply problems; (ii) non-economic drivers of fuelwood economy; (iii) conditional requirements for feasibility of renewable fuelwood supplies; (iv) energy sector contributions and costs to the Gambian economy; (v) spatial and temporal distributions of wind velocities at utility scale turbine heights; and (vi) feasibility of biomass as feedstock for electricity generation.
- *Infrastructure*: (i) disaggregation of technical and non-technical electricity transmission losses and marginal costs of loss reduction; (ii) runoff, sediment transport and control in urban catchments; (iii) safety of recycling of sediments from eroded catchments; (iv) interaction between coastal morphodynamics and coastal engineering; and (v) contamination of bottom estuary and coastal sediments at sewage outfalls.

- *Tourism:* (i) stakeholder familiarity facts on climate change; (ii) tourists' perceptions of climate impacts; (iii) long-term prospects of beach resort tourism; (iv) cultural impacts of tourism in small communities; (v) optimal use of surplus (bed) capacity in lean season; (vi) second/alternative choice destination of tourists and their attractions; and (vii) qualifying and amplifying factors behind customer satisfaction, loyalty and financial performance of sector.
- *Financial services:* (i) geographical and temporal dimensions of weather and climate related damages, losses and insurance coverage; (ii) climate amplification of risks faced by financial service providers and clients; (iii) households' risk-taking behaviour within the context of disaster relief and insurance; and (iv) feasibility studies on introducing new insurance products for frequent uninsured climate-related damages and losses.
- *Enterprise development:* research on innovative mitigation and adaptation technologies that could serve as an entry point for small and medium enterprises (SMEs) to invest in as a profitable enterprise.

Implementation of the National Research Framework on Climate Change should assist with meeting the goal set out in the Second National Communication to the UNFCCC: By 2025, Gambian researchers and scientists should be in a position to conduct joint/collaborative research in a broad spectrum of thematic areas.

Annex 10 Results-based Logical Framework for the SPCR of The Gambia

HIERARCHY OF OBJECTIVES	EXPECTED RESULTS	REACH	PERFORMANCE INDICATORS	INDICATIVE TARGETS TIMEFRAME	ASSUMPTIONS / RISKS
<p>GOAL Design an enabling environment, including integration of climate resilience considerations into development/sectoral planning and strengthened institutions, for successfully responding to climate risks by the public and private sector</p>	<p>IMPACT Improved integration of climate resilience considerations into development/sectoral planning and strengthened institutions, for responding to climate risks by the public and private sector</p> <p>Effective mechanisms for regular Monitoring, Evaluation and reporting on “Meeting the targets and goals of the SPCR</p>	<p>All population in The Gambia</p>	<p><u>Indicator</u> Sustained enabling environment <u>Sources:</u> National and international statistics and reports</p> <p>Project Reporting and evaluation</p>		<p>Impacts of climate change do not outpace project Resilience/adaptation responses (this will be alleviated by the project’s interventions targeted to build resilience)</p>
<p><u>Project purpose:</u> <i>To develop SPCR Investment Strategy for the government’s long-term vision to achieve a climate resilient development inclusive of vulnerable economic sectors targeting social groups amongst women, youth, indigenous peoples, and local communities, and ecosystems resilience.</i></p>	<p><u>Outcomes:</u> Better understanding and knowledge of the state of government’s long-term vision to achieve a climate resilient development inclusive of vulnerable economic sectors targeting social groups amongst women, youth, indigenous peoples, and local communities, and ecosystems resilience</p>	<p><u>Beneficiaries:</u> National Government, Sector Ministries, Regional Provinces, Technical Teams and local population</p>	<p><u>Outcome indicators:</u> National Government, Regional Provinces and Sector Ministries annually report on the status of government’s long-term vision to achieve a climate resilient development</p>	<p><u>Progress anticipated in the medium term:</u> Annual National Government, Sector Ministries and Regional Provinces report on government’s long-term vision to achieve a climate resilient development</p>	<p><u>Assumption statement:</u> Acceptance of the report content</p>

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HIERARCHY OF OBJECTIVES	EXPECTED RESULTS	REACH	PERFORMANCE INDICATORS	INDICATIVE TARGETS TIMEFRAME	ASSUMPTIONS / RISKS
Pillar 1: Developing the enabling environment for climate resilience	Improved enabling environment for climate resilience	National Government, Regional Provinces, Sector Ministries and M&E Units,	SPCR strategy programs and action plans adopted by National Government and Regional Provinces <u>Sources:</u> Project reporting and Evaluation	National Government and Sector Ministries indicators governance and monitoring compatible with global monitoring systems.	Capacity of National level stakeholders will match project activity demands (this will be alleviated by a project capacity building strategy)
Sub-Component 1: Policy, legislative and institutional review and development	Improved policy, legislative and institutional capabilities and abilities	National Government, Sector Ministries and M&E Units	Policy, legislative and institutions adopted by National and regional governments <u>Sources:</u> Project reporting and Evaluation Number of regional governments monitoring, assessing, and reporting to National Climate Change Authority on climate resilience measures. <u>Sources:</u> Project Reporting and Evaluation	National Policy indicators, governance and monitoring compatible with global monitoring systems.	Capacity of National level stakeholders will match project activity demands (this will be alleviated by a project capacity building strategy)
<u>Inputs and activities:</u>	<u>Outputs:</u>	<u>Beneficiaries:</u>	<u>Output indicator:</u>	<u>Progress /Timeframe:</u>	<u>Assumption statement:</u>
1.1 Promulgate the draft NCCP and develop a Climate Change Act;	1.1 Climate Change Act prepared	National Government, Regional governments, States Sector Agencies, Policy and Decision-makers, local communities	Functional and adequate Regional and National Task Forces set up in place	Official set up of The Gambia National Climate Change Fund, Set up of National Climate Change Commission	Restrictions in dissemination of the Climate Change Act as a government document

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1.2 Comprehensively integrate climate change into National Development Plans	1.2 National Development Plans prepared	National Government, Regional governments, States Sector Agencies, Policy and Decision-makers, local communities	Functional and adequate Regional and National Task Forces set up in place		Limited circulation of Development plans create information gaps
1.3 Revise key legislation and their related regulations and strategies to mainstream climate change	1.3 Revised legislations, regulations and strategies	Regional governments, States Sector Agencies, Policy and Decision-makers, local communities	Functional and adequate Regional and National Task Forces set up in place		Limited circulation creates information gaps
1.4 Develop a comprehensive framework for integrating climate risks and resilience into key other and sectoral policies and regulatory standards	1.4 Developed framework for integrating climate risks and resilience sectoral policies and regulatory standards	Regional governments, States Sector Agencies, Policy and Decision-makers, local communities	Functional and adequate Regional and National Task Forces set up in place		Limited circulation creates information gaps
1.5 Review and approve the (Draft) National Strategic Environmental Assessment Policy and its Guidelines and Procedures	1.5 Approved National Strategic Environmental Assessment Policy and its Guidelines and Procedures	Regional governments, States Sector Agencies, Policy and Decision-makers, local communities	Functional and adequate Regional and National Task Forces set up in place		Limited circulation creates information gaps
Sub-Component 2: Enhanced mobilisation of climate finance	National Climate Change Fund Established Capacities established for climate change resilience/adaptation assessment and monitoring in the country. Financial management techniques for improving climate change resilience through budget coding, registry systems	National and Regional Governments, Sector Ministries, Farm Organizations, private sector and consultants,	Number of Regional governments accessing climate finance and implementing climate resilience programs <u>Sources:</u> Project reporting and evaluation Monitoring by national and local authorities and project stakeholders Number of private sectors participating in implementing climate resilience projects	Climate Fund Governance and M&E systems assessment reports validated at county and national levels by end month 7 and regional level by end months 8	National and Regional level stakeholders will match project activity demands (this will be eradicated by a project capacity building strategy, including national/local mentoring program) Proposed interventions are able to deliver climate resilience results (this will be eradicated by strategic and participatory planning.)

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	<p>Impact assessment / feasibility study, to launch innovative climate financing mechanisms e.g. polluter pays, carbon tax, carbon credits, Green labels</p> <p>Developed CC budget coding and tracking</p> <p>Government introduced policies to leverage private sector investment</p> <p>Micro-finance supported farmer organisations and cooperatives</p> <p>Supported the piloting of Local Climate Change Action Plans (LCCAPs) and assisted development of procedures for channelling and access to the funds from the GCCF, and supported the process through which national and local governments ensured the content of the plans reflected in policies and plans at all levels</p>		<p><u>Sources:</u> Monitoring by national and local authorities and project stakeholders strategies and plans Project reporting and evaluation</p> <p>Number of farm organizations and cooperatives accessing financing from SMEs</p> <p><u>Sources:</u> National annual reports National census-based poverty map Project reporting and evaluation</p>		
<u>Inputs and activities:</u>	<u>Outputs:</u>	<u>Beneficiaries:</u>	<u>Output indicator:</u>	<u>Progress /Timeframe:</u>	<u>Assumption statement:</u>

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2.1 Operationalise the Gambia Climate Change Fund;	2.1 Established Climate Change Fund	National Government Sector Ministries Agencies. NGOs. Private Sector, Farm Organizations, Research Institutes	Functional and adequate Regional and National Task Forces set up in place		National Government willing to provide financing and budget allocation to the National Climate Change Fund
2.2 Commission an impact assessment / feasibility study, to launch innovative climate financing mechanisms e.g. polluter pays, carbon tax, carbon credits, green labels	2.2 Completed studies on innovative climate financing mechanisms e.g. polluter pays, carbon tax, carbon credits, green labels	National Government Sector Ministries Agencies. NGOs. Private Sector, Farm Organizations, Research Institutes	Functional and adequate Regional and National Task Forces set up in place and consultants engaged in time		National Government willing to allocate funds for consultancy
2.3 Develop the climate change budget coding and tracking registry	2.3 Developed Climate Change Code and tracking Registry System	National Government, Sector Ministries	Functional and adequate Regional and National Task Forces set up in place and consultants engaged in time		National Government willing to allocate funds for consultancy
2.4 Introduce policies and incentives to leverage private sector investment in low carbon and climate resilient development initiatives	2.4 Developed New Policies and incentives to leverage private sector investment in low carbon and climate resilient development initiatives	National Government, Sector Ministries	Functional and adequate Regional and National Task Forces set up in place and consultants engaged in time		National Government willing to allocate funds for consultancy
2.5 Develop micro finance products and provide support to local government, farmer organisations and cooperatives, other user groups and entrepreneurs to access and use climate finance at local levels	2.5 Developed micro finance products	Farm Organizations, Local Communities, Youth and Women, Entrepreneurs	Functional and adequate Regional and National Task Forces set up in place and consultants engaged in time		National Government willing to allocate funds for consultancy

The Gambia Strategic Programme on Climate Resilience Phase 1 (SPCR)

<p>Sub-Component 3: Climate change research, capacity development and communication</p>	<p>concept paper on capacity development and communication prepared</p>	<p>National and Regional Coordination Teams</p>	<p>Number of government decision-makers with increased knowledge of climate change resilience</p> <p><u>Sources:</u> Project reporting and Evaluation</p>	<p>National and Regional gaps in climate resilience governance and M&E compiled and prioritized</p>	<p>National, provincial and district level stakeholders are receptive to project's Climate resilience knowledge building approach (this will be eradicated by with project support for the design of formal information development and communication strategies)</p>
<p>Sub-Component 4: Furthering climate services investments and systems</p>	<p>Climate Service Systems and Investments established</p>	<p>National and Regional Coordination Teams</p>	<p>Number of government decision-makers with increased knowledge of climate change resilience</p> <p><u>Sources:</u> Project reporting and Evaluation</p>	<p>National and Regional gaps in climate resilience governance and M&E compiled and prioritized</p>	<p>National, provincial and district level stakeholders are receptive to project's Climate resilience knowledge building approach (this will be eradicated by project support for the design of formal information development and investment strategies)</p>
<p><u>Inputs and activities:</u></p>	<p><u>Outputs:</u></p>	<p><u>Beneficiaries:</u></p>	<p><u>Output indicator:</u></p>	<p><u>Progress /Timeframe:</u></p>	<p><u>Assumption statement:</u></p>
<p>4.1 Develop all observations systems, climatic and sectoral, automated as far as possible, and full maintained, to the levels required for climate services and research within The Gambia and to satisfy international requirements;</p>	<p>4.1 Developed automated observation systems</p>	<p>National Government, Sector Ministries, Agencies, Farm Organizations</p>	<p>Functional and adequate Regional and National Task Forces set up in place and consultants engaged in time</p>		<p>National Government willing to allocate funds for observation systems and climate change services</p>

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4.2 Provide real time information dissemination through appropriate communications systems to central databases for at least the climate observations;	4.2 Provided Real time based information	National Government, Sector Ministries, Agencies, Farm Organizations	Functional and adequate Regional and National Task Forces set up in place and consultants engaged in time		National Government willing to allocate funds for information dissemination through appropriate communications systems to central databases for at least the climate observations
4.3 Provide equipment for climate and, where necessary, sectoral databases;	Provided Equipment	National Government, Sector Ministries	Functional and adequate Regional and National Task Forces set up in place		National Government willing to allocate funds for equipment
4.4 Provide internet in all GoTG agencies involved with the production, dissemination, or receipt of climate services;	Provided internet	National Government, Sector Ministries, Agencies	Functional and adequate Regional and National Task Forces set up in place		National Government willing to allocate funds for internet
4.5 Provide all computer and software facilities required to manage data receipt, storage, access, visualisation, climate service creation and dissemination	Provided Computers and software facilities	National Government, Sector Ministries, Agencies	Functional and adequate Regional and National Task Forces set up in place		National Government willing to allocate funds for computers and software facilities
Sub-Component 5: Developing the climate resilience monitoring, evaluation and reporting system	Climate resilience monitoring, evaluation and reporting system developed	National and Regional Coordination Teams	Number of government decision-makers with increased knowledge of climate change resilience, monitoring, evaluation and reporting system <u>Sources:</u> Project reporting and Evaluation	National and Regional gaps in climate resilience governance and M&E compiled and prioritized	National, provincial and district level stakeholders are receptive to project's Climate resilience knowledge building approach (this will be eradicated by project support for the design of formal information development and monitoring, evaluation and reporting)

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Resources:					
SPCR Fund Grant: US\$28,850,000 and The Gambia Government in kind contribution: US\$					
HIERARCHY OF OBJECTIVES	EXPECTED RESULTS	REACH	PERFORMANCE INDICATORS	INDICATIVE TARGETS TIMEFRAME	ASSUMPTIONS / RISKS
Pillar 2: Climate resilient land use mapping, planning and information systems	Improved climate resilient land use mapping, planning and information systems	National Government, Regional Provinces, Sector Ministries and M&E Units,	SPCR strategy programs and action plans adopted by National Government and Regional Provinces <u>Sources:</u> Project reporting and Evaluation	National Government and Sector Ministries indicators governance and monitoring compatible with global monitoring systems.	Capacity of National level stakeholders will match project activity demands (this will be alleviated by a project capacity building strategy)
Sub-Component 2.1: Data gathering to inform climate resilient land use planning	Improved organizational and technical structures of land use and data collection, monitoring and reporting mechanisms	Municipalities, Sector Ministries and M&E Units	Land Use strategies, programs and action plans adopted by National Government and Municipalities <u>Sources:</u> Project Reporting and Evaluation Number of municipalities monitoring, assessing, and reporting to National Climate Change Authority on land degradation measures. <u>Sources:</u> Project Reporting and Evaluation	National Land Use and Planning indicators governance and monitoring compatible with global monitoring systems.	Capacity of National level stakeholders will match project activity demands (this will be alleviated by a project capacity building strategy)
	Adequate resources mobilized for functional and regular observation mechanism and reporting process established at municipal, national and regional levels	Municipal Councils, Sector Agencies, Civil Society, NGOs, CBOs	Total hectares included within protected areas system in the project sites <u>Sources:</u> Project Reporting and Evaluation	Municipal and National Governance and M&E budgets finance adequately the municipal and national governance and M&E action Plan	Protected area expansion is approved by government structures (this will be eradicated through the participatory planning processes implemented in Component One)

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<u>Inputs and activities:</u>	<u>Outputs:</u>	<u>Beneficiaries:</u>	<u>Output indicator:</u>	<u>Progress /Timeframe:</u>	<u>Assumption statement:</u>
2.1.1 Survey coastal zones structures by technical experts;	2.1.1 Strategic assessment, including climate change considerations, conducted for target coastal landscapes. Economic valuations completed comparing the coastal landscape level costs and benefits. Coastal Ecosystem-based Resilience/Adaptation strategies completed and operational for selected eco-regions	Municipal Councils, National Government, Sector Agencies,	Functional and adequate Municipal and National Task Teams set and put in place		Classified information on coastal zones and restricted areas
2.1.2 Survey Urban areas and demarcation of land in accordance with effective use	2.1.2 Plans for infrastructure, Industrialization, Resettlement, Waste Disposal, Recreational prepared	Municipal Councils, National Government, Sector Agencies,	Functional and adequate Municipal and National Task Teams set and put in place		Land Use and Resource Management including wetlands/Riparian Reserves conflicts
2.1.3 Survey Rural Areas and land allocation for farming and resettlement	2.1.3 Land Survey Maps prepared	Local Authorities, Farmers, Organizations, Entrepreneurs	Functional and adequate Municipal and National Task Teams set and put in place		Land Use and Resource Management including wetlands/Riparian Reserves conflicts
2.1.4 Determine Cross-sectoral interventions	1.4 Topographical Maps prepared	Municipalities, National Government, Private sector, Developers, Farmers, Fishermen	Functional and adequate Municipal and National Task Teams set and put in place		Land Use and Resource Management including wetlands/Riparian Reserves conflicts

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HIERARCHY OF OBJECTIVES	EXPECTED RESULTS	REACH	PERFORMANCE INDICATORS	INDICATIVE TARGETS TIMEFRAME	ASSUMPTIONS / RISKS
<p>Sub-Component 2.2: Establish a central information management system based on GIS</p>	<p>National level GIS and Data Base and M&E systems assessed</p> <p>Capacities established for climate change resilience/adaptation assessment and monitoring</p>	<p>Municipal Councils, National Government and Regional Coordination Teams and consultants,</p>	<p>Number of Municipalities Using GIS for strategic programmes on Land Use and Planning</p> <p><u>Sources:</u> Project Reporting and Evaluation Monitoring by national and local authorities and project stakeholders</p>	<p>GIS and M&E systems assessment reports validated at municipal and national levels periodically</p>	<p>National and Municipal level stakeholders will match project activity demands (this will be eradicated by a project capacity building strategy, including national/local mentoring program)</p> <p>Proposed interventions are able to deliver GIS results (this will be eradicated by strategic and participatory planning implemented under Component One that will identify and prioritize actions based upon local needs.)</p>
<p>Sub-Component 2.3: Preparation and publication of national land use and cadastral maps at a range of appropriate scales based on the existing situation</p>	<p>Cadastral maps prepared</p>	<p>Municipal, National, and Regional Coordination Teams</p>	<p>Number of government decision-makers with increased knowledge of basic cadastral maps principles and practices</p> <p><u>Sources:</u> Project Reporting and Evaluation Determined by cadastral maps monitoring</p> <p>Number of Municipalities replicating cadastral maps principles and practices within the target areas</p>	<p>Municipal Council County, National and Regional gaps in cadastral maps, M&E compiled and prioritized periodically</p>	<p>National, Municipal, Regional, provincial and district level stakeholders are receptive to project's cadastral maps knowledge building approach (this will be eradicated by with project support for the design of formal information development and awareness for outreach strategies)</p> <p>Government is willing and capable of directing financing towards the support of cadastral maps,</p>

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			<p><u>Sources:</u> The Municipal Council Strategy Process implemented will verify results</p> <p>Project Reporting and Evaluation Report</p>		soil maps
<p>Sub-Component 2.4 Development and publication of a National Land Policy and overarching Act to guide land ownership, planning, management, development, and governance</p>	Land Policy and overarching Land Act prepared	Municipal, National, and Regional Provinces	<p>Number of government decision-makers with increased knowledge of Land Policy, Land Act and Practices</p> <p><u>Sources:</u> Project Reporting and Evaluation Determined by Land Policy, Land Act and Practices monitoring</p>	Municipal Council County, National and Regional gaps inland Policy, Land Act, Land Practices, M&E compiled and prioritized periodically	Land Regulatory Commission may lack capacity and may be constrained by institutional and administrative challenges posing the risk of non-performance and non-delivery
<p>Sub-Component 2.5 Cross-sectoral updating, development and publication of relevant Policies and Acts taking account of climate resilience in addition to other national development objectives</p>	5.1 Publication of relevant Policies and Acts prepared	Municipal, National, and Regional Provinces	<p>Number of government decision-makers with increased knowledge of Land Policy, Land Act and Practices</p> <p><u>Sources:</u> Project Reporting and Evaluation Determined by Land Policy, Land Act and Practices monitoring</p>	Municipal Council County, National and Regional gaps inland Policy, Land Act, Land Practices, M&E compiled and prioritized periodically	Duplication of information and information gaps may result into information risk
<p>Sub-Component 2.6 Preparation and publication of a national land use plan, including definition and legal recognition of implementation, monitoring and enforcement procedures</p>	6.1 Publication of a national land use plan prepared	Municipal, National, and Regional Provinces	<p>Number of government decision-makers with increased knowledge of Land Policy, Land Act and Practices</p> <p><u>Sources:</u> Project Reporting and Evaluation</p>	Municipal Council County, National and Regional gaps inland Policy, Land Act, Land Practices, M&E compiled and prioritized periodically	Duplication of information and information gaps may result into information risk

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and creation of capacity to enact			Determined by Land Policy, Land Act and Practices monitoring		
Sub-Component 2.7: Ongoing review and updating of the policies, plans and maps to respond to future changes in social, economic and environmental conditions	7.1 updated policies, plans and maps	Municipal, National, and Regional Provinces	Number of government decision-makers with increased knowledge of Land Policy, Land Act and Practices <u>Sources:</u> Project Reporting and Evaluation Determined by Land Policy, Land Act and Practices monitoring	Municipal Council County, National and Regional gaps inland Policy, Land Act, Land Practices, M&E compiled and prioritized periodically	Duplication of information and information gaps may result into information risk
Resources: SPCR Fund Grant: US\$45,000,000 and The Gambia Government in kind contribution: US\$					
HIERARCHY OF OBJECTIVES	EXPECTED RESULTS	REACH	PERFORMANCE INDICATORS	INDICATIVE TARGETS TIMEFRAME	ASSUMPTIONS / RISKS
Pillar 3: Climate resilient urban infrastructure and development	Improved climate resilient urban infrastructure and development	National Government, Regional Provinces, Sector Ministries and M&E Units,	SPCR strategy programs and action plans adopted by National Government and Regional Provinces <u>Sources:</u> Project reporting and Evaluation	National Government and Sector Ministries indicators governance and monitoring compatible with global monitoring systems.	Capacity of National level stakeholders will match project activity demands (this will be alleviated by a project capacity building strategy)
HIERARCHY OF OBJECTIVES	EXPECTED RESULTS	REACH	PERFORMANCE INDICATORS	INDICATIVE TARGETS TIMEFRAME	ASSUMPTIONS / RISKS

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<p>GOAL Develop systems to promote climate resilience in the urban areas of The Gambia, through actions to make systems and infrastructure for waste management, roads and drainage, water supply and sanitation, and energy resilient to current and future projected climatic changes</p>	<p>IMPACT Improved systems for promoting climate resilience in the urban areas of The Gambia, and developed systems and infrastructure for waste management, roads and drainage, water supply and sanitation, and energy climate resilient Effective mechanisms for regular Monitoring, Evaluation and reporting on “Meeting the targets and goals of the climate resilient</p>	<p>All population in The Gambia</p>	<p><u>Indicator</u> Sustained climate resilience in the urban areas of The Gambia, and infrastructure for waste management, roads and drainage, water supply and sanitation, and energy <u>Sources:</u> National and international statistics and reports</p>		<p>climate resilience reporting remains operational and reliable (this will be alleviated by project support) Impacts of climate change do not outpace project Resilience/adaptation responses (this will be alleviated by the project’s interventions targeted to build resilience)</p>
<p><u>Project purpose:</u> <i>To establish actions to make systems and infrastructure for waste management, roads and drainage, water supply and sanitation, and energy resilient to current and future projected climatic changes.</i></p>	<p><u>Outcomes:</u> 1. Better understanding and knowledge of the state of infrastructure for waste management, roads and drainage, water supply and sanitation, and energy resilient</p>	<p><u>Beneficiaries:</u> 1. National Government, Regional Provinces, Municipalities, Technical Teams and Sector Ministries and water, infrastructure, energy, roads, sanitation governance and population</p>	<p><u>Outcome indicators:</u> National Government, Regional Provinces and Sector Ministries annually reports on the status of infrastructure for waste management, roads and drainage, water supply and sanitation, and energy resilient</p>	<p><u>Progress anticipated in the medium term:</u> Annual National Government and Regional Provinces reports on infrastructure for waste management, roads and drainage, water supply and sanitation, and energy resilient</p>	<p><u>Assumption statement:</u> Acceptance of the reports content</p>
<p>HIERARCHY OF OBJECTIVES</p>	<p>EXPECTED RESULTS</p>	<p>REACH</p>	<p>PERFORMANCE INDICATORS</p>	<p>INDICATIVE TARGETS TIMEFRAME</p>	<p>ASSUMPTIONS / RISKS</p>

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Sub-Component 3.1: Climate-resilient integrated waste management	Integrated climate resilient in waste management	National Government, Regional Provinces, Municipalities	Waste Management strategy programs and action plans adopted by National Government, Regional Provinces and Municipalities <u>Sources:</u> Project reporting and Evaluation	National waste management sector indicators governance and monitoring compatible with global monitoring systems.	Capacity of National, Regional Provinces and Municipalities levels will match project activity demands (this will be alleviated by a project capacity building strategy)
<u>Inputs and activities:</u>	<u>Outputs:</u>	<u>Beneficiaries:</u>	<u>Output indicator:</u>	<u>Progress /Timeframe:</u>	<u>Assumption statement:</u>
3.1.1 Develop a National Waste Management Strategy;	3.1.1 Developed a waste management strategy	National Government, Regional Provinces, Municipalities	Functional and adequate National, Regional and Municipalities Task Forces set up in place	Official set up of Task Forces	Restrictions in setting up Task Forces
3.1.2 Conduct a waste survey in GBA and Growth Centres to identify opportunities for recycling businesses, particularly to target women and youth	3.1.2 Conducted survey in GBA for waste and recycling	Local communities, National Government, Regional Provinces, Municipalities	Functional and adequate National, Regional and Municipalities Task Forces set up in place	Official set up time for conducting survey in GBA for waste and recycling	Restriction in conducting survey in GBA for waste
3.1.3 Identify socially and environmentally acceptable waste dump sites in the GBA	3.1.3 Identified dumpsite in GBA	Communities, National Government, Regional Provinces, Municipalities, NGOs, Private Sector	Functional and adequate National, Regional and Municipalities Task Forces set up in place	Official set up time for identifying socially and environmentally acceptable waste dump sites in the GBA	Restriction of identifying socially and environmentally acceptable waste dump sites in the GBA
3.1.4 Develop standards and design and implement dumpsites and landfills in the GBA to appropriate standards, with access roads, embankments, fencing, drainage, weigh scales and scale house as appropriate	3.1.4 Developed standards and designed and implemented dumpsites and landfills in the GBA	Communities, National Government, Regional Provinces, Municipalities, NGOs, Private Sector	Functional and adequate National, Regional and Municipalities Task Forces set up in place	Official set up time for developing standards and designing and implementing dumpsites and landfills in the GBA	Restriction in developing standards and designing and implementing dumpsites and landfills in the GBA

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3.1.5 Assess the equipment for proper waste collection in each municipality or growth centre (e.g. waste compactors, bulldozers, back hole/with front loader and dump trucks, skip buckets, trailers)	3.1.5 Assessed the equipment for proper waste collection in each municipality or growth centre	Communities, National Government, Regional Provinces, Municipalities, NGOs, Private Sector	Functional and adequate National, Regional and Municipalities Task Forces set up in place	Official set up time for assessing the equipment for proper waste collection in each municipality or growth centre	Restriction in assessing the equipment for proper waste collection in each municipality or growth centre
3.1.6 Close all community dump sites (collection points), as well as both Bakoteh and Mile 2 dump sites	3.1.6 Closed all community dump sites (collection points), as well as both Bakoteh and Mile 2 dump sites	Communities, National Government, Regional Provinces, Municipalities, NGOs, Private Sector	Functional and adequate National, Regional and Municipalities Task Forces set up in place	Official set up time for closing all community dump sites (collection points), as well as both Bakoteh and Mile 2 dump sites	Restriction in closing all community dump sites (collection points), as well as both Bakoteh and Mile 2 dump sites
3.1.7 Design and implement a nation-wide awareness raising campaign to sensitise the public about the rationale for integrated waste management, and climate resilient infrastructure and services; this should include <i>inter alia</i> the health impacts of illegal waste dumping, the need to keep drains free of waste and climate-related increased flooding risks	3.1.7 Designed and implemented a nation-wide awareness raising campaign plan	Communities, National Government, Regional Provinces, Municipalities, NGOs, Private Sector	Functional and adequate National, Regional and Municipalities Task Forces set up in place	Official set up time for designing and implementing a nation-wide awareness raising campaign plan	Restriction in designing and implementing a nation-wide awareness raising campaign plan
HIERARCHY OF OBJECTIVES	EXPECTED RESULTS	REACH	PERFORMANCE INDICATORS	INDICATIVE TARGETS TIMEFRAME	ASSUMPTIONS / RISKS
Sub-Component 3.2: Climate-resilient Water and Sanitation	Developed Climate-resilient Water and Sanitation infrastructure	Urban areas of the Greater Banjul area and towns in Regional Provinces	Number of towns developed with climate resilience infrastructure <u>Sources:</u> Project reporting and evaluation	Climate-resilient Water and Sanitation and M&E systems assessment reports validated at municipal. Regional	National, municipal and regional levels stakeholders will match project activity demands (this will be eradicated by a project capacity building

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			Monitoring by national and local authorities and project stakeholders	Provinces and National Government	strategy, including national/local mentoring program) Proposed interventions are able to deliver Climate-resilient Water and Sanitation results (this will be eradicated by strategic and participatory planning.)
<u>Inputs and activities:</u>	<u>Outputs:</u>	<u>Beneficiaries:</u>	<u>Output indicator:</u>	<u>Progress /Timeframe:</u>	<u>Assumption statement:</u>
3.2.1 Implementation of IWRM	3.2.1 IWRM implemented	Urban areas of the Greater Banjul area and towns in Regional Provinces	Functional and adequate National, Regional and Municipalities Task Forces set up in place	Official set up time for 1 Implementation of IWRM	Restriction in awareness, sensitization and public consultation
3.2.2 Update the SNC Lavan Water and Sanitation Master plan up to 2030 and implement plan – this should entail <i>inter alia</i> the location of new boreholes away from heavily built up areas to minimize runoff and facilitate recharge of aquifers	3.2.2 Updated the SNC Lavan Water and Sanitation Master plan up to 2030 and implement plan	Urban areas of the Greater Banjul area and towns in Regional Provinces	Functional and adequate National, Regional and Municipalities Task Forces set up in place	Official set up time for updating the SNC Lavan Water and Sanitation Master plan up to 2030 and implementing the plan	Restriction in updating the SNC Lavan Water and Sanitation Master plan up to 2030 and implementing the plan
3.2.3 Develop a Rural Water Supply Programme to attain 100% coverage in the Gambia	3.2.3 Developed a Rural Water Supply Programme to attain 100% coverage in the Gambia	Urban areas of the Greater Banjul area and towns in Regional Provinces and local communities	Functional and adequate National, Regional and Municipalities Task Forces set up in place	Official set up time for developing a Rural Water Supply Programme to attain 100% coverage in the Gambia	Restriction in developing a Rural Water Supply Programme to attain 100% coverage in the Gambia

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3.2.4 Put in place a robust village water supply maintenance mechanism to maintain the systems to a satisfactory and sustainable level	3.2.4 Put in place a robust village water supply maintenance mechanism to maintain the systems to a satisfactory and sustainable level	Rural areas of The Gambia and towns in Regional Provinces and local communities	Functional and adequate National, Regional and Municipalities Task Forces set up in place	Official set up time for putting in place a robust village water supply maintenance mechanism to maintain the systems to a satisfactory and sustainable level	Restriction in putting in place a robust village water supply maintenance mechanism to maintain the systems to a satisfactory and sustainable level
3.2.5 Increase the density of observation boreholes to monitor the groundwater extraction rates and possible relocation of boreholes due to salt water intrusion	3.2.5 Increase the density of observation boreholes	Urban areas of the Greater Banjul area and towns in Regional Provinces and local communities	Functional and adequate National, Regional and Municipalities Task Forces set up in place	Official set up time for increasing the density of observation boreholes	Restriction in increasing the density of observation boreholes
3.2.6 Develop a treatment plant, for the Banjul sewage system	3.2.6 Developed a treatment plant for Banjul Sewage system	Urban areas of the Greater Banjul area	Functional and adequate Municipal Task Forces set up in place	Official set up time for developing a treatment plant, for the Banjul sewage system	Restriction in developing a treatment plant, for the Banjul sewage system
HIERARCHY OF OBJECTIVES	EXPECTED RESULTS	REACH	PERFORMANCE INDICATORS	INDICATIVE TARGETS TIMEFRAME	ASSUMPTIONS / RISKS
Sub-Component 3.3: Climate resilient Roads and Drainage Infrastructure	Country level climate resilient roads and drainage infrastructure governance and M&E systems assessed	National and Regional Provinces	Number of municipalities implementing climate resilient roads and drainage Infrastructure governance and M&E systems strategic programs <u>Sources:</u> Project reporting and evaluation Monitoring by national and local authorities and project stakeholders	level climate resilient roads and drainage infrastructure governance and M&E systems governance and M&E systems assessment reports validated at municipal, regional and national levels	National, Regional and Municipal levels stakeholders will match project activity demands (this will be eradicated by a project capacity building strategy, including national/local mentoring program)
<u>Inputs and activities:</u>	<u>Outputs:</u>	<u>Beneficiaries:</u>	<u>Output indicator:</u>	<u>Progress /Timeframe:</u>	<u>Assumption statement:</u>

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3.3.1 Review and modify existing policies and strategies on roads and bridges to ensure climate resilient standards are applied, including appropriate drainage systems along their corridors	3.3.1 Reviewed and modified existing policies and strategies	National Government, Municipalities and Regional Provinces	Functional and adequate National, Regional and Municipalities Task Forces set up in place	Official set up time for reviewing existing policies and strategies	Restriction in reviewing existing policies and strategies
3.3.2 Update and design the Kotu stream drainage system from Lamin to Badala Park	3.3.2 Updated and designed the Kotu stream drainage system from Lamin to Badala Park	National Government, Municipalities and Regional Provinces	Functional and adequate National, Regional and Municipalities Task Forces set up in place	Official set up time for updating and designing the Kotu stream drainage system from Lamin to Badala Park	Restriction in updating and designing the Kotu stream drainage system from Lamin to Badala Park
3.3.3 Design and implement drains for all major roads in the GBA including Kombo Coastal Roads	3.3.3 Designed and implement drains for all major roads in the GBA including Kombo Coastal Roads	National Government, Municipalities and Regional Provinces	Functional and adequate National, Regional and Municipalities Task Forces set up in place	Official set up time for designing and drains for all major roads in the GBA including Kombo Coastal Roads	Restriction in designing and drains for all major roads in the GBA including Kombo Coastal Roads
3.3.4 Provide a comprehensive institutional framework for the maintenance of urban drains	3.3.4 Provided a comprehensive institutional framework for the maintenance of urban drains	National Government, Municipalities and Regional Provinces	Functional and adequate National, Regional and Municipalities Task Forces set up in place	Official set up time for providing a comprehensive institutional framework for the maintenance of urban drains	Restriction in providing a comprehensive institutional framework for the maintenance of urban drains
HIERARCHY OF OBJECTIVES	EXPECTED RESULTS	REACH	PERFORMANCE INDICATORS	INDICATIVE TARGETS TIMEFRAME	ASSUMPTIONS / RISKS
Sub-Component 3.4: Climate resilient energy infrastructure	Country level climate resilient energy infrastructure governance and M&E systems assessed	National and Regional Provinces and Municipalities	Number of Municipalities and Regional Provinces implementing climate resilient energy infrastructure strategic programs <u>Sources:</u> Project reporting and evaluation	Climate resilient energy infrastructure governance and M&E systems assessment reports validated at national levels	National, Municipality and Regional Provinces levels stakeholders will match project activity demands (this will be eradicated by a project capacity building strategy, including national/local mentoring program)

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			Monitoring by national and local authorities and project stakeholders		
<u>Inputs and activities:</u>	<u>Outputs:</u>	<u>Beneficiaries:</u>	<u>Output indicator:</u>	<u>Progress /Timeframe:</u>	<u>Assumption statement:</u>
3.4.1 Explore the possibility of immediately replacing NAWEC's existing aged generators.	3.4.1 Replaced NAWEC's existing aged generators	National Government, Municipalities and Regional Provinces	Functional and adequate National, Regional and Municipalities Task Forces set up in place	Official set up time for replacing NAWEC's existing aged generators	Restriction in replacing NAWEC's existing aged generators
3.4.2 Expedite the feed-in-tariff study to encourage private sector participation in the Energy Sector	3.4.2 Completed Feed-in-Tariff studies	National Government, Municipalities and Regional Provinces, Technical Teams and consultant	Functional and adequate National, Regional and Municipalities Task Forces set up in place	Official set up time for undertaking studies on Feed-in-Tariffs	Restriction in undertaking studies on Feed-in-Tariffs
3.4.3 Install solar and wind mini-grids to compliment NAWEC's generating capacity	3.4.3 Installed solar and wind mini-grids to compliment NAWEC's generating capacity	National Government, Municipalities and Regional Provinces	Functional and adequate National, Regional and Municipalities Task Forces set up in place	Official set up time for installing solar and wind mini-grids to compliment NAWEC's generating capacity	Restriction in installing solar and wind mini-grids to compliment NAWEC's generating capacity
3.4.4 Support SMEs (tailoring shops, fish markets, vegetable vendors etc.) with solar powered system to boost the sector	3.4.4 Supported SMEs (tailoring shops, fish markets, vegetable vendors etc.) with solar powered system to boost the sector	National Government, Municipalities and Regional Provinces	Functional and adequate National, Regional and Municipalities Task Forces set up in place	Official set up time for supporting SMEs (tailoring shops, fish markets, vegetable vendors etc.) with solar powered system to boost the sector	Restriction in supporting SMEs (tailoring shops, fish markets, vegetable vendors etc.) with solar powered system to boost the sector
3.4.5 Institute urgent human resources development together with a substantial investment of material resources	3.4.5 Instituted urgent human resources development together with a substantial investment of material resources	National Government, Municipalities and Regional Provinces, Technical Teams and consultant	Functional and adequate National, Regional and Municipalities Task Forces set up in place	Official set up time for instituting urgent human resources development together with a substantial investment of material resources	Restriction in instituting urgent human resources development together with a substantial investment of material resources
3.4.6 Design and implement a nation-wide awareness raising and sensitisation campaign on the climate change and health related aspects of fossil fuels and energy inefficiency, and the	3.4.6 Designed and implemented a nation-wide awareness raising and sensitisation campaign plan	National Government, Municipalities and Regional Provinces	Functional and adequate National, Regional and Municipalities Task Forces set up in place	Official set up time for designing and implementing a nation-wide awareness raising and sensitisation campaign plan	Restriction in designing and implementing a nation-wide awareness raising and sensitisation campaign plan

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substantial adaptation and mitigation benefits existing within renewable energy					
Resources:					
SPCR Fund Grant: US\$164,000,000 and The Gambia Government in kind contribution: US\$					
HIERARCHY OF OBJECTIVES	EXPECTED RESULTS	REACH	PERFORMANCE INDICATORS	INDICATIVE TARGETS TIMEFRAME	ASSUMPTIONS / RISKS
Pillar 4: Developing integrated approaches to build rural climate resilience	Improved integrated approaches to build rural climate resilience	National Government, Regional Provinces, Sector Ministries and M&E Units,	SPCR strategy programs and action plans adopted by National Government and Regional Provinces <u>Sources:</u> Project reporting and Evaluation	National Government and Sector Ministries indicators governance and monitoring compatible with global monitoring systems.	Capacity of National level stakeholders will match project activity demands (this will be alleviated by a project capacity building strategy)
Sub-Component 4.1: Enhancing the resilience of small-scale farming against future climate impacts	Improved organizational and technical structures of the resilience of small-scale farming against future climate impacts	Regional Provinces, Sector Ministries and M&E Units	The resilience of small-scale farming against future climate impacts strategy programs and action plans adopted by National Government and Regional Provinces <u>Sources:</u> Project reporting and Evaluation Number of Regional Provinces monitoring, assessing, and reporting to National Climate Change Authority on the resilience of small-scale farming against future climate impacts measures. <u>Sources:</u> Project Reporting	National Agriculture sector indicators governance and monitoring compatible with global monitoring systems.	Capacity of National and Regional Provinces' level stakeholders will match project activity demands (this will be alleviated by a project capacity building the resilience of small-scale farming against future climate impacts strategy)

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			and Evaluation		
<u>Inputs and activities:</u>	<u>Outputs:</u>	<u>Beneficiaries:</u>	<u>Output indicator:</u>	<u>Progress /Timeframe:</u>	<u>Assumption statement:</u>
4.1.1 Develop plan and put in place a National Programme for Crop Diversification led by the Ministry of Agriculture, as a tool to spread crop failure risks and enhance resilience of small scale/commercial farming;	4.1.1 A tool to spread crop failure risks and enhance resilience of small scale/commercial farming developed;	Sector Ministries, Regional Provinces, Farm Organizations, Cooperatives, rural communities	Functional and adequate Regional Provinces and National Task Forces set up in place		Restrictions in diversifications may limit coordination
4.1.2 Strengthen stakeholder structures in water resources and irrigation management to enhance the resilience of small-scale farming	4.1.2 Structures in water resources and irrigation management to enhance the resilience of small-scale farming strengthened	Sector Ministries, Regional Provinces, Farm Organizations, Cooperatives, rural communities	Functional and adequate Regional Provinces and National Task Forces set up in place		Restrictions in strengthening stakeholder structures in water resources and irrigation management to enhance the resilience of small-scale farming may limit functional operations of the regional provinces and national task force

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4.1.3 Strengthening technical capacity and skills among farmers and Extension Service officers through Climate Change Farmer Field Schools (CC-FFS) for implementing climate-smart measures addressing crop yield response to water and husbandry (fertilizers and organic matter);	4.1.3 Technical capacity and skills among farmers and Extension Service officers developed	Sector Ministries, Regional Provinces, Farm Organizations	Functional and adequate Regional Provinces and National Task Forces set up in place		Restrictions in strengthening technical capacity and skills among farmers and Extension Service officers through Climate Change Farmer Field Schools (CC-FFS) for implementing climate-smart measures addressing crop yield response to water and husbandry (fertilizers and organic matter) may impact capacity development
4.1.4 Strengthening and/or operationalization of a Climate Change Integrated Agrometeorological Advisory Services for the Gambia to support farming practice under the extreme climate variability;	4.1.4 A Climate Change Integrated Agrometeorological Advisory Services for the Gambia to support farming practice under the extreme climate variability strengthened	National Government Meteorological Stations, Sector Ministries, Regional Provinces, Farm Organizations	Functional and adequate Regional Provinces and National Task Forces set up in place		Restrictions in operationalization of a Climate Change Integrated Agrometeorological Advisory Services for the Gambia to support farming practice under the extreme climate variability may limit operational functions
HIERARCHY OF OBJECTIVES	EXPECTED RESULTS	REACH	PERFORMANCE INDICATORS	INDICATIVE TARGETS TIMEFRAME	ASSUMPTIONS / RISKS
Sub-Component 4.2: Reverting the "Sahelization" of ecosystems in The Gambia to support resilience of small-scale farming, livestock and wildlife sub-sectors	Capacities established to support resilience of small-scale farming, livestock and wildlife sub-sectors	National and Regional Provinces Teams, Farm Organizations and local communities	Number of Regional Provinces and Farm Organization implementing resilience of small-scale farming, livestock and wildlife sub-sectors strategic programs <u>Sources:</u> Project reporting and Evaluation Monitoring by national and local authorities and project		National and Regional Provinces stakeholders will match project activity demands (this will be eradicated by a project capacity building strategy, including national/local mentoring program)

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<u>Inputs and activities:</u>	<u>Outputs:</u>	<u>Beneficiaries:</u>	<u>Output indicator:</u>	<u>Progress /Timeframe:</u>	<u>Assumption statement:</u>
<p>4.2.1 Climate-smart ecosystem-based approach to protection, management, conservation, restoration of traditional farming ecosystems to promote water retention, conservation and soil management (intercropping fruit or native trees within the farming plots) to act as “nutrient pumps,” bringing nutrients that are too deep for crops</p>	<p>4.2.1 Climate-smart ecosystem based approach developed</p>	<p>National Government, Regional Provinces and Sector Ministries</p>	<p>Functional and adequate Regional Provinces and National Task Forces set up in place</p>		<p>Restrictions in climate-smart ecosystem-based approach to protection, management, conservation, restoration of traditional farming ecosystems to promote water retention, conservation and soil management</p>
<p>4.2.2 Promoting soil and water conservation measures through climate-smart water ponds and intercropping in agroforestry, to act as “climate buffers” providing shade, wind breaker and litter source for water conservation coupled with minimum tillage, soil fertility management and regeneration of natural vegetation;</p>	<p>4.2.2 Developed soil and water conservation measures</p>	<p>National Government, Regional Provinces and Sector Ministries</p>	<p>Functional and adequate Regional Provinces and National Task Forces set up in place</p>		<p>Restrictions in promoting soil and water conservation measures through climate-smart water ponds and intercropping in agroforestry, coupled with minimum tillage, soil fertility management and regeneration of natural vegetation</p>
<p>4.2.3 Promoting strategically placed drinking points/ponds deep in Forest protected areas (“traditional flora and wildlife regeneration</p>	<p>4.2.3 Developed climate-smart livestock management practices</p>	<p>National Government, Regional Provinces and Sector Ministries</p>	<p>Functional and adequate Regional Provinces and National Task Forces set up in place</p>		<p>Restrictions in climate-smart livestock management practices addressing multiple gains of adaptation (green expansion, livestock</p>

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traps”) for offsetting the disappearance of the natural habitats and indigenous traditional flora and wildlife species due to frequent bush fires and drying of streams.					diversification, and water supply) and mitigation (developing National Programme for Biogas Production and Utilization through on-farm anaerobic digestion of manure as an integrated adaptation-mitigation measure)
4.2.4 Establishment a regional network of rural water supply system coupled with construction of strategically placed Plunge dips structures to support livestock animals for preventing against ticks, flies, mites, lice and other external parasites expected to increase under the projected warmer climate and new management practices such as artificial insemination, castration, inoculation, dehorning and weighing.	4.2.4 Developed National Plans for Grazing Zones and management systems of grazing activities	National Government, Regional Provinces, Sector Ministries, Farm Organizations, individual farmers and local communities	Functional and adequate Regional Provinces and National Task Forces set up in place		Restriction in development of National Planning of Grazing Zones and management of grazing activities with Improvement of stock feeds to avoid overgrazing issues (goats/sheep)
HIERARCHY OF OBJECTIVES	EXPECTED RESULTS	REACH	PERFORMANCE INDICATORS	INDICATIVE TARGETS TIMEFRAME	ASSUMPTIONS / RISKS
Component 3: Supporting the planning, rehabilitation and management of buffering coastal ecosystems to build the resilience of fisheries and tourism development in The Gambia	Plan for rehabilitation and management of buffering coastal ecosystems prepared Ecosystem-based climate resilience of fisheries and tourism development in The Gambia established	National Government, Regional Provinces, Sector Ministries	Number of government decision-makers with increased knowledge of planning, rehabilitation and management of buffering coastal ecosystems <u>Sources:</u> Project reporting		National, provincial and district level stakeholders are receptive to project’s building the resilience of fisheries and tourism knowledge (this will be eradicated by with project support for the design of formal information

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			<p>and Evaluation Determined by monitoring</p> <p>Number of Regional Provinces replicating Ecosystem-based climate resilience of fisheries and tourism development principles and practices within the target areas</p> <p><u>Sources:</u> Climate Resilient Strategy Process implemented will verify results</p>		<p>development and strategies)</p> <p>Government is willing and capable of directing financing towards the support of building the resilience of fisheries and tourism programming (Incentive issues will be eradicated by the project strategy of linking success demonstrations with comprehensive capacity building efforts, including studies showing the economic, social and ecological benefits of up scaling)</p>
<u>Inputs and activities:</u>	<u>Outputs:</u>	<u>Beneficiaries:</u>	<u>Output indicator:</u>	<u>Progress /Timeframe:</u>	<u>Assumption statement:</u>
<p>3.1 Develop Regional Programmes for Ecotourism for buffer control of protect forest and riverine locations with clear identification of potential sites and natural conditions. This will be used by the Gambia Tourist Board to attract external investment on ecotourism;</p>	<p>3.1 Developed Regional Programmes for Ecotourism</p>	<p>National Government, Regional Provinces, Sector Ministries</p>	<p>Functional and adequate Regional Provinces and National Task Forces set up in place</p>		<p>Restrictions in development Regional Programmes for Ecotourism</p>

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<p>3.2 Initiation of a national programme addressing the Rehabilitation of ecosystems bordering the costal dunes and riverine areas to be used as a buffer between the coastal zone and the community villages particularly in the West Coast Region (land reclamation operations on fish landing sites and old sand mining sites using palm trees, mangroves and other native shrubs);</p>	<p>3.2 Established national programme for addressing the Rehabilitation of ecosystems bordering the costal dunes and riverine areas</p>	<p>National Government, Regional Provinces, Sector Ministries</p>	<p>Functional and adequate Regional Provinces and National Task Forces set up in place</p>		<p>Restrictions in establishment of national programme for addressing the Rehabilitation of ecosystems bordering the costal dunes and riverine areas</p>
<p>HIERARCHY OF OBJECTIVES</p>	<p>EXPECTED RESULTS</p>	<p>REACH</p>	<p>PERFORMANCE INDICATORS</p>	<p>INDICATIVE TARGETS TIMEFRAME</p>	<p>ASSUMPTIONS / RISKS</p>
<p>Component 4: Private sector involvement for promoting and strengthening the resilience of communities' livelihoods in The Gambia</p>	<p>Involved private sector in promoting and strengthening the resilience of communities' livelihoods in The Gambia</p>	<p>Private Sector in The Gambia</p>	<p>Number of government decision-makers with increased knowledge of Private sector involvement for promoting and strengthening the resilience of communities' livelihoods in The Gambia <u>Sources:</u> Project reporting and Evaluation Determined by monitoring</p>		<p>Government is willing and capable of directing financing and providing incentives towards the support of Private sector involvement for promoting and strengthening the resilience of communities' livelihoods in The Gambia</p>
<p><u>Inputs and activities:</u></p>	<p><u>Outputs:</u></p>	<p><u>Beneficiaries:</u></p>	<p><u>Output indicator:</u></p>	<p><u>Progress /Timeframe:</u></p>	<p><u>Assumption statement:</u></p>

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<p>4.1 Promotion of youth and women centred “Spin-off” SMMEs for development of climate resilient agricultural and livestock value chains in each of the Gambian Regions</p>	<p>4.1 Promoted youth and women centers</p>	<p>Youth and Women centers</p>	<p>Functional and adequate Regional Provinces and National Task Forces set up in place</p>		<p>Restriction in Promoting youth and women centers</p>
<p>4.2 Establishment of Waste Management Plans at Municipal Level – National Recycling Training Programmes for youth and women</p>	<p>4.2 Established Plans for waste management</p>	<p>National Government, Municipalities, Youth and Women Enterprises</p>	<p>Functional and adequate Regional Provinces and National Task Forces set up in place</p>		<p>Restrictions in establishment of Waste Management Plans at Municipal Level – National Recycling Training Programmes for youth and women</p>
<p>4.3 Establishment (physical and logistical infrastructures) of a regional network of Village Centres for Agro-Forest Resources Transformation (Village CARTs) following the Global Eco-village Network approach</p>	<p>4.3 Established physical and logistical infrastructures of a regional network of Village Centres for Agro-Forest Resources Transformation (Village CARTs)</p>	<p>National Government, Regional Provinces, Municipalities</p>	<p>Functional and adequate Regional Provinces and National Task Forces set up in place</p>		<p>Restrictions in establishing physical and logistical infrastructures of a regional network of Village Centres for Agro-Forest Resources Transformation (Village CARTs)</p>
<p>4.4 Establishment of a network of Centres for Skills Development (CSDs) to assist youth and women associations in developing skills for alternative income generating activities to curb migration and intense degradation of the environment, in particular the coastline through</p>	<p>4.4 Established a network of centers for skills development</p>	<p>National Government, Regional Provinces, Youth and Women</p>	<p>Functional and adequate Regional Provinces and National Task Forces set up in place</p>		<p>Restrictions in establishing a network of centers for skills development</p>

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mangrove cutting and sand mining					
4.5 Strengthening the resilience of the Fisheries Sector and community livelihoods by upgrading all eight national Fish Landing Points, and fish markets and cold chain structures, as well as the establishment and operationalization of post-harvest value chain units at each landing site	4.5 Strengthened, Established and Operationalized resilience of the Fisheries' Sector and community livelihoods	National Government, Sector Ministries, Regional Provinces, Fishery Organizations	Functional and adequate Regional Provinces and National Task Forces set up in place		Restrictions in strengthening the resilience of the Fisheries Sector and community livelihoods by upgrading all eight national Fish Landing Points, and fish markets and cold chain structures, as well as in establishing and operationalization of post-harvest value chain units at each landing site
<p>Resources:</p> <p>SPCR Fund Grant: US\$73,000,000 and The Gambia Government in kind contribution: US\$</p>					