REPUBLIC OF NAMIBIA
Ministry of Environment & Tourism

NATIONAL CLIMATE CHANGE STRATEGY & ACTION PLAN

2013 – 2020





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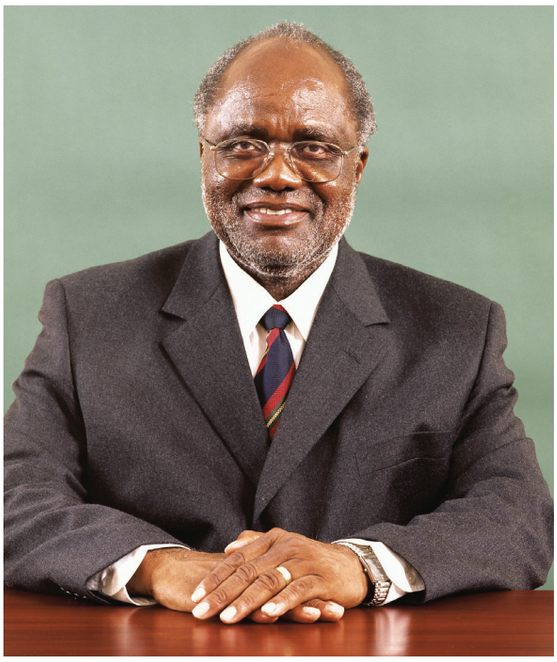
Table of Contents

Foreword



This publication contains Namibia's National Climate Change Strategy and Action Plan (2013-2020), which is premised on the need to address the issues related to climate change as they affect our country. Our point of departure is that Namibia is strongly committed to implementing measures to promote and advance sustainable development, which is enshrined not only in our Constitution but also in our long-term development framework of Vision 2030. We have adopted policies aimed at streamlining our approach to sustainable development so as to incorporate it into the planning frameworks of all sectors.

Climate Change has been identified as a critical threat to sustainable development. Therefore, it must be addressed in a holistic and multi-sectoral manner. This phenomenon does not only threaten human lives and food security but it is also capable of reversing the socio-economic gains and achievements that we have made over the past 24 years. Our commitments to tackle the challenges of climate change are outlined in the National Climate Change Policy of 2011. We recognize that a policy in itself is not enough, and that a more specific framework in the shape of a Strategy and Action Plan is needed.

This National Strategy and Action Plan lays out the guiding principles responsive to climate change that are effective, efficient and practical. It further identifies priority action areas for adaptation and mitigation. Namibia is ready to learn from and adopt best practices from other parts of the world in dealing with issues of climate change. This includes leveraging opportunities brought about through our transformation towards a low carbon, resource efficient and climate resilient economy.

The effective implementation of this Strategy and Action Plan will require not only the integration of climate change aspects in all sectors, but moreover the close collaboration of all sectors to enhance synergies and propel the nation towards the achievement of our national development agenda.

I urge all stakeholders to do their part and contribute to the effective implementation of this National Strategy and Action Plan.

Hifikepunye Pohamba
PRESIDENT OF THE REPUBLIC OF NAMIBIA

Preface

I am proud that Namibia is one of the first countries in Africa to have prepared a comprehensive Climate Change Policy as well as a first Strategy and Action Plan to implement this policy.

I would like to acknowledge the intensive two-year consultative process undertaken to develop this Strategy and Action Plan. This involved a wide range of stakeholders with a particular focus on the grassroots level to raise awareness and garner ideas from our local communities, who are most at risk to the impacts from climate change. I would like to thank all stakeholders for their recommendations and inputs into this document. It is truly a nationally-owned document.

Climate change in Namibia will affect everyone, all sectors and at many levels. Being the country with the most arid climate in southern Africa, our economy is already exposed to difficult and harsh conditions – with water accessibility a serious threat. Prolonged droughts – although considered "normal" to some extent – have devastating impacts on livelihoods, food availability, health and wellbeing in many of our rural communities.

This means we must be prepared and ready to act in an integrated cross-sectoral approach. We are committed to implementing measures that will prepare us for the medium and longer-term climate changes that are projected – as well as the impacts on our development. With funding from our own national budget we will address some pressing issues, but we also realise that the impacts expected will require a much broader set of resource mobilization.

This Strategy and Action Plan offers a comprehensive framework for us to climate change proof our different economic sectors and the livelihoods of all individuals. It is our sincere hope that this Strategy and Action Plan, under the leadership of the Ministry of Environment and Tourism, will contribute towards a prosperous future for our people and environment.

We need all of you to get involved to help us tackle the challenges ahead!

Hon. Uahekua Herunga
MINISTER OF ENVIRONMENT AND TOURISM

List of figures

Acknowledgements

The development of the National Climate Change Strategy and Action Plan is the result of a multi-pronged consultative and interactive process involving national, regional and local stakeholders. The Ministry of Environment and Tourism (MET) is greatly thankful to all individuals and institutions consulted during the first two phases: namely the consultative meeting involving stakeholders at national, regional, and local levels, and all stakeholders who participated in the final validation meetings. Members of the Namibian National Climate Change Committee (NCCC) are thanked for their inputs and guidance during the consultations and review process. The UNDP Namibia Country Office and the Government of Japan are thanked for supporting and providing funding for this important activity which will address climate change mitigation and adaptation benefiting Namibia in the long run. The German Federal Ministry for Economic Development and Cooperation (BMZ) through the GIZ is acknowledged for peer reviewing the final draft and providing financial assistance to finalise the NCCSAP.

Republic of Namibia
Ministry of Environment & Tourism

JAPAN
Official Development Assistance

UNDP
Empowered lives. Resilient nations.

german cooperation
DEUTSCHE ZUSAMMENARBEIT

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Acronyms

AAP	Africa Adaptation Programme
AMCEN	Africa Ministerial Conference on the Environment
BCC	Bengeula Current Commission
CBNRM	Community Based Natural Resource Management
CBOs	Community Based Organisations
CCA	Climate Change Adaptation
CCM	Climate Change Mitigation
CDM	Clean Development Mechanism
CETN	Coastal Environment Trust of Namibia
CO2	Carbon Dioxide
COP	Conference of Parties
DDRM	Directorate Disaster Risk Management
DEA	Department of Environmental Affairs
DEGREEE	Demonstration Renewable Energy Energy Efficiency
DMEA	Division Multi-lateral Environmental Agreements
DRFN	Desert Research Foundation of Namibia
EAF	Ecosystem Approach to Fisheries
ECB	Electricity Control Board
EIA	Environmental Impact Assessment
EIF	Environmental Investment Fund
ENSO	El-Niño Southern Oscillation
EMU	Emergency Management Unit
EWS	Early warning system
GCF	Green Climate Fund
GCMs	Global Climate Models
GDP	Gross Domestic product
GEF	Global Environment Facility
GHG	Greenhouse Gases
GIS	Geographical Information System
GRN	Government of Namibia
GTZ	German Development Cooperation
IGOs	Intergovernmental organizations
ILTER	Long--term Ecological Research Network
INC	Initial National Communication
IPCC	Intergovernmental Panel on Climate Change
LDCF	Least Developed Countries Fund
LPG	Liquid Petroleum Gas
LULUCF	Land-Use, Land Use Change and Forestry
M&E	Monitoring and Evaluation
MAWF	Ministry of Agriculture, Water and Forestry
MDGs	Millennium Development Goals
MET	Ministry of Environment and Tourism
MFA	Ministry of Foreign Affairs
MFMR	Ministry of Fisheries and Marine Resources
MGECW	Ministry of Gender Equality and Child Welfare

MICT	Ministry of Information and Communication Technology
MISA	Media Institute of Southern Africa
MLR	Ministry of Lands and Resettlement
MLHPZ	Mid-Latitude High Pressure Zone
MME	Ministry of Mines and Energy
MoE	Ministry of Education
MoF	Ministry of Finance
MoHSS	Ministry of Health and Social Services
MPs	Members of Parliament
MRLGHRD	Ministry of Regional and Local Government, Housing and Rural Development
MSS	Ministry of Safety and Security
MTC	Mobile Telecommunication
MTI	Ministry of Trade and Industry
MWT	Ministry of Works and Transport
NAB	Namibia Agronomic Board
NACOMA	Namibia Coast Conservation and Management Project
NACSO	Namibian Association of Community Based Natural Resource Management
NaEON	Namibia Environmental Observatories Network
NAMREP	The Namibian Renewable Energy Programme
NAPAs	National Adaptation Strategies
NAU	Namibia Agricultural Union
NBC	Namibia Broadcasting Cooperation
NBI	Namibia Business Institute
NCCC	National Climate Change Committee
NCCC	Namibia Climate Change Committee
NCCI	Namibia Chamber of Mines, Namibia Chamber of Commerce and Industry
NCCSAP	National Climate Change Strategy and Action Plan
NDF	Namibia Defence Force
NDPs	National Development Plans
NEEP	Namibia Energy Efficiency Programme
NGOs	Non-Governmental Organisations
NIED	National Institute for Educational Development
NMA	Namibia Manufacturers Association
NNF	Namibia Nature Foundation
NNFU	Namibia National Farmers Union
NPC	National Planning Commission
NPCC	National Policy on Climate Change
NSA	Namibia Statistic Agency
OPM	Office of the Prime Minister
PoN	Polytechnic of Namibia
RA	Roads Authority
REDS	Regional Electricity Distributors
REMU	Regional Emergency Management Unit
RCM's	Regional Climate Models
SADC	Southern African Development Community
SAP	Strategy and Action Plan
SANUMARC	Sam Nujoma marine & Coastal Resources Research Centre

SCCF	Special Climate Change Fund
SEA	Strategic Environmental Assessment
SGP	Small Grants Programme
SNC	Second National Communication
SPA	Strategic Priority on Adaptation
STAR	System for Transparent Allocation of Resources
TNC	Third National Communication
UN	United Nations
UNDP	United Nations Development Programme
UNAM	University of Namibia
UNFCCC	United Nations Framework Convention on Climate Change
UNFPA	United Nations Population Fund
V&A	Vulnerability and Adaptation Assessment

Section 1: Introduction

Climate change impacts directly on the entire chain of national development, and is likely to have negative impacts on efforts to achieve development objectives, including the long-term objectives and targets of Namibia's Vision 2030. Climate change is a complex and cross-cutting concern, thus there is a need for a holistic and integrated approach to developing a multi-sectoral (cross-practice-based) National Climate Change Strategy and Action Plan (NCCSAP) in order to implement the National Policy on Climate Change (NPCC), which was promulgated in Namibia in 2011. The NCCSAP has been developed as a result of the growing concern and discourse focusing on climate variability, and climate change risks and impacts affecting Namibia's social, environmental and economic developmental potential. The Strategy and Action Plan is a key instrument to operationalise the NPCC over a period of 8 years from 2013 – 2020 as a first comprehensive and practical tool which offers guidance on the mechanisms, means and manner in which implementation can happen. It is clear that climate change awareness, knowledge and understanding, both in terms of the risks, impacts and responses is rapidly developing, and therefore a mid-term review process of the implementation and impact of the NCCSAP is foreseen.

The development of the NCCSAP started in 2011 and intensive interactive consultations took place over a period of two years with a great variety, diverse and multiple numbers of stakeholders in the country. These included government ministries, agencies, Members of Parliament, Non-Governmental Organisations (NGOs), IGOs, private sector representatives, regional councils, local authorities, Community based Organisations (CBOs) and other civil/civic society organisations. The inputs gathered during those consultations form the basis of the Strategy and Action Plan. A final round of validation took place during July and August 2013 with selected key stakeholders to validate the activities, actions, targets, budgets and key responsible implementing agencies presented in the NCCSAP.

Section 2: Background

2.1 Overview of Global Climate Change Issues

Climate change is considered as one of the major challenges of the 21st century, posing threats to humankind, and undermining efforts to achieve key development goals including poverty reduction. It is one of the severe impediments to the attainment of the Millennium Development Goals (MDGs) and sustainable development aspirations globally, regionally and nationally. There is now sufficient scientific evidence and consensus that climate change is caused and particularly exacerbated by human activities. This is mainly through the burning of fossil fuels and changes in land use patterns due to rapid economic growth, related changes in lifestyles, rapid increases in human population, and the growing fuel and resource needs to meet these development imperatives. In addition, these may also be compounded by natural climate variability.

Climate change has and will have profound impacts on peoples' livelihoods, economic growth, and ecosystems. However, the effects and impacts of climate change on economies and societies will vary greatly over the world, and each country's circumstances, such as initial climate, socio-economic situation, and growth prospects, will define and shape the extent of climate change effects on societies, both in economic and environmental terms (Stern, 2006). Developing countries are most vulnerable, particularly those in Africa, largely because of their geographic exposure, relatively small economies, prevailing low levels of household incomes, and greater reliance on climate sensitive sectors such as rain-fed agriculture and ecosystem or nature based production activities (e.g. tourism).

During the 20th century, global average temperature increased by roughly 0.75°C, and the beginning of the 21st century has been described as the warmest period on record. The global average temperature increase exceeded 0.7°C in eleven of the last twelve years (1995– 2006) ranking among the 12 warmest years of global surface temperature since 1850 (IPCC, 2007a).

Climate change will alter patterns of water availability by causing fluctuations in the water cycle and droughts and floods will become more severe in many areas (Stern, 2006). Some parts of Southern Africa are likely to experience further decreases in water availability. Further projections for Africa revealed that by 2020, between 75 and 250 million people will be exposed to increased water stress due to climate change (IPCC, 2007b). Changes in water temperature, precipitation and oceanographic variables such as wind velocity, wave action and sea level rise, have the potential to bring about significant ecological and biological changes to both marine and fresh water ecosystem, thus affecting fish populations, a major food source to many populations (Badjeck *et al.,* 2009). Stern (2006) indicate that rising sea levels will also result in tens to hundreds of millions more people being displaced or otherwise affected by flooding each year (with a warming of 3 or 4°C).

In recent years, the reports on climate related disasters have increased, and extreme climatic events are becoming more frequent and severe globally. Scientific research on climate change is on-going and background knowledge on the phenomenon is improving rapidly.

Changes and increased variability in the climate will amplify the existing development challenges due to location (arid conditions and geographic exposure), dependence on agriculture, rapid

population growth and poverty (Stern, 2006). Other compounding issues include weak institutional, human, economic and financial capacity to cope with the multiple impacts of climate change in these countries.

2.2 Namibia Climate (Change) - Overview

2.2.1 Namibia: geographic and "natural" climate

Namibia, located in south-western Africa, covers land areas of 825,418 km^2, with a 1,500 km long coastline stretching along the South Atlantic Ocean (MET, 2011a). It has a population of 2.1 million people and one of the lowest population densities in the world with an average of about 2.5 people per km^2 (NPC, 2011; MET, 2011a). Namibia is one of the most arid countries south of the Sahara. Highly variable climatic conditions are the norm, and the country experiences frequent dry-spells and droughts with sporadic occurrences of flooding in water basins. These basins are the Cuvelai drainage, Cubango-Okavango, Zambezi, Kunene and Orange-Senqu rivers. Overall, about 22% of the country is classified as desert, 70% as arid to semi-arid, and less than 8% as dry sub-humid (Turpie *et al.*, 2010).

Namibia is situated at the interface between different climate systems. Its climate is mainly influenced by the country's proximity to the northward flow of the Benguela current associated with colder temperatures on its western shores, while the northern part of the country is influenced by the intersection of the warm tropical winds from Angola and the Benguela current from the southwest. The southern part of the country lies at the interface between the Mid-Latitude High Pressure Zone and the Temperate Zone (MET, 2011).

The distribution of mean annual rainfall extends across a rainfall gradient with increasing humidity from south-western to north-eastern Namibia, with an annual mean rainfall between 25 mm and 700 mm along this gradient (Figure 1) (MET, 2011).

However, there are some general patterns, e.g. the maize triangle of Tsumeb, Grootfontein and Otavi, receives more rainfall than would be expected in that geographic location as shown in the map above. This is attributed to undulating topography, thus giving rise to orographic rainfall (MET, 2011) which is caused when winds containing water vapour from the flat lying surfaces of Northern Namibia is forced up by hills and mountains in the Tsumeb/Otavi region. Most rain occurs in the summer months from November to April in forms of localized showers and thunderstorms (GRN, 2002; MET, 2011).

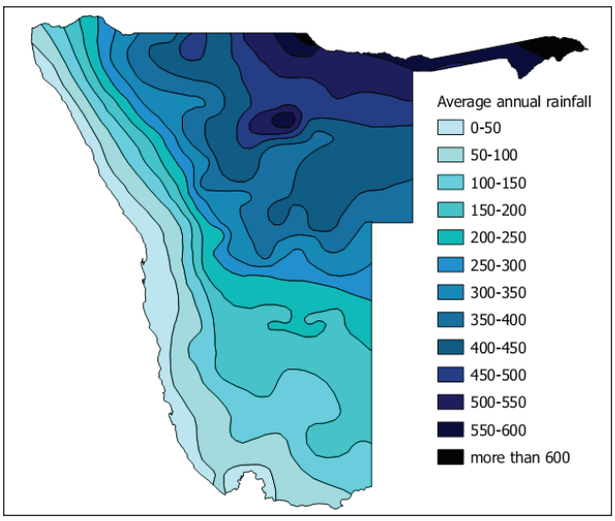


Figure 1: Distribution of average annual total rainfall in Namibia
Source: Mendelsohn et al., 2012

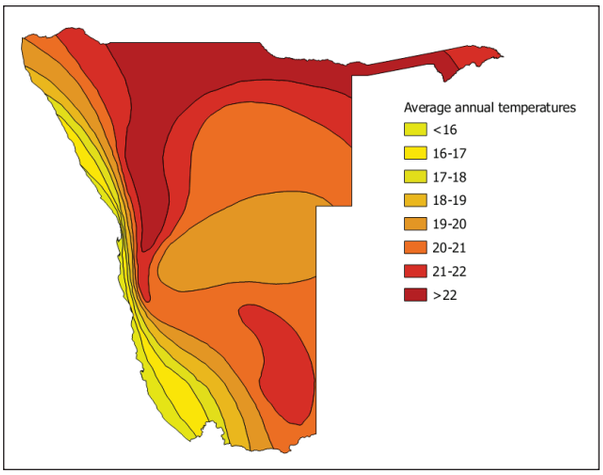


Figure 2: Average annual temperature in Namibia
Source: Mendelsohn et al., 2012.

Namibia is characterized by high temperatures (Figure 2). Most of the country receives an annual average of more than nine hours of sunlight per day (Turpie *et al.*, 2010).

Daytime air temperatures are generally warm, but due to low humidity and outgoing long wave radiation at night, minimum temperatures can drop to below freezing point in winter (GRN, 2002). Coastal areas experience mean monthly minimum and maximum temperatures throughout the year of 16-22°C and 10-17°C respectively. Inland areas, during summers, experience mean monthly minimum and maximum temperatures of 13-20°C and 28-37°C, respectively. During winters, mean monthly minimum and maximum temperatures range between 2-12.5°C and 20-30°C, respectively (GRN, 2002; MET, 2011).

The north and south of the country experience the highest temperatures with the average maximum for the hottest month being over 34°C (Turpie *et al.*, 2010). The Southern Kalahari experiences the lowest temperatures with the average minimum for the coldest month being less than 2°C (Turpie *et al.*, 2010).The lowest temperatures occur during the dry season months of June and August. High evaporation rates in the country vary between 3 800 mm per annum in the south to 2 600 mm per annum in the north (MET, 2011). This is attributed to high solar radiation, low humidity and high temperature. It is also estimated that potential evaporation is at least five times greater than average rain received over most of the country.

2.2.2 Climate change projections

The Namibia Vulnerability and Adaptation (V&A) Assessment report (Dirkx *et al.*, 2008) in preparation of the Second National Communication (SNC, contains the first national data sets (regional climate change models) for the country. The V&A focused specific attention on the Zambezi (formerly Caprivi) and Karas regions, which represent two extremes in Namibia in terms of geographical location, as well as environmental and socio-economic conditions (MET, 2011). Climatic variability is a common phenomenon in Namibia, with persistent droughts and unpredictable and variable rainfall and temperatures the norm (Mfune & Ndombo, 2005; Dirkx *et al.*, 2008).

Projected Rainfall

Projected changes in total monthly rainfall change from global climate models (GCMs) indicate an increase for some parts of the country, and a decrease in other parts of the country.

The most consistent changes indicate an increase in late summer rainfall over major parts of the country, and a decrease in winter rainfall in the south and west of the country. Increases in rainfall

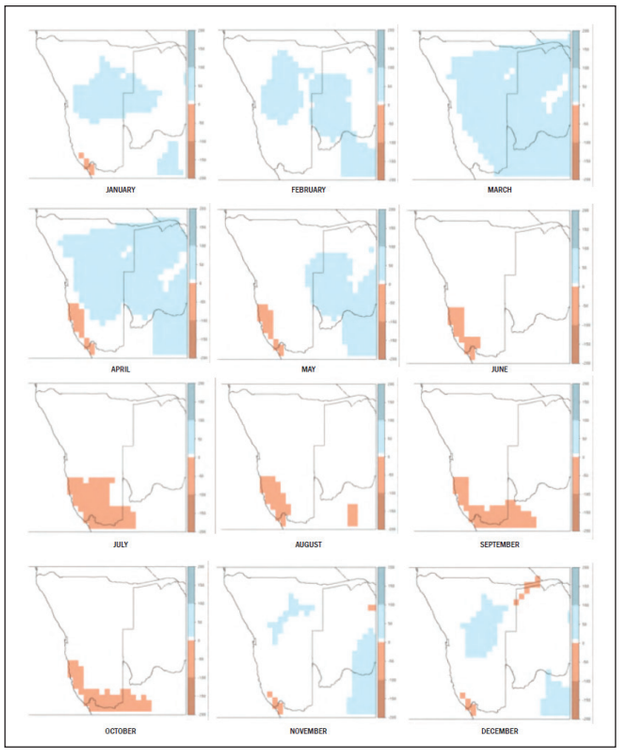


Figure 3: Median change in total monthly rainfall (mm/month) from 6 statistically downscaled GCM rainfall projections. Regions where 3 models indicate drying/wetting, as well as experiencing increases of less than 10 mm per month (less than increases in potential evapotranspiration) are left blank. *Source: Dirkx et al., 2008*

are most obvious during the January to April period, especially in the central and north-eastern regions (MET, 2011).

The projections for the Cuvelai area which often experiences seasonal flooding are inconclusive (MET, 2011). However, these projections reveals that the southwest is expected to experience a decrease in rainfall for most of the year, except for the months of February and March but they are particularly widespread during the main winter months, which are traditionally the most important rainfall months in the country. These projections in rainfall are consistent with the contemporary understanding of how climate change will affect the southern African region and are captured in regional climate models, especially in that:

a. Increases in thermal heating, coupled with increases in atmospheric moisture, especially during mid to late summer, will increase convective rainfall over much of the country, and that
b. Winter rainfall is reduced in the southern and especially south-western parts of the continent, and by implication, southern Namibia (DRFN, 2009; MET, 2011).

In addition, both the rainfall and temperature in Namibia are very sensitive to the El-Niño Southern Oscillation (ENSO) effect, showing periods of below-average rainfall and above-average temperature during El Niño conditions (GRN, 2002).

Projected Temperature

The Inter-governmental Panel on Climate Change (IPCC) Third Assessment Report suggests that by 2050, temperatures over southern Africa will be 2-4 ^{0}C higher compared to the 1961-90 baselines (IPCC, 2001). Although climates across Africa have always been erratic, the continent is expected to face even greater droughts, floods, rising sea-levels, food insecurity, loss of biodiversity and depletion in the water supply.

It has been predicted with a high degree of certainty, that Namibia will become hotter throughout the year (with an expected increase in temperatures of between 1°C and 3, 5°C in summer and 1°C to 4°C in winter in the period 2046-2065) (Dirkx *et al.*, 2008).

Maximum temperatures have been getting hotter over the past 40 years, as observed in the frequency of days exceeding 35°C (Dirkx *et al.*, 2008; MET, 2011). Frequencies of days with temperatures below 5°C have been getting less, suggesting an overall warming (Dirkx *et al.*, 2008). Based on the projections, winters are expected to have fewer cold days while summers are expected to get hotter. According to GCM's projections, coastal areas of Namibia are projected to get warmer compared to inland regions, but these projections, because of their scale, have a large degree of uncertainty (MET, 2011).

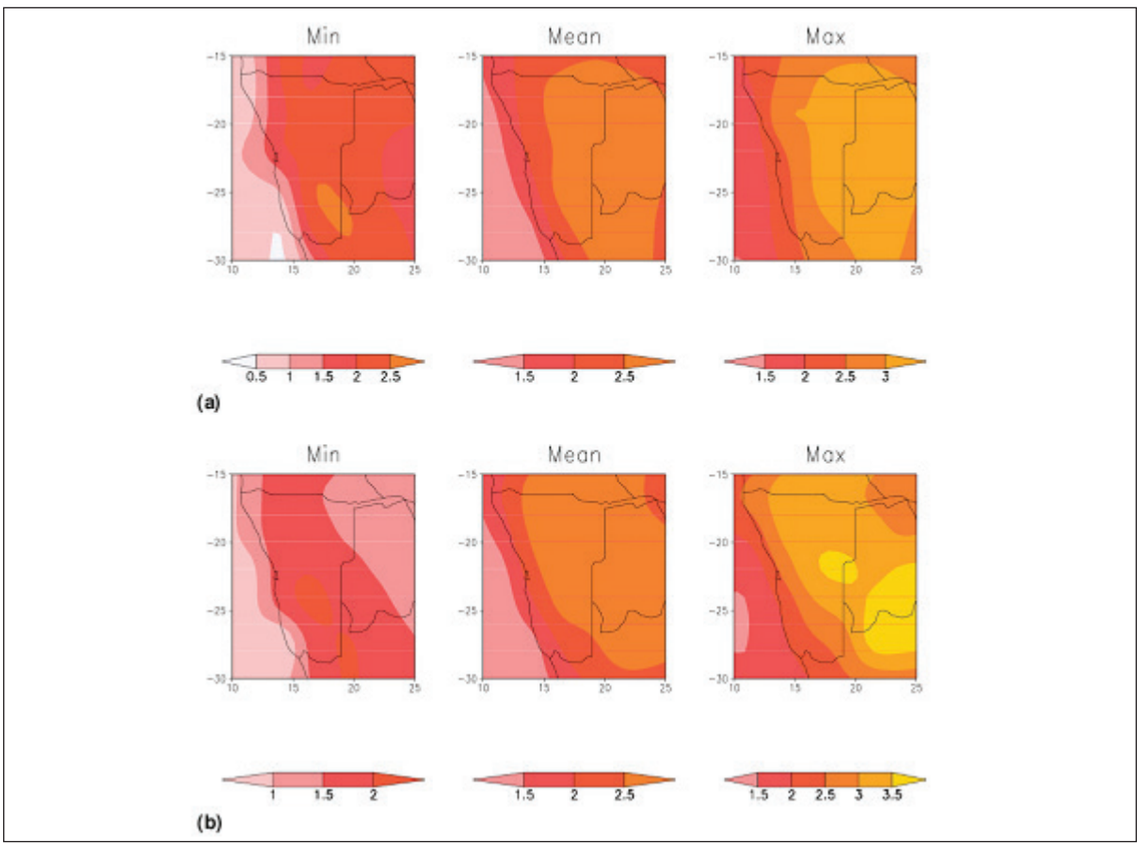


Figure 4: Minimum (left), mean (middle) and maximum (right) projected change in (a) January-March and (b) July-September mean surface air temperature (°C) from 13 GCMS. *Source: Dirkx et al., 2008.*

Table 1 Detailed regional profile for all regions in the country, and the projections under climate change for key sectors Source: MET, 2012

Region	Background Information	Active Sectors	Impacts & Projections
Erongo	80% population in urban areas Major shift from livestock production to wildlife based tourism Natural high variability in climate Poor soils with less agricultural potential High migration of young people from other regions Most people employed in fishing sector Water extraction from ephemeral rivers, underground & desalination plants	• Tourism • Marine resources • Fishing • Housing & Infrastructure • Wildlife • Mining	• Decrease in underground water quality and quantity • Warming of the Benguela current with decreasing fish stocks • Infrastructure development along the coast was washed away by strong tides and • Reduced grazing availability • Sea level rise between Walvis bay and Henties bay • Health impacts from Uranium dust
Hardap	Arid biome with 0mm to 300mm average rainfall Poor soils with less agricultural potential Least populated area in Namibia with an average of 1 person per Km^2 Domestic and agricultural water use from underground sources Natural high variability in climate	• Tourism • Housing & Infrastructure development • Livestock agriculture	• Decrease in water quality and quantity in the aquifer around Stampriet • Reduced grazing availability • Underground water contamination and low recharge
Karas	Southern border delimited by Orange river, and Atlantic ocean to the west Driest region in Namibia (less than 50mm average rainfall in the south west and 250mm in the north east) Unpredictable and localised rainfall Natural high variability in climate Livestock farming	• Wildlife • Distinct succulent biome • Housing & Infrastructure development • Mining	• Decline in winter rainfalls • Temperature increase • Warming of the Benguela current with decreasing fish stocks • Dry Spells & Reduced grazing availability • Sporadic floods

Khomas	4.5% total area with 15% of country population Cattle and game farming 200-350mm average rainfall Water pipelined from Northern Namibia	• Underground water resources • Housing & Infrastructure development • Fishing • Tourism • Livestock farming	• Increase in temperature • Underground water contamination and low recharge • Increase in rainfall • Frequent flooding along the ephemeral rivers
Omaheke	Omaheke region known as 'cattle country' Majority depends on livestock/ game farming Hunting and gathering for natural resources for daily survival by the San people 72% population lives in rural areas Poorly distributed and unreliable rainfall Small irrigated gardens	• Livestock farming • Tourism • Wildlife conservation	• Shift in vegetation zones and distribution of plants • Less water availability • Increase in temperature • Prolonged droughts & persistent dry spells • Increase in seasonal rainfall • Invasive species spotted
Otjozondjupa	Majority depends on livestock farming; however crop farming is also practiced Commercial irrigated crop farming in the northern part of the region and livestock farming in the southern parts Productive Aquifers Home to the Waterberg Plateau Park Most productive area in terms of crop production in the northern part of the region i.e. around Grootfontein ('food basket ' of Namibia) Bush encroachment	• Tourism • Livestock & crop farming • Wildlife conservation	• Prolonged droughts • Floods • Increase in temperature • Low recharge / declining groundwater availability and quality • Invasion of grassland by undesirable species • Later start and earlier ending of rainfall seasons • Increase in seasonal rainfall

Ohangwena	Small-scale farming Livestock & crop farming Flat/plain landscape No permanent rivers Highest population density in Namibia at 21.3 people per Km^2 99% population in rural areas Rain-fed subsistence farming	• Small-scale crop & livestock farming • Fresh water fishing (seasonal) • Forestry • Housing and infrastructure	• Increase in temperature • Floods (2006-2009) • Increased length of dry season • Heavy infestations of mosquitoes and tsetse flies • Decreasing rainfall intensity • Prolonged droughts • Pests invasions • Threat of water borne diseases such as cholera and malaria • Deforestation
Oshana	Livestock & crop farming Smallest region in the country High salinity of soil and underground water Oshana flood plains of the Cuvelai drainage system extending from Southern Angola 18.7 people per Km^2 Low soil fertility Water resources depending on rainfall in Southern Angola	• Small-scale crop & livestock farming • Fresh water fishing (seasonal) • Housing and infrastructure	• Increase in temperature • Floods (2006-2009) • Increased length of dry season • Decreasing rainfall intensity • Prolonged droughts • Pests invasions • Threat of water borne diseases such as cholera and malaria • Threat of water borne diseases such as cholera and malaria
Oshikoto	Small-scale to large-scale farming Livestock & crop farming Extensive woodland areas 70% or area has less than 1 person per Km^2 High salinity of soil and underground water	• Small-scale to large-scale farming • Forest resources • Wildlife • Forestry	• Increase in temperature • Floods • Increased length of dry season • Prolonged droughts • Deforestation

Kunene	Home to the Skeleton Coast Park Frequent flooding of the Kunene river Mining of gold, silver, tin lead, zinc and uranium Natural resource-based production systems and livelihoods Less development & limited infrastructure Practice of 'migratory range management' of livestock by Ovahimba cattle farmers for years Little or no underground sources with no access to permanent water sources	• Livestock farming • Conservancy related tourism • Wildlife • Mining	• Increase in temperature • Persistent dry spells and frequent droughts • Fluctuations in grazing availability • Floods • Later start and earlier ending of rainy season • Increase of summer rainfall with high intensity over short periods
Omusati	Extreme salinity of the soil Hand-dug wells and boreholes provide drinking water for people and livestock Frequent flooding of the 'Iishana" systems from Angola Water resources heavily dependent on climatic conditions in Southern Angola	• Small-scale crop & livestock farming • Wildlife • Fisheries	• Increase in temperature • High evaporation • Floods • Projected long periods of droughts • Pests invasion
Kavango East & Kavango West	Natural resource-based livelihoods Frequent flooding Comprehensive forest areas & national parks Threatening deforestation from slash and burn practices Home to 11% of Namibia's population	• Small-scale crop & livestock farming • Conservancy related tourism • Forestry • Fisheries • Housing and infrastructure	• Increase in temperature • Fluctuation in grazing availability • Increase in Malaria and other water borne diseases • Projections suggest increase of summer rainfall • Flooding (2007-2010)

Zambezi (previously Caprivi)	Natural resource-based livelihoods Frequent flooding Highest rainfall in Namibia (600mm-700mm) Largest number of perennial rivers Rich vegetation and best arable land in Namibia Dependency on subsistence agriculture and local level fishing Highest rate of Malaria in the country	• Small-scale crop farming • Conservancy related tourism • Forestry • Fisheries • Housing and infrastructure	• Increase in temperature • Increase in Malaria and other water borne diseases • Increase length of dry season • Decrease in the number of consecutive wet days • Later start and earlier end of rainy seasons • Increase of summer rainfall • Flooding (2007-2010)

2.2.3 Vulnerabilities

Vulnerability to climate change is the degree to which geophysical, biological and socio-economic systems are susceptible to, and unable to cope with, adverse impacts of climate change (IPCC, 2007b).

Developing countries are especially vulnerable to the physical impacts due to their already fragile environment, an economic structure that is highly sensitive to climatic changes, and low incomes that constrain the adaptive capacity (Stern, 2006). The United Nations Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (4AR, 2007) suggests African countries are most vulnerable, especially those which are already arid to semi-arid. Namibia, in particular, has been classified as one of the most vulnerable countries to the impacts of climate change during the submission of the Initial National Communication (INC) to UNFCC in 2002 (GRN, 2002). The vulnerability and adaptation assessment prepared for the SNC indicates that rural communities and poor people in Namibia are the most vulnerable to climate change impacts (Dirkx et al., 2008; MET, 2011). This high vulnerability is attributed to the country's natural-resource-based economy, its arid nature, and variability in climatic patterns, as well as socio-economic factors, such a poverty and high divergence of income levels, for example, which limit the adaptive capacity of its population (GRN, 2002; Dirkx et al., 2008; MET, 2011). Additionally, natural resources such as forest products and rain fed agriculture on which people depend are vulnerable and sensitive to anthropogenic climate change (Reid et al., 2007; GRN, 2002).

Many key sectors such as human health, water resources, agriculture (crop and livestock production), biodiversity, ecotourism, coastal zone management, infrastructure and energy as well as trade and industry (GRN, 2002; MET, 2011; DRFN, 2009) have been identified as vulnerable to climate change.

Climate change could reverse the country's development goals and efforts by attacking those sectors most important and most vulnerable to the country's development (such as agriculture, basic infrastructure, tourism) and has the potential to reduce the high and sustainable economic growth, increased income equality and creating employment for up to 51% of unemployed citizens to achieve the country's 2030 vision.

Moreover climate change can have severe effects on agricultural production, food security, fishing, tourism and health. The projected sea level rises could submerge some of our coastal islands and affect our entire marine industry and the coastal economy (DRFN, 2009).

Water scarcity is already a challenge in Namibia, and water is one of the sectors identified to be most vulnerable to climate change. Even without the threat of climate change, Namibia faces absolute water scarcity by the year 2020 (GRN, 2002; MET, 2011). Overall Namibia's economy already has marked boundaries to expansion due to water limitations – which is likely to worsen under climate change scenarios for the region.

Although Namibia's natural aridity already has led to the development of a multitude of auto-adaptive measures, e.g. moving from cattle ranching to wildlife management, it remains a challenge for rural communities to maintain and improve livelihood outcomes under difficult climatic circumstances. In addition, droughts and floods are generally considered normal in a highly variable climate, Namibia had to deal with an increasing number of flood and drought related extreme events in the past decade. Climate change is likely to exacerbate the impact and frequency of these extreme events.

2.2.4 GHG emissions – the role of Namibia

Article 4.1 (a) of the UNFCCC requires Parties to periodically share information about the emissions from defined sources and uptakes by sinks of the gases that are believed to contribute to global climate change. Article 12.1 (a) of the convention provides that the communication should include a national inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol (GRN, 2002).

To date, Namibia has only prepared two Greenhouse Gas Inventories, the first inventory was prepared in 1994 (du Plessis, 1994) – for the preparation of the INC (GRN, 2002) and the second inventory was undertaken in 2000 (Hartz and Smith, 2008), for the SNC.

Namibia's contribution to global greenhouse gas (GHG) emissions is negligible and it is shown to be a net sink of carbon dioxide. This is attributed to the large uptake of carbon dioxide by trees into their woody tissues (GRN, 2002) and bush encroachment. Namibia also imports between 50% and 70% of its electricity from neighbouring countries, particularly from South Africa, has low population density and small industries and agricultural sector (MET, 2011). The country is nevertheless committed to reducing its GHG emissions where this is financially and environmentally feasible (GRN, 2002; MET, 2011).

It was found that the largest differences in emissions and removals between the 1994 and 2000 inventories occur in the agriculture and Land-Use, Land Use Change and Forestry (LULUCF) sectors (Hartz and Smith, 2008). The results for CO_2-equivalent emissions and removals clearly indicate that the agriculture and energy sectors are most important with respect to emissions while the LULUCF sector is most important with respect to removals (Hartz and Smith, 2008). The agriculture and energy sectors emitted 6738Gg and 2200Gg of CO_2e, while about 10560Gg of CO_2e was sequestered (MET, 2011). The inventory report revealed that both sectors showed a growth in emissions of 81.5% (agriculture) and 15.5% (energy) in the six years. LULUCF showed an increase in sequestration of 84% (MET, 2011) as a result of an increase in campaigns to plant more trees and better forestry management practices.

Within the energy sector, transport is the most intensive contributor to GHG emissions in the country, contributing to 1025Gg CO_2e to the atmosphere in 2000, which represents more than 50% of emissions from the energy sector. In the agricultural sector, the cattle farming industry contributes most significantly, adding 195Gg of methane per annum. This represents almost 80% of the sectors' emissions (MET, 2011).

2.3 Namibia's response

Namibia has set up measures to respond to climate change because it presents a real threat to the achievements of its development objectives. The strategy aims to address and plan for action against climate change, both through mitigation and adaptation actions.

So far, the focus of Namibia's climate change response has generally been on adaptation to moderate the negative impacts and to some extent exploit beneficial opportunities associated with the impacts of climate change. Although adaptation measures are set as key priorities in tackling the impacts of climate change, the country is also committed to undertake mitigation measures where they strongly contribute to national development goals (and with the assistance of international support).

2.3.1 Namibia's Climate Response Vision

The National Policy on Climate Change (NPCC) of 2011 is the national vision on addressing climate change. It seeks to outline a coherent, transparent, and inclusive framework on climate risk management in accordance with Namibia's national development agenda, legal framework, and in recognition of environmental constraints and vulnerability. The policy further takes cognizance of Namibia's comparative advantages with regard to the abundant potential for renewable energy exploration. The NPCC will be implemented through the NCCSAP in order to deal with the threats associated with climate change.

The goal of the NPCC is to contribute to the attainment of sustainable development in line with Namibia's Vision 2030 through strengthening of national capacities to reduce climate change risk and build resilience for any climate change shocks. Namibia's long-term development vision, Vision 2030 aims to achieve a prosperous and industrialised Namibia, developed by her human resources, enjoying peace, harmony and political stability (GRN, 2011).

As stated in the fourth National Development Plan (NDP4), in order to keep our national pride of having a clean environment (as is a right stated in our Constitution) we expect all elements of society, and businesses in particular, to support a precautionary approach (as per the Precautionary Principle) to environmental challenges and alterations of the natural world contributing to climate change, undertake initiatives to promote greater environmental responsibility, and encourage the development and diffusion of environment-friendly technologies. NDP4 recognizes that environmental management is both an enabler and driver of economic development and that the utilization of our living natural resources in a sustainable manner is for the benefit of all Namibian, both present and future (NPC, 2012). In addition, the Polluter Pays Principle is necessary to protect the environmental right embedded in our constitution and to mitigate climate change.

Climate change impacts predicted for Namibia will adversely affect the extent and the speed at which long-term, medium and even short-term national development goals will be achieved. Besides that, climate change impacts have a potential to reverse our hard earned efforts in sustaining our natural environment and development if left unaddressed. The policy requires a significantly improved capacity for planning and implementation of adaptation and mitigation related activities. It considers existing coping mechanisms of vulnerable communities, households and individuals, and advocates the enhancement of coping capacities in affected communities, as well as improved institutional response and action at local, regional and national levels (GRN, 2011).

2.3.2 UNFCCC obligations

Namibia, having ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1995, resolved to adopt and implement policies and measures designed to mitigate the adverse effects of climate change on the environment and to adapt to such change (GRN, 2002; Mfune and Ndombo, 2005; MET, 2011).

Parties to the UNFCCC are committed to taking actions to address and adapt to climate change. All parties are required to report their initiatives for implementing the Convention. As part of its obligations to the UNFCCC, Namibia has prepared and submitted the Initial National Communication (INC) in 2001 and the Second National Communication (SNC) in 2011. The SNC was prepared after a series of studies were commissioned and these included the review of circumstance report capturing Namibia's vulnerability to climate change and its capacity to respond to impacts in various key sectors. The preparation of the Third National Communication (TNC) is ongoing and is expected to be finalised in 2015.

2.3.3 The existing governance and institutional framework

The Ministry of Environment and Tourism (MET) has been designated as the government agency responsible for the coordination and implementation of climate policies and measures that will have an effective response to climate change in the interest of the country to protect present and future development gains and with respect to the fulfilment of the country's obligations under the UNFCCC. However, the Office of the Prime Minister (OPM) is envisaged to take on a coordinating role in the future. The Namibia Climate Change Committee (NCCC), a broad-based multi-stakeholder committee was established in 2001 following work of an ad hoc committee (the Climate Change Advisory Committee) led by the Directorate of Environmental Affairs (DEA) in the MET. The NCCC was tasked to advise the government with respect to its roles and responsibilities under the UNFCCC as well as to coordinate the overall national climate change program. The current NCCC membership includes institutions such as MET, UNAM, NPC, METEONA, MME, MTI, UNDP, MAWF, MFMR, NAMWATER and NAMPOWER (MET, 2002).

2.3.4 Some important lessons and foundations – some of Namibia's major climate change actions already implemented

Namibia has implemented a number of enabling projects and programmes, which have enhanced some of the country's policies and institutional start-ups. The Africa Adaptation Programme (2010-2012) has probably been the most focused and concerted Government effort to develop a national approach to addressing climate change. Sector- specific initiatives like the Namibia Renewable

Energy Programme (NAMREP) have managed to eliminate some of the barriers to the adoption and nationwide promotion of renewable energy, particularly solar; yet with increasing threats and risks, more needs to be done to ensure that adoption and utilisation of both renewable energy and energy efficiency are widely scaled up.

Box 1 The various sub-project/ outputs of the Africa Adaptation Project Namibia

The Africa Adaptation Project in Namibia (AAP NAM) "Building the foundation for a national approach to Climate Change Adaptation in Namibia" (MET, 2010) aimed to build an effective leadership and institutional framework in Namibia for better coordination and integration of climate change programmes into development policy. The project had 6 sub-projects:

- National Climate Risk Management Capacity Assessments and Capacity Development Plan: The assessment focused on the existing national climate change adaptation and climate-related disaster risk reduction capacity within Namibia and subsequently led to the formulation of a Climate Risk Management (CRM) capacity development plan for the nation-wide capacity building programme. A practical and detailed 5 year strategy and a longer-term vision for addressing climate change adaptation needs in Namibia were developed based on broad consultation of individuals and institutions.
- Dynamic Systems Modelling and Threshold 21 (T21) to undertake Cross-sectoral Analyses of Climate change impacts, climate change adaptation and policy and adaptation options: Threshold 21 (T21) is a dynamic simulation tool designed to support comprehensive and integrated long-term national development planning (http://www.met.gov.na/AAP/TechnicalStudies/T21Modelling/Pages/default.aspx). The T21 initiative in Namibia has identified the core climate change issues to be tackled through the use of dynamic systems modelling and identifying the specific goals to work towards. It has also ensured multi-stakeholder participation, training key staff from various sectors in the use of the model.
- Information Packages and Targeted Awareness-raising and Training to Decision-makers and Practitioners on Climate Change Adaptation: A suite of five professional updating events were conducted in 2011, with tailor-made information packages (including a Blog) designed to interactively inform and update carefully selected professionals representing a wider range of sectors and institutions across Namibia. The theme of the approach taken was the "Climate Change Adaptation Ambassadors" - a programme aimed at engaging a critical mass of climate change adaptation-knowledgeable professionals.
- Design and Deliver Leadership Training Packages in CRM: a suite of targeted information packages tailored for ministers, parliamentarians, permanent secretaries, directors and the business community were developed to update and sensitize the decision-makers.
- Regional Climate Change Adaptation Information Toolkits: Regional climate change adaptation information toolkits were developed after intensive consultations with communities and stakeholders in each region. The toolkits are providing farmers, rural communities, and peri-urban communities with clear information on how to adapt to climate change and climate variability. The toolkits provide the target groups with clear information and simple coping methods that are applicable in their environments. These were also made available in major vernacular languages. The five toolkits were built on the work done in the Omusati region under the Country Pilot Partnership for Integrated Sustainable Land Management.
- Youth Action Programme and Outreach Strategy: Through various youth targeted activities and youth led action, and the hosting of a large National Youth Climate Change Adaptation Conference (which brought together 300 nation-wide representatives), a Youth Action Programme was developed to educate the youth on climate change and adaptation opportunities, including gender aspects, which are also addressed.

Box 2 Overview of additional climate change responses in Namibia

A variety of other responses (in addition to the AAP NAM) are being implemented by a suite of stakeholders and with the support of various cooperation partners, such as:

- Investment & Financial Flows to Address Climate Change: The project focused on quantifying the financial implications of national policy options to address climate change in the country's energy and agriculture sectors. These two sectors have been identified as Namibia's key sectors for enhanced mitigation and adaptation activities respectively.
- SPA (Strategic Priority on Adaptation) Adapting to Climate Change through the Improvement of Traditional Crops and Livestock Farming (CCA): This project aims to develop and pilot a range of coping mechanisms for reducing the vulnerability of farmers and pastoralists to climate change including variability.
- Adjusting Community Agricultural Practices to Reduce Climate Change Risk in Omusati Region (OIKE): A lot of community based projects have been implemented through Global Environmental Facility Small Grants Programme (GEF SGP) through UNDP, and these include OIKE which aimed to strengthen the resilience of communities to the adverse impacts of climate change impacts. The specific goals of OIKE are to provide the community with practical tools for adaptation and to increase community awareness about climate change risks.
- NAMREP - The Namibian Renewable Energy Programme (NAMREP) project aims to (a) improve livelihoods and income generation opportunities of rural people by providing them with access to off-grid solar energy technologies (for lighting, radio/TV, water pumping, small electric tools and refrigeration) and (b) reduce the dependency on increasingly expensive imported fuels by promoting solar water heating (to the household, and institutional and commercial sectors) and solar water pumping in the agricultural sector through the removal of barriers such as capacity and institutional barriers, public awareness and social acceptability barriers, and financial and technical barriers. In the process, NAMREP is expected to contribute to climate stabilization by reducing or avoiding CO_2 emissions in the order of 233,700 tonnes of CO_2 (over a 15-year period).
- NEEP (Namibia's Energy Efficiency Programme): The project's objective is to reduce Namibia's energy-related GHG emissions through the promotion of nationwide adoption of energy-efficient technologies and practices in the commercial and residential buildings such as government office buildings, hospitals, hotels, schools and possibly a sample of residential buildings.
- DEGREEE - The Demonstration Gobabeb of Renewable Energy and Energy Efficiency program has been developed over a 5 year period. Funded by the Danish Government through Danida, the DEGREEE project addresses the energy situation at Gobabeb. The wider objective with the DEGREE project is to demonstrate energy technology, energy efficiency and energy management with the purpose of inspiring others to apply these and by that contribute to the supply of energy to remote, isolated locations in Namibia and throughout the Southern African Development Community (SADC).

Section 3: Strategic Aims, Goal and Objectives

Aim: The NCCSAP aims to build Namibia's adaptive and mitigative capacities by identifying potential adaptation options and, where development actions also have mitigation benefits, committing to pursue these opportunities to bring the country on to a low-carbon development pathway. The NCCSAP will help to clarify national goals and objectives regarding climate change, and lay out a plan for implementing, reporting and monitoring a series of priority activities in pursuit of this aim. Furthermore, it will enable Namibia to be a more active participant in the global effort to combat climate change.

Goal

To further facilitate building the adaptive capacity of Namibia to increase climate change resilience and to optimize mitigation opportunities toward a sustainable development path, guided by the National Climate Change Policy.

Specific objectives

1. To reduce climate change impacts on Namibia's key sectors and vulnerable communities;
2. To integrate climate change issues (adaptation and mitigation) into sectoral policies, and national development planning at all levels;
3. To develop and enhance capacities at all levels and strengthen institutions to ensure successful implementation of climate change response activities;
4. To facilitate funding resources for effective mitigation and adaptation investments necessary for the effective implementation of the NCCSAP;
5. To provide an institutional framework to guide international and national climate financing modalities and support climate readiness (linking to Namibia's Climate Finance Readiness Strategy).

3.1 Structure of the NCCSAP

The Namibia Climate Change Strategy and Action Plan (NCCSAP) has been developed around four key pillars namely Planning, Adaptation, and Mitigation, and Cross-cutting issues (Figure 5). Under each pillar there are different themes. The NCCSAP outlines activities to be carried out within various sectors to adapt and mitigate to climate change. Stakeholders (lead and partner agencies) will carry out the activities and actions in a coordinated, collaborative and integrated approach to effectively deal with climate change. "Planning" in this NCCSAP refers to the ongoing efforts to develop, monitor and evaluate the performances of the NDPs, (i.e. NDP 4, 5, 6) to ensure that climate change adaptation (CCA) and climate change mitigation (CCM) are investigated at the macro-economic impact level. The Planning Phase involves review of past NDPs as done in NDP 3 prior to development of NDP 4; thus in the current Phase of the NCCSAP, the Planning Phase is partially done under the NDP 4, but will involve review of CCA and CCM implications at the mid-term review of the NDP 4 to ensure that the NDP 4 will include specific strategies and objectives that are in line with the NCCSAP.

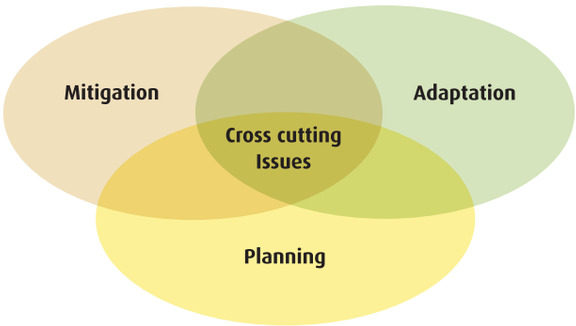


Figure 5: Structural aspects of the NCCSAP

3.2 Adaptation

Adaptation is defined as any adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities (harness any beneficial opportunities) (IPCC, 2007a). Adaptation to climate change is comprised of various actions by government, agencies, private sector, civil society and even households. It involves improving society's ability to cope with the resulting impacts (positive and negative) of changes in climatic conditions across time and policy scales.

The consultation process of developing the NPCC and NCCSAP identified four adaptation key themes that are critical to Namibia and require urgent responses. The background to each theme is provided in the next section – synopsis – "Agenda A":

1. **Food security and sustainable biological resource base**
2. **Sustainable water resources base**
3. **Human health and well being**
4. **Infrastructure development**

3.3 Mitigation

Mitigation refers to an anthropogenic intervention to reduce the sources or enhance the sinks of greenhouse gases (IPCC, 2001). Actions on reducing current and future emissions include using renewable energy sources and energy efficient technology among many other actions. Mitigation is rooted in the "transition to move toward a low-carbon development path" taking into consideration Namibia's long term Vision 2030. These themes were prioritised as critical to Namibia's and background to them is provided under the next section – synopsis - "Agenda B":

1. **Sustainable energy and low-carbon development**
2. **Transport**

3.4 Cross-cutting issues concerning adaptation and mitigation

Cross-cutting issues (themes) were identified and prioritised during consultations with stakeholders and they are in line with Namibia's Climate Risk Management (CRM) Capacity Development Plan (CDP) developed in 2011 as part of the AAP. Detailed background for each theme is provided in the next section – synopsis - "Agenda C":

1. **Capacity building, training and institutional strengthening**
2. **Research and information needs, including how to use climate change information**
3. **Public awareness, participation and access to information**
4. **Disaster reduction and risk management**
5. **Financial, resource mobilisation and management**
6. **International cooperation and networking**
7. **Technology development and transfer**
8. **Legislative development**

Section 4: Guiding Principles

The development of the NCCSAP is based on the guiding principles outlined in Namibia's NPCC. These principles provide guidance for a response to climate change that is nationally appropriate, effective, efficient, fair, non-discriminatory and timely. The NCCSAP is guided by the following principles (GRN, 2011):

Principle 1: Mainstreaming climate change into policies, legal framework and development planning

The Government of Namibia recognises the need to prioritise climate change issues and integrate climate change into sectoral policies, as well as mainstream climate change into development planning to ensure that it is addressed at appropriate levels at all times.

Principle 2: Sustainable development and ensuring environmental sustainability

The Government of Namibia recognises the need for Namibia to develop in a way that does not compromise the ability of current and future generations to meet their needs.

Principle 3: Stakeholder participation in climate change policy implementation

The Government of Namibia recognises the importance of meaningful participation in the planning, development and implementation of climate change activities at local, regional and national level. The partnering with Non-Governmental Organisations (NGOs), Academic Institutions, Community Based Organisations (CBOs) and Faith Based Organisations, and the private sector, in climate change adaptation and mitigation is integral to the successful implementation of the Strategy.

Principle 4: Awareness generation, education, training and capacity building are building blocks

The need for and importance of raising awareness, building capacity and empowering stakeholders at local, regional and national levels and at the individual, institutional and systemic levels to ensure a collective and timely response to climate change is emphasised. There is also a need to appropriately integrate climate change into the education system to generate awareness and capacity at the early stages of educational development in the country.

Principle 5: Development should be based on notions of human rights and equity

The Government of Namibia advocates for the practising of human rights-based development in accordance with national and international law at all times during implementation of climate change response activities. The Strategy bases itself on the premise of human rights and well-being, considering that combating climate change will contribute to equality, poverty reduction and sustainability.

Principle 6: Promote and address 'adaptation' and 'mitigation' as key approaches

The Government of Namibia advocates for the development of adaptation and mitigation measures that will reduce Namibia's vulnerability to climatic variability and change, while addressing the needs of the most vulnerable social groups and sectors.

Principle 7: Promote Public Private Partnerships to foster involvement of all sectors in sustainable development

The Government of Namibia will encourage the development of public private partnerships contributing to climate change adaptation and mitigation. The private sector has a strong role to play, including investment, the development, and transfer of technology for climate change adaptation and mitigation, as well as capacity building.

Section 5: Namibia's Climate Change Strategy and Action Plan

5.1 Agenda A: Adaptation

Theme A1: Food Security and Sustainable Resource Base

Theme synopsis

a) Agriculture (crop and livestock)

Approximately 48% of Namibia's rural households depend on subsistence agriculture (NPC, 2012). Agriculture contributes 7.3 % to the national Gross Domestic Product (GDP) (CIA World Fact book, 2013). The most important areas in crop agriculture are the wet North Eastern part of the country (Zambezi and Kavango regions), the North Central part of the country and the area around Grootfontein, known as the '*food basket*' of Namibia. During flooding in wet regions of the country, large tracts of land cannot be cultivated or grazed because of water logged soils and limited pastoral mobility. However, flooding can also have a positive effect as the soil fertility of the floodplains is increased by the sediments and organic matter that come down with the flood. Climate change impacts are likely to affect crop agriculture through increased evaporation rates and increased salinization of the soil. Livestock farming will suffer more from the prolonged impacts of climate change compared to wildlife because wild animals are generally better adapted to an inconstant environment. A shift from livestock based to wildlife based production is seen as a good adaptation strategy. Some of climate change projected impacts on agriculture include:

- Crop failure leading to reduced/poor crop yields due to changes in rainfall pattern and increased temperature (Lambrou and Piana, 2005);
- Livestock losses due to increased droughts and diseases, and reduced feedstock.

b) Natural resources – biodiversity

Namibia's biodiversity is a fundamental to livelihood generation and a national asset of significant value. In addition, it underpins an important nature-based tourism industry (MET, 2011a). Climate change impacts (sea level rise, changes in temperature and rainfall) may affect natural resources: temporal and spatial shifts in habitat/habitat loss, loss of biodiversity and ecosystems, species diversity, and invasive species among others (World Bank, 2010). Indigenous plants such as the Kalahari (Tsama) melon and devils claw which are highly valued for their medicinal properties are already experiencing distributional changes.

c) Marine and inland fisheries

Fisheries and aquaculture play important roles for food supply, food security, and income generation (Cochrane *et al*., 2009). Namibia has an important offshore marine fisheries sector which benefits from the high productivity of the Benguela current upwelling system. However, this productivity is sensitive to changes in the frequency, distribution and timing of upwelling (MET, 2011; GRN, 2002; Reid *et al*., 2008; Cochrane *et al*., 2009). The warming of the Benguela current along the Namibian

coast is likely to affect the distribution of fish stocks and foreign species population. For instance, jelly fish populations are projected to increase southwards from northern Angola. Inland fisheries could experience increases in productivity in years of increased river flow in the North Central parts of the country, but is expected to suffer from less predictable flow and more frequent flood and drought events. Main projections in this sector include:

- The climate change impacts on marine and inland fisheries are not fully understood, but Reid *et al*., 2008 suggested that a 50% reduction in output is a feasible estimate over the coming fifty years;
- Inland fisheries including aquaculture may be negatively impacted due to the disruption of frequent and intensive flooding regimes and reductions in river flow (MET, 2011);
- Increases in temperature could decrease fish-stocks (Badjeck *et al*., 2009).

d) Forestry

Changes in a variety of ecosystems are already being detected, particularly in southern African ecosystems at a faster rate than anticipated (Boko *et al*., 2007). The Zambezi and Kavango region are the most forested regions in the country. These forests form a very important aspect in sustaining peoples' livelihoods as they are utilised both for wood and non-timber products. With climate change and deforestation, the distribution and population of tree and shrub species will be affected as well as their occurrence in specific areas.

Proposed Strategic Aims:

Strategic Aim 1: Climate change understanding and related policy responses in food security are further improved.

Strategic Aim 2: Develop, identify and disseminate climate resilient crop farming practices.

Strategic Aim 3: Identify (pilot) climate resilient livestock breeds with local farmers and herders.

Strategic Aim 4: Further promote game meat as a sustainable animal protein source for domestic food supply.

Strategic Aim 5: Best sustainable land management (SLM) and suitable land use practices are tested and implemented at both national and local level.

Strategic Aim 6: Early Warning System (EWS) and Climate Risk Management (CRM) systems are developed/improved and implemented.

Strategic Aim 7: Adaptation strategies are improved by monitoring and establishment of baseline data on extreme events.

Strategic Aim 8: Conservation measures to utilize sustainable forest resources for food security are in place and implemented at community level, building climate change resilience.

Strategic Aim 9: Encouraging approaches that lead to sustainable management and utilization of fisheries and marine resources.

Strategic Aim 10: Promote integrated fisheries and marine resources management.

Strategic Aim 11: Strengthen and encourage integrated coastal zone management plans for

the protection of marine life.

Strategic Aim 12: Conservation, utilization and development of biological resources and maintenance of resilient ecosystems to ensure climate resilience and environmental sustainability.

Theme A2: Sustainable Water Resources Base

Water is primarily the limiting factor to development in Namibia (MET, 2011a). The exacerbation of water scarcity by climate change will have a significant impact on the country's socio-economic development leading to major implications on all other sectors. With the already extreme high temperatures and the dry climate of Namibia, evaporation rates in the country are very high (MET, 2011; GRN, 2011). Ground water, which can be exploited through boreholes, is often of poor quality and extremely saline. Even without climate change, arid Namibia is expected to face severe water scarcity in the near future (MET, 2011: GRN, 2002). Predicted impacts on the water sector in Namibia include:

- Decreased water availability, quantity and quality, low groundwater recharge, increased variability of rainfall, temperature increase, prolonged and more severe droughts, floods, declining soil moisture, and increased evapo-transpiration.
- Namibia is already facing water scarcity with predictions of absolute water scarcity by 2020 even without climate change (MET, 2011: GRN, 2002).

Proposed Strategies Aims:

Strategic Aim 1: Further improve the overall climate change understanding and related policy responses in water resources sector.

Strategic Aim 2: Monitoring and data collecting technologies of surface and underground water are developed and implemented at basin/watershed level.

Strategic Aim 3: Strategies for harvesting and capturing water during the rainy season are well formulated and implemented and guidelines for more efficient water use by sectors, households and individuals are provided.

Strategic Aim 4: Improve access to sanitation and safe drinking water for all, particularly in flood-prone areas.

Strategic Aim 5: Promote conservation and sustainable utilisation of water resources.

Strategic Aim 6: Improve Trans-boundary cooperation regarding water resources.

Strategic Aim 7: Support institutional and human capacity building in integrated water resources management and use.

Theme A3: Human Health

Addressing human health is entrenched in Namibia's Vision 2030 objectives (Office of the President, 2004). Poor sanitary conditions as a result of flooding (e.g. cholera outbreaks) in some areas and malnutrition as a result of reduced crop yields and livestock productivity will increase illness and child mortality including malaria and other water borne diseases (GRN, 2011). Climate change will pose serious threats to human health (Stern, 2006). In Namibia, certain diseases are predicted to change patterns, with flood related illnesses on the increase in certain areas (e.g. malaria, potentially cholera), whilst heat stress and extreme dryness will impact on human and animal health exacerbating vulnerabilities in areas where food and water supplies already are a challenge (von Oertzen, 2011). Predicted health impacts include:

- Changes in temperature, extreme weather events and precipitation are expected to have both direct and indirect impacts on human health, increasing the potential risk of malnutrition as well as water borne and spread diseases including diarrhoea, cholera and malaria.
- Increase in temperature will lead to heat-related illness and put to risk the already vulnerable groups such as the old, already sick people (e.g. with HIV/AIDS) and children.

Proposed Strategic Aims:

Strategic Aim 1: Health sector climate change strategy in place.

Strategic Aim 2: Strengthen disease prevention and treatment for those diseases expected to increase due to climate change.

Strategic Aim 3: Develop adaptation mechanisms to climate change related health risks and disseminate information for effective preparedness.

Strategic Aim 4: Strengthen the existing mechanisms for the vulnerable groups to access basic services and health facilities during climate related emergencies.

Theme A4: Infrastructure

Public infrastructure is the rolling wheel for economic growth and national development and is needed as a basic enabler for industries to perform at the required level of output to reach Vision 2030 (NPC, 2012). Predicted impacts of climate change could severely affect public infrastructure (housing, roads, water facilities, electricity transmission, communication systems, sewerage and drainage systems) in Namibia (GRN, 2011). These include the following impacts on infrastructure:

- Flood events are predicted to become more aggressive, destructive, and frequent with strong potential for increased damage to infrastructure particularly in the already prone areas and settlements;
- Sea level rise may inundate coastal towns including Walvis Bay, with the harbour extremely vulnerable.

Proposed Strategic Aims:

Strategic Aim 1: Establish, improve and enforce standards for infrastructure development and develop infrastructure that is more resilient to climate events, and integrate climate change issues into design and development planning strategies.

Strategic Aim 2: Encourage the adoption of town and regional planning and development standards and principles toward climate resilient human settlements.

Strategic Aim 3: Encourage adjustment of designs and environmentally sensitive construction and maintenance methods.

5.2 Agenda B: Mitigation

Theme B1: Sustainable Energy and Low Carbon Development

Energy production in Namibia is confined to the electricity and fossil fuel sector with total electricity generation capacity of about 495.5 MW from mainly Hydro, diesel and coal (MME, 2012). Fossil fuel energy (diesel, petrol, kerosene, LPG and coal) is 100% imported and about 50% of Namibia's electricity is imported from neighbouring countries (MME, 2012). Mitigation options in the energy sector focus on energy efficiency and reduce carbon-intensive fuels (IPCC, 2007b).

Proposed Strategic Aims:

Strategic Aim 1: Promote and develop renewable energies at all levels to reduce GHG emissions.

Strategic Aim 2: Develop and diversify secure energy backup systems through renewable (energy security) and efficient use of energy.

Strategic Aim 3: Promote clean energy sources and reduce GHG emissions from Land-Use, Land Use Change and Forestry (LULUCF) –including agriculture sector and enhance the GHG sink.

Strategic Aim 4: Promote reduction of GHG emissions from industries (e.g. major construction, mining, manufacturing).

Strategic Aim 5: Improve waste management and control harmful emissions following the Polluter Pays Principle.

Theme B2: Transportation

The transport sector plays a crucial and is a powerful sector in terms of energy use and emissions of GHGs around the globe (IPCC, 2007b). Transport fuel consumption constituted over 70% of Namibia's total demand in 2006 (MET, 2011). In the same vein, tourism as it relates to transport also has a large role to play. If the tourism sector makes a collaborative effort to embrace change and take advantage of the opportunities presented by climate change, Namibia has the potential to develop as a leading carbon-neutral tourism destination (Davidson, 2009; Jones *et al.*, 2009).

Proposed Strategies Aims for this theme:

Strategic Aim 1: Foster other sources of transportation that do not contribute or have less GHG emissions by introducing an improved public transportation system.

Strategic Aim 2: Promote the fuel efficiency in transport system toward low GHG emission.

Strategic Aim 3: Scope the potential for carbon tax – including positioning Namibia as a carbon-neutral tourism destination.

5.3 Agenda C: Cross-cutting issues

Theme C1: Capacity building, training, and institution strengthening

Capacity building, training and institution strengthening are essential to addressing climate change issues and sustainable development. Climate change is a complex issue and requires a better understanding to be effectively addressed. Inadequate capacity at all levels is one of the major bottlenecks toward understanding and dealing with climate change issues in the country (Mfune and Ndombo, 2005). Building human and institutional capacity to address climate change must be a fundamental component of the strategy.

Proposed Strategic Aim:

Strategic Aim 1: Implement the Climate Risk Management (CRM) Capacity Development (CD) Plan for Namibia.

Theme C2: Research and information needs

Although consensus among the scientific community has been reached around the anthropogenic influence on our climate (IPCC, 2011; GRN, 2011), climate change projections and resulting impacts at national and local level are not well understood. Tailored and country specific research and information is crucial to our understanding of the likely impacts of climate change. Evidence-based research and indigenous knowledge are essential for improved decision-making on adaptation and mitigation actions benefiting human wellbeing.

Proposed Strategic Aims:

Strategic Aim 1: Improved functional climate monitoring system in Namibia.

Strategic Aim 2: Monitor ecosystem and biodiversity changes and their impacts related to climate change.

Strategic Aim 3: Coordinate and encourage research and information sharing and capacity building for knowledge production on climate change.

Strategic Aim 4: Undertake and document traditional/indigenous knowledge and coping mechanisms.

Strategic Aim 5: Determine the likely cost of adaptation and mitigation in the key sectors.

Strategic Aim 6: Investigate macroeconomic and sectoral impacts of climate change.

Theme C3: Public awareness, participation and access to information

Public awareness is important as it empowers stakeholders to participate and make informed decisions (GRN, 2011). Similarly, access to information and understanding of climate change issues forms an important decision making tool for climate change mitigation and adaptation. Educating the general public and creating awareness on climate change, promoting public participation in dealing with climate change are vital. Overall awareness and understanding of climate change is relatively low particularly at local and regional level and needs to be improved.

Proposed Strategic Aims:

Strategic Aim 1: Develop a communication strategy on climate change (develop and disseminate public awareness materials on climate change).

Strategic Aim 2: Promote public participation in addressing climate change and development of adequate responses.

Theme C4: Action plan for Disaster Reduction and Risk Management

Namibia's economy and livelihood is dependent on natural resources and agriculture. Almost every year, Namibian communities face devastating losses through extreme events, such as floods or droughts. Extreme events (or disasters) and associated consequences have significant impacts on communities, the economy, infrastructure and the environment (OPM, 2011), compromising sustainable development. Climate change is likely to amplify these extreme events by increasing the frequency and intensity of disasters. Climate change adaptation and disaster risk reduction have a similar approach and mutual benefits, however, quite often they operate in isolation from each other.

Proposed Strategic Aims:

Strategic Aim 1: Strengthen the climate risk induced disaster management strategy, forecasting and Early Warning Systems (EWS).

Strategic Aim 2: Improve the disaster preparedness and a coordinated and appropriate timely disaster response mechanism.

Theme C5: Financial Resource Mobilisation and Management

Adaptation is not an easy or cost-free option because it often involves the residual damages of climate change. Adaptation itself will bear a cost (Stern, 2006). However, in the medium- to long-term, the cost of adaptation is much lower than the cost of not adapting. The emerging argument about adaptation is that it can be simple and free, but this depends on the form of adaptation (Jones, 2010). Although it is cumbersome to estimate precisely the adaptation cost or future pricing of adaptation efforts, sustainable financing mechanism should be developed to address climate change.

Proposed Strategic Aims:

Strategic Aim 1: Develop a strategy to finance climate change mitigation and adaptation activities.

Strategic Aim 2: Scope the establishment and hosting mechanism for a sustainable development fund for large climate investments and financing.

Theme C6: Action plan for International Cooperation and Networking

As climate change is a global concern, international cooperation and networking is decisive in addressing both mitigation and adaptation. Being a developing country, international cooperation, and networking is crucial to Namibia to be able to address climate change.

Proposed Strategic Aims:

Strategic Aim 1: Participation in regional and international cooperation programs and activities on climate change.

Strategic Aim 2: Pursue the UN environmental international obligations under various conventions particularly the UNFCCC.

Theme C7: Technology Development and Transfer1

Technology is central to both adaptation and mitigation solutions (IPCC, 2007). The Bali Action Plan emphasizes the importance of effective mechanisms for scaling up the development and transfer of affordable and environmentally sound technologies particularly to developing nations (World Bank, 2008). The role of technology in the socio-economic growth of Namibia is entrenched the Namibia's long term Vision 2030 (Office of the President, 2004) and it requires location-specific approaches.

Proposed Strategic Aims:

Strategic Aim 1: Identify technology development and knowledge transfer needs to address and deal with climate change.

Strategic Aim 2: Development of technologies for mitigation and adaptation promoted and supported.

1 Technology Transfer as defined in the IPCC's Special Report on Methodological and Technological Issues as a broad set of processes covering the flows of know-how, experience and equipment for mitigating and adapting to climate change amongst different stakeholders (Brocke, Mouton and Classen, 2005).

Theme C8: Action plan for Legislative development

Although most of the sectors (particularly those that are likely to be affected by climate change) in Namibia have their legal and policy instruments, these sector policies have not integrated climate change issues. With the emerging evidence of climate change severe impacts on many sectors, the need to review, develop and update policies cannot be overemphasised.

Proposed Strategic Aims:

Strategic Aim 1: Review and update the existing legislation to reflect climate change issues.

Strategic Aim 2: Review the National Climate Change Policy as new information arises.

Theme C9: Gender issues and child welfare

It is very important to ensure that the needs of women, men, children, youth and the elderly are mainstreamed in climate change planning. Namibia's vulnerability and adaptation assessment indicates that the poor and rural populations of Namibia, most of them being women, are most vulnerable to climate change because rural populations are extremely dependant on natural resources (Dirkx *et al.*, 2008). According to Angula (2010), women form the majority of the population in rural areas, and therefore depend heavily on natural resources and rain-fed resources which are sensitive to climate change.

Proposed Strategic Aims:

Strategic Aim 1: Ensure that communities are empowered and both men and women participate meaningfully in the planning, testing and roll out of adaptation and mitigation activities in both rural and urban areas.

Strategic Aim 2: Ensure that climate change response activities are gender sensitive.

Section 6: Namibia's Climate Change Action Plan Framework

The timeframe for the NCCSAP is set for the time period of 2013-2020, which is broken down as follows in the log-frame:

- "Short" term: between year 1 to 3
- "Medium" term: between year 4 to 5
- "Long" term: after year 5

6.1 Agenda A: Adaptation

Theme A2: Sustainable Water Resources Base

Strategic Aim	Budget [Millions NAD]	Targets	Activity	Time frame	Lead Agency	Partner Agency
1. Further improve the overall climate change understanding and related policy responses in the water resources sector	2 mil	*Understanding of climate change policy responses on the water sector is maintained and improved*	a) Sustain well water related research and capacity development in all aspects of climate change	2014-2017	MAWF	NAMWATER, MET, DRFN
			b) Improve water planning and related decision-making processes to better manage climate change risk and uncertainty			
2. Monitoring and data collecting technologies of surface and underground water are developed and implemented at basin/ watershed level	1,5 mil GIZ	*Have water monitoring and data collecting tools in all river basins in the country by 2017*	a) Control the use of resources in the watershed areas	2014-2017	MAWF	all line ministries, NAMWATER, Meteorological, Municipalities, UNAM, DRFN, PoN, NGOs, DRFN
			b) Monitor changes in water quality and quantity available for drinking			
			c) Model and forecast future water changes due to climate change			
			d) Undertake integrated water and land use planning			

3. Strategies for harvesting and capturing water during the rainy season are well formulated and implemented, and guidelines for more efficient water use by sectors, households and individuals are provided	TBD	*Water infrastructure and facilities such as earth dams etc. constructed and optimizing the existing water facility and access*	a) Identify relevant alternative technologies for water harvesting b) Promote water harvesting, and adopt water efficient technologies c) Identify and enhance positive outcomes from impacts of climate change d) Explore other water sources or water infrastructure/innovative water storage of rain water, construction of dams, and maintain the water infrastructure	2014-2018	MAWF	NAMWATER
4. Improve access to sanitation and safe drinking water for all particularly in flood-prone areas	75 mil for the first three years	*On-going improvement of sanitation done in conjunction with sanitation policy and strategy –more than half of the population in all towns have access to sanitation*	e) Reduce pollution of water sources e.g. prepare against water contamination (chemicals) e.g. industries, irrigation schemes due to flooding f) Assess needs and provide sanitary services and improve drainage capacity in areas that are vulnerable to climate related health risks to be amplified by floods g) Facilitate development and improve sanitation facilities in rural and urban communities	2014-2018	MAWF	NAMWATER, Municipalities, DRFN, Red Cross
5. Promote conservation and sustainable utilisation of water resources	5 mil	*Conservation and sustainable use of water promoted and measures implemented*	h) Promote water conservation including water recycling and reuse and reduction of water wastage (using standards, incentives/ disincentives)	2014-2020	MAWF	NAMWATER, MET, Municipalities, MRLGHRD, DRFN

6. Improve trans-boundary cooperation regarding water resources	TBD in conjunction with responsible institutions	*Trans-boundary cooperation enhanced, with at least a minimum of two assessments of water resource use every second year*	a) Share information on water use, demand and water resources development b) Establish agreed procedures for conflict resolution regarding water use and management c) Develop joint trans-boundary research as well as poverty-oriented water-related investments	2013-2020	MAWF	MFA, NAMWATER, MET, MRLGHRD, UNAM, PoN, DRFN
7. Support institutional and human capacity building in integrated water resource management and use	Make use of the existing budget	*On-going efforts of supporting institutional and human capacity built e.g. MSc in IWRM*	a) Promote stakeholder meetings to share experiences on water use and management b) Improve water governance and increase collaboration amongst various water sectors - water supply and sanitation, irrigation and ecosystem maintenance	2014-2018	MAWF	NAMWATER, MET, Municipalities, MRLGHRD, PON, MoHSS, UNAM, DRFN

Theme A3. Human Health and Well-being (or security)

Strategic Aim	Budget [Millions NAD]	Targets	Activity	Time frame	Lead Agency	Core – Lead Agency
1. Health sector climate change strategy in place	1 mil	*By 2015 MoHSS has developed an initial health sector strategy on CC, incl. an assessment of research needs, as well as a national CRM capacity development plan for the sector*	a) Model climate risks to health sector, incl. projections of disease prevalence, as well as adequacy of current health responses	2014-2015	MoHSS	Red cross

2. Strengthen disease prevention and treatment for those diseases expected to increase due to climate change	120 mil	*By 2020 access to adequate health services specifically addressing climate related diseases increased by 80%*	a) Improve health facilities particularly in areas that are at high risk and vulnerable (densely populated areas) and enable them to cope with the additional climate related predicted health issues	2015-2020	MoHSS	MWT, NMA, NGOs, Private sectors, OPM
			b) Stock medications that would be needed to treat climate related health risks (preparedness)			
3. Develop adaptation mechanisms to climate change related health risks and disseminate information for effective preparedness	5 mil (pa based on the emergency)	*Prevention and treatment measures strengthened, contingency plans developed and in place.*	a) Develop a preparedness programme and adaptive capacity strategies to respond to the impacts on the health sector	2013-2018	MoHSS	OPM, MWT, NMA, NGOs, Private sectors
			b) Strengthen and improve disease prevention and treatment measures for common water borne diseases and food borne diseases			
			c) Strengthen the contingency plans (transport, medicines) for outbreak of diseases			
4. Strengthen the existing mechanisms for the vulnerable groups to access basic services and health facilities during climate related emergencies	2 mil	*Existing mechanisms for the vulnerable groups strengthened and ready in case of emergency*	a) Put in place contingency plan to all vulnerable groups to access basic services during flood disaster periods	2014-2017	MGECW & MoHSS	OPM, NDF, UN System, Red Cross
			b) Develop measures to safeguard vulnerable groups with emphasis on the special needs of women and children from flood and drought related problems			

Theme A4: Infrastructure

Strategic Aims	Budget	Target	Activity	Time frame	Lead Agency	Core – Lead Agency
1. Establish, improve and enforce standards for infrastructure development and develop infrastructure that is more resilient to climate events	Budget to be availed by all institutions involved	*By 2018, national strategy is developed and improved to guide the infrastructure development Climate change issues are integrated into all development planning and infrastructure development Infrastructure development standards are established, updated based on the needs by 2018*	a) Carry out ?. Carry out climate change infrastructure risk assessment and conduct climate change risk assessment studies defining the risk for various infrastructures for each sector	2013-2016	MWT	NPC, MLR, MME, MET, MRLGHRD,RA, NAMPOWER, NAMWATER, TransNamib , Telecom, PoN, UNAM, NAMPORT, Municipalities
			b) Develop a climate change infrastructure risk preparedness plan and risk reduction measures to increase resilience in all sectors			
			c) Develop the national strategy and guidelines for infrastructure (all infrastructures) development.			
			d) Develop an action plan with costs on the implementation of the preferred methods for protection of infrastructure			
			e) Encourage and integrate climate change risks in the design and implementation of infrastructure development plans	2015-2020	MWT	NPC, line ministries, OPM, Telecom ,NAMPOWER, NAMWATER, TransNamib
			f) Impose penalties against non-compliance to infrastructure spatial planning and development regulations and laws			
			g) Discourage building of infrastructures from encroaching into vulnerable areas, high risk zones and low lying areas	2015-2020	MWT	MRLGHRD, RA, MET,MME
			h) Rehabilitate and improve existing infrastructure in areas where extreme events are predicted to cause damage or destruction to infrastructure			
			i) Design and construct infrastructure -resistant and resilient to climate e.g. roads			

2. Encourage the adoption of town and regional planning and development standards and principles toward climate resilient human settlement	1 mil - mainly for enforcement of town planning regulations	*Develop and update the standards and codes of town and regional planning, disseminated them widely*	a) Conduct regional studies of vulnerable, at-risk and low lying areas that should not be settled b) Regulate establishment of new human settlements to prevent encroaching into areas that are vulnerable to and at risk of extreme events such as floods c) Enforce town and regional planning and development regulation and standards (including drainage system) particularly in vulnerable areas to extreme events e.g. informal settlements patterns	2013-2017	MRLGHRD	MLR,MWT, Regional and Local Authorities, Association of Local Authorities
3. Encourage adjustment of designs and environmentally sensitive construction and maintenance methods – integrating climate change issues into design and development planning strategies	TBD	*New designs integrate environmental issues, and maintenance methods are environmental sensitive*	a) Encourage the use of appropriate designs and environmentally sensitive construction and maintenance methods	2014-2018	MWT	MRLGHRD (Municipalities) MET, MAWF

6.2 Agenda B: Mitigation

Theme B1: Sustainable Energy and Low Carbon Development						
Strategic Aim	**Budget**	**Targets**	**Activity**	**Time frame**	**Lead Agency**	**Partner Agencies**
1. Promote and develop renewable energies at all levels to reduce GHG	TBD	*Renewable energy sources explored and promoted*	a) Promote, invest in renewable energy sources (e.g. solar water heating technologies) b) Explore and undertake further feasibility studies, building on previous studies, of renewable energy sources to harness energies in potential areas (e.g. wind, solar, biogas, etc)	2014-2020	MME	NAMPOWER, PoN, MAWF, Private Sector, MET, NGOs
2. Develop and diversify secure energy backup system (energy security) and efficient use of energy	TBD	*By 2018 different energy sources are developed and contribute to the overall energy supply in the country*	a) Invest in clean energy sources and choose the most cost effective one b) Ensure energy efficiency in production and use (buildings, air condition, light bulbs) through appropriate investments, policies and incentives	2015-2020	MME	NAMPOWER, MAWF, ECB, REDS, IPPs, NAMCOR, NGOs, Private Sectors
3. Promote and reduce GHG emissions from Land-Use, Land Use Change and Forestry (LULUCF) –including agriculture sector and enhance the GHG sinks	4,5 mil	*The current rate of GHG emission is reduced and GHG absorption is enhanced and promoted within the role players*	a) Encourage and promote conservation agricultural practices to increase crop diversification and soil carbon storage b) Update the inventory of GHG emissions from LULUCF and agriculture and its reduction potential c) Explore possibility of development of CDM projects under LULUCF d) promote agroforestry, afforestation of deforested landscapes and conservation of forests and forest resources	2014-2018	MAWF	NNFU, NAB, PoN, UNAM, MET

4. Promote reduction of GHG emissions from industries (e.g. major construction, mining, manufacturing) both in public and private sector	3,5 mil	*GHG reduction within industries is promoted and reduced*	a) Promote and implement Environmental Management Systems and apply standards that integrate reduction of GHG emissions	2014-2017	MET	MME, MTI, MFMR, NAMCOR, MAWF,ECB, Private Sector, NAMPOWER
			b) Develop and implement practices that reduce GHG emissions from industries e.g. use of gas filters from industrial emissions			
			c) Facilitate the establishment of GHG emission targets to be adhered to by industries			
5. Improve waste management and control harmful emissions following the Polluter Pays Principle	4,5 mil	*Harmful emissions are controlled and proper waste management disposal systems in place, industries take responsibility for the waste they create*	d) Encourage and improve and regulate dumping / disposal of waste areas e.g. urban areas, mining waste	2014-2017	MET	MRLGHRD, municipalities and town councils; Private sector, Industry
			e) Find an alternative use for waste e.g. recycle, reuse			
			f) Initiate compulsory commercial waste recycling			
			g) Scope and encourage the application of the Polluter Pays Principle amongst industries			

Theme B2: Transport

Strategic Aim	Budget [Millions NAD]	Target	Activity	Time frame	Lead Agency	Partner Agency
1. **Foster other sources of transportation that do not contribute or have less GHG emissions by introducing improved transportation system**	2,5 mil	*Other sources of mobility explored and implemented by 2018 in consultation with all relevant players at all levels*	a) Look into ways to improve the transport system e.g. through transport master plan including biking, walking particularly in urban towns and sustainable public transport	2015-2020	MWT	MME, MET, Local authorities, Trans-Namib, Roads Authority, NPC, MoF.
			b) Promote the practice of subjecting transport infrastructure development to EIA through Environmental Management Plans (EMPs)			
			c) Explore other possible means of transportation that have less or do not contribute to GHG emission			
			d) Improve quality of services (especially in terms of duration of travel to desired destination and cleanliness) to attract mass population e.g. public transport			
2. **Promote fuel efficiency in transport systems toward low GHG emission**	2,5 mil	*Fuel efficiency in transport systems toward low GHG emission promoted and measures put in place relating to enforcement (where possible)*	a) Regulate importation of cars to promote certain fuel standards, or environmentally friendly vehicles	2015 - 2018	MME & MWT	MET, EIF
			b) Encourage fuel switching, for instance to the use of LPG			
			c) Utilization of low emission energy sources, for example natural gas (including for small and medium scale business)			
			d) Undertake mandatory and random vehicle inspections and maintenance programs, e.g. spot check for exhaust emissions			
			e) Institute an environmental levy on old, used imported vehicles.			

3. Scope the potential for carbon tax – including positioning Namibia as a carbon-neutral tourism destination			a) Feasibility study on carbon taxing for heavy transport industry b) As recommended in previous studies on ecotourism and climate change in Namibia, actively raise awareness of climate change implications for tourism and highlight the need for accuracy of tourism growth targets in light of climate change implications c) Scope and test feasibilities of positioning Namibia as a carbon-neutral tourism destination	2015 - 2018	MET and MWT	Tourism Industry

6.3 Agenda C: Cross-cutting Issues

Theme C1: Capacity Building, Training, and Institution Strengthening[1]

Strategic Aim	Budget [Millions NAD]	Target	Activity	Time frame	Lead Agency	Partner Agencies
1. Implement the Climate Risk Management (CRM) Capacity Development (CD) strategy for Namibia developed in 2011	1,3 mil **(US$)** (CRM CD, 2011 developed through AAP)	*By 2020, the CRM CD is fully implemented and its objectives are met*	a) Implement all activities and actions listed in the CRM CD plan	2014-2019	Institutions listed in the CRM CD plan	All line ministries, institutions listed in the CRM CP – refer to the CRM CD Plan available at the MET
			b) Roll out the Regional Climate Change Adaptation toolkits	2013-2020	Line ministries	private sectors, NGOs, Donors

Theme C2: Research and Information Needs

Strategic Aim	Budget [Millions NAD]	Targets	Activity	Time frame	Lead Agency	Partner Agencies
1. Improved functional climate monitoring system in Namibia	75 mil	*Have a functional monitoring system for the whole country by 2020*	a) Improve weather stations for effective monitoring	2015-2018	Meteorological Services	MET, MAWF, PoN, UNAM, Private sector
			b) Improve climate monitoring and modelling (with outside capacities)			
			c) Improve accuracy of climate change projections and understanding			
			d) Provide relevant information to sectors for sector risk and V&A analyses			
			e) Provide EWS and agro-meteorological information			
2. Monitor ecosystem and biodiversity changes and their impacts related to climate change	2,5 mil	*Changes in the biodiversity and ecosystem monitored and documented*	f) Support and promote activities of the Namibia Environmental Observatories Network (NaEON) to better understand CC risks and impacts on ecosystems	2014-2017	MET	MoE, MME, MAWF, MFMR, PoN, UNAM , DRFN, Agriculture unions
			g) Develop and support participatory ecosystem monitoring systems by involving local trained people including all stakeholders and local communities			
			h) Ecosystem vulnerability analysis – ecosystem based adaptation and mitigation			

3. Coordinate and encourage research and information sharing capacity building for knowledge production on climate change	1,5 mil	*Research and information shared among the role players and affected communities by 2018*	a) Develop and maintain a modern climate change data base on a user friendly web portal dedicated to climate change b) Identify and prioritise top research and information needs for addressing climate change in Namibia – develop cross-sectoral research agenda and update regularly c) Conduct research on impacts of climate change on crops, livestock, fisheries, forests, pests and diseases a.o. and develop appropriate adaptation responses (see also Agenda A)	2014-2017	MET in partnership with other line ministries	MoE, other line ministries, UNAM, PoN, Directorate of Scientific Services, private sector
4. Undertake and document traditional / indigenous knowledge and coping practices	2 mil	*By 2018, traditional/ indigenous knowledge and coping practices in all the key sectors are documented and distributed widely.*	a) Undertake inventories of best practices, traditional knowledge and alternative practices for coping with climate variability and extreme weather b) Disseminate best practices, traditional knowledge and alternative practices for coping to different stakeholders in different parts of Namibia for possible adoption	2013-2018	MAWF	MoE, MET, PoN, UNAM, traditional authorities council
5. Determine the likely cost of adaptation and mitigation in the key sectors	3,5 mil	*Studies commissioned to determine the likely cost of mitigation and adaptation in partnership with all line ministries*	a) Commission the studies/models to estimate the cost of adaptation and mitigation in the key sectors	2015-2017	MET	All line ministries PoN, UNAM, MoF, other research agencies
6. Investigate macroeconomic and sectoral impacts of climate change	0,3 mil	*Macroeconomic and sectoral impacts of climate change investigated and widely distributed*	a) Research on impacts of climate change on the macro-economy of Namibia including impacts on growth, employment, inequality, trade etc	2015-2018	MoF	NPC, NSA, Bank of Namibia, line ministries, UNAM, PoN, MoE, Private sector in research industry.

Theme C3: Public Awareness, Participation and Access to Information

Strategic Aim	Budget [Millions NAD]	Targets	Activity	Time frame	Lead Agency	Partner Agencies
1. Develop a communication strategy on climate change (develop and disseminate public awareness materials on climate change)	1 mil	*A communication strategy and action plan on climate change should be in place by 2016, and implemented by various stakeholders involved.*	a) Develop a communication strategy on climate change (impacts, effects on societies) targeting all levels, e.g. through using the toolkits at community level	2014-2017	MET	MICT, all line ministries, NBC, NIED, CBOs, NACSO, publishers, Meteorological Services, and supporting partners (UNESCO, UNDP)
2. Promote public participation in addressing climate change and development of adequate responses	1,5 mil	*Mass public participation in climate change mitigation and adaptation, at least by 2018*	a) Provide relevant information and data to assist farmers and other stakeholders to adapt to effects of climate change e.g. forecast of drought through extension services	2015-2018	MAWF	MICT, line Ministries through extension agency, Meteorological services, faith based organization, traditional authorities
			b) Facilitate development and implementation of local/regional climate change specific strategies and actions by all stakeholders		MET	
			c) Train local communities on responses to climate change effects as coping strategies i.e. using the Regional Community Climate Change Adaptation Community Information toolkit			

Theme C4: Action plan for Disaster Reduction and Risk Management

Strategic Aim	Budget [Millions NAD]	Targets	Activity	Time frame	Lead Agency	Partner Agencies
1. Strengthen the climate risk induced disaster management strategy, forecasting and early warning systems	2,5 mil	*Climate risk induced disaster management strategy and plan, EWS for disasters improved.*	a) Strengthen and establish advanced forecasting of weather and early warning system (EWS) for disaster management b) Awareness building programmes at community level on warnings produced and released	2014-2018	OPM – DDRM in partnership with MWT, Meteorological Services	MAWF, Civil society organisations active in disaster management and the media
2. Improve the disaster preparedness and a coordinated and appropriate timely disaster response mechanism	1 mil	*Disaster preparedness improved, timely and well-coordinated particularly before and during the emergency*	a) Keep improving the disaster preparedness and response plan based on the needs b) Improve capacity and preparedness of emergency services to respond effectively and in time c) Update contingency plans on a regular basis to be more effective during an emergency	2013-2018	OPM -DDRM and Regional Emergency Management Unit (REMU)	MRLGHRD, MET, Regional councils, Red cross

Theme C5: Financial Resource Mobilisation and Management

Strategic Aim	Budget [Millions NAD]	Targets	Activity	Time frame	Lead Agency	Partner Agencies
1. Develop a strategy to finance climate change mitigation and adaptation activities	2 mil	*Climate change activities strategy for financing developed by 2017, and effectively implemented*	a) Research and estimate cost of climate change adaptation and mitigation	2013-2016	MET	EIF, NPC, MoF, OPM, and Line Ministries, CBOs, Private sector
			b) Continue developing projects for funding under designated donors in a coordinated cross-sectoral manner, and following the priorities set out in the NCCSAP			
			c) Advocate climate change adaptation and mitigation budget and incorporated in annual Government Departments and Ministries' budgets			
			d) Develop smart partnership with the private sector for climate change funding and investments			
			e) Support DRFN to become Adaptation Fund designated entity; develop proposals in line with NCCSAP priorities for funding			
2. Scope the establishment and hosting mechanism for a sustainable development fund for large climate investments and financing	9 mil	*Sustainable development fund and hosting mechanism for climate change scoped established and functional*	a) Establish the fund to finance climate change activities – for large investments and financing to be hosted potentially in the MoF	2014-2018	MET, MoF with EIF initial support	MoF, MET and Line Ministries, CBOs, Private sector, UNDP
			b) Harmonise the existing efforts of financing climate change activities			

Theme C6: Action plan for International Cooperation and Networking

Strategic Aim	Budget [Millions NAD]	Targets	Activity	Time frame	Lead Agency	Partner Agencies
1. Participation in regional and international cooperation programs and activities on climate change	TBD	*Participation in regional and international cooperation programmes promoted*	a) Encourage exchange of scientific and technical experts and secondment of personnel on climate change issues b) Promote and support participation of scientists to attend regional and international workshops and conferences on climate change	2014-2018	MET	NPC, PoN, UNAM, Donors, line Ministries, Private sector
2. Pursue the UN environmental international obligations under various conventions particularly the UNFCCC	1,5 mil	*UN international (environmental) obligations under various conventions (i.e. UNFCCC) facilitated and acted upon*	a) Timely development and submission of various reports required for UNFCCC b) Continue to implement Programmes, projects and activities that are obligatory under the UNFCCC for Namibia as a Party to the convention	2014-2016	MET	NPC and other Line Ministries

Theme C7: Action Plan for Technology Development and Transfer

Strategic Aim	Budget [Millions NAD]	Targets	Activity	Time frame	Lead Agency	Partner Agencies
1. Identify technology development and knowledge transfer needs to address and deal with climate change	2 mil	*Technology needs and knowledge transfer needed to effectively deal with climate change identified and pursued.*	a) Identify potential technology needed to address both mitigation and adaptation b) Explore possibility of technology transfer through the Carbon market / CDM projects c) Promote development of technologies to address climate change problems for women and children	2014-2017	MET (adaptation) & MME (mitigation)	MTI, MAWF, UNAM, Renewable Energy and Energy Efficiency Institute (PoN), private sector, Chambers of Commerce

2. Development of technologies for mitigation and adaptation promoted and supported	TBD by the parties involved	*Technologies for mitigation and adaptation pursued, promoted and developed*	a) Support investment in development of production of renewable energy resources and materials locally. E.g. development of solar panel production industries b) Expand technology research, development and demonstration and promoting technology innovation c) If required, protect intellectual property rights in arrangements for technology development	2015-2018	MET (adaptation) & MME (mitigation)	MAWF, Chambers of Commerce, MTI, MoF, Renewable Energy and Energy Efficiency Institute (PoN)

Theme C8: Action Plan for Legislative Development

Strategic Aim	Budget [Millions NAD]	Targets	Activities	Time frame	Lead Agency	Partner Agencies
1. Review and update the existing legislation on building climate change resilience	0.5 M	*Existing legislation reviewed and updated in consultation with all stakeholders*	a) Review existing legislation / policies to assess the level of relevant climate change content b) Enhance climate change synergies amongst sector policies and legislation	2014-2016	Ministry of Justice	MET, NPC, line government ministries, UNAM, PoN
2. Review the National Climate Change Policy as need arises and NCCSAP at least at mid-term (2016)	0.15 M	*NPCC reviewed and updated based on the need.*	a) Review and update the National Climate change Policy based on the need b) Review the NCCSAP at mid term	2013-2016	MET	Line ministries, all other stakeholders

Theme C9: Gender issues and child welfare

Strategic Aim	Budget [Millions NAD]	Targets	Activities	Time frame	Lead Agency	Partner Agencies
1. Empower both men and women to participate meaningfully in the planning, testing and roll out of adaptation activities in all areas	TBD	*Have a meaningful participation of both men and women in climate change planning and decision making*	a) Facilitate women's participation in climate change decision making at both local and national level b) Advocate for equal participation of vulnerable groups in the implementation of climate change adaptation and mitigation activities	2014-2017	MGECW	Line ministries, all other stakeholders
2. Ensure that climate change response activities are gender sensitive	TBD	*Ensure that both genders and vulnerable groups can take part in climate change response*	c) Identify the adaptation skills of vulnerable groups and mainstream them in the planning of climate change adaptation and mitigation strategies	2014-2016	MGECW	Line ministries, all other stakeholders

Section 7: Implementation Arrangements

The implementation of NCCSAP is differentiated by two functions: implementation and coordination and policy decisions, and is built upon the foundation set out in the NPCC (Figure 6).

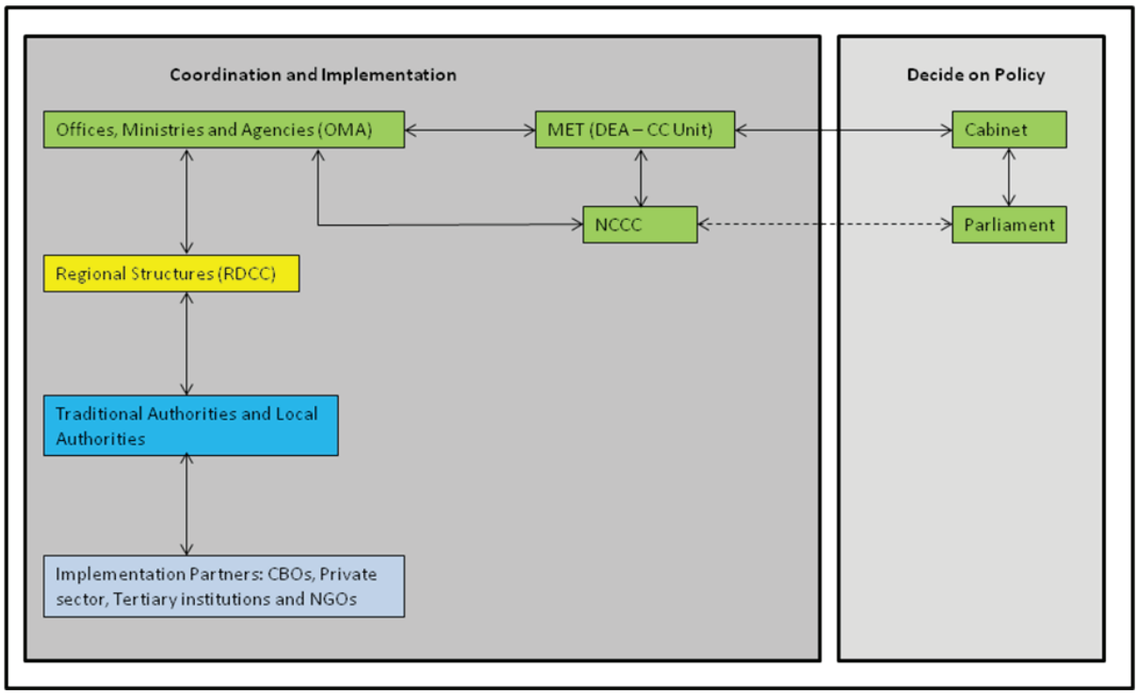


Figure 6 Proposed implementation structures, roles and function, based on NPCC and operationalised for the NCCSAP

7.1 Implementation and Coordination

MET Directorate of Environmental Affairs – Climate Change Unit

As outlined in the Policy, the Climate Change Unit established under the Directorate of Environmental Affairs, will be designated as the coordinating unit, with the Ministry of Environmental Affairs the coordinating Ministry. The Unit would assist directly with planning, development, implementation and coordination of climate change activities at the local, regional and national levels. It would be responsible for the NPCC and the NCCSAP implementation, coordination and monitoring and evaluation, as well as reporting on NCCSAP progress. The Unit will house the Operational Focal Point of the UNFCCC. It will coordinate and mobilize climate change relevant funding.

Offices, Ministries and Agencies (OMA)

Sectoral Ministries are responsible for sector-specific implementation of activities at national level. They will support local and regional level implementation and coordination, and report to MET on the NCCSAP implementation. The Ministries will actively contribute to the mid-term review and

further updates of the NCCSAP and support resource mobilization for NCCSAP implementation. The Meteorological Services will establish and maintain expertise on climate science, projections and forecasting, supporting evidence based decision-making. It will provide climate science services for EWS, and other climate change response planning and research. With regards to the Disaster Risk Management and Early Warning Systems, OPM the Disaster Risk Management Unit provides advice on minimizing community vulnerability to hazards and effectively manages the impact of climate change. The unit is responsible for effective coordination and facilitation of all disaster risk reduction initiatives in Namibia. It also will provide technical and policy advice through the NCCC or directly to MET and later to the OPM climate change unit. Other institutions and expert advice will be sought for on demand and in support of the NCCC and other institutions implementing and coordinating the NCCSAP.

National Climate Change Committee

The NCCC is a multi-stakeholder platform that provides technical and policy relevant guidance to MET (and later to OPM). The committee will coordinate and advise sector-specific and cross-sector implementation of activities, and advise on monitoring and evaluation outcomes as well as future directions of NPCC and NCCSAP.

Regional Structures

Regional Structures such as Regional Councils are responsible for the implementation of activities at regional level and will report directly to MET on NCCSAP implementation. They will also actively contribute to the mid-term review and support resource mobilization for the NCCSAP implementation.

Traditional Authorities and Local Authorities

Traditional and Local Authorities are responsible for the implementation and coordination of activities at local level. They will actively contribute to the mid-term review, and contribute to reporting on the NCCSAP implementation through Regional Councils. They will also support resource mobilization for NCCSAP implementation.

Private sector & business community, Academic and Tertiary Education institutions, NGOs, CBOs and civil society

These stakeholders would be responsible for implementing and coordinating specific and relevant activities. They would actively contribute to the mid-term review and other NCCSAP updates; contribute to reporting on the NCCSAP implementation and support resource mobilization for NCCSAP implementation.

7.2 Policy Decisions

Cabinet

Cabinet will be responsible for decisions on NPCC and NCCSAP and reporting on implementation progress, as well as providing directives for updates and reviews.

Parliament

Parliament will advise Cabinet on relevant policy matters leading to decisions about the NPCC and NCCSAP, as well as reporting on implementation progress, and provide directives for updates and reviews from a regional perspective.

Section 8: Monitoring and Evaluation, and reporting

Monitoring and Evaluation (M&E) as well as reporting progress shall be the most important component of the NCCSAP to demonstrate achievement of NCCSAP activities and support the ongoing implementation of the activities in a cost-effective way. The M&E will help in tracking the ongoing progress, quality and impacts of activities undertaken by various sectors and seek to assist stakeholders in leveraging the power of networking toward achieving the activities in the NCCSAP and achieve cross-cutting goals in the national response to climate change.

Moreover, it will help to propose new activities to enable the attainment of the strategic aims and readjust timing of the implementation of the NCCSAP in light of evolving circumstances. While reporting will inform the stakeholders on the status of implementation, stakeholders shall submit reports on the progress to the coordinating body. M&E is crucial to strengthen the synergies between plans, actions, and sectoral strategies. In addition, donor agencies channelling billions of dollars for climate change adaptation, including under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC), will require such systems as an important dimension to the adaptation initiatives they support.

M&E will require adequate personnel given the nature of the multi-sectoral NCCSAP; the NPC has a monitoring department that could be strategically located to conduct the M&E in conjunction with the coordinating institution, the Climate Change Unit under the Department of Environmental Affairs as shown in the above structure, with the OPM climate change unit possibly taking over this function. In addition, an independent organisation or committee would be a good evaluator of the NCCSAP in conjunction with both the NPC and MET. The targets contained in the NCCSAP lay the foundation for the formulation of performance indicators, which, along with other key deliverables and benchmarks will be the main tools for assessing implementation progress of the NCCSAP.

The M&E should focus on the following:

- **Input:** focusing on the kinds of inputs injected to implement the planned activities
- **Process:** focusing reviewing and analysing the mainstreaming of climate change into national, existing and planned inter-sectoral activities that have been implemented or continued to be implemented within the given timeframe of the NCCSAP.
- **Output:** centred on the output per activity or strategic aim.

Periodic updates and reporting by institutions will ensure that new information can be incorporated into the plan and strategies adjusted accordingly. Two kinds of M&Es should be undertaken at different intervals:

- **Mid-term M&E**: this should be carried in 2017 in order to determine the progress of the implementation of the activities (achievements and status) and importantly uncovering challenges (shortcomings) and provide practical recommendations for the remaining time.
- **Final M&E:** The final M&E is envisaged to be carried out in 2020 (at the end of the first NCCSAP) to quantify the overall attained results in relation to the overall planned goal, objectives and performance indicators. The findings of the overall M&E shall be used as lesson learnt for updating, revising the next NCCSAP.

Section 9: Financing Strategy

It is recognized in the NCCSAP that government alone will be unable to carry out and fund activities identified in this strategy. Hence, the implementation of the identified activities will only be achieved through a collective involvement and contribution of the private sector and non-governmental organizations, as well as donor agencies. The country needs to significantly scale up domestic climate finance over the next few years to successfully implement the NCCSAP. International climate finance can play an important role in enabling Namibia's climate change response and helping to address barriers and additional costs.

The successful implementation of the NCCSAP depends on the commitment of various stakeholders to avail resources needed particularly financial resources. This can be achieved by following the approach made in the draft paper on understanding climate readiness needs in Namibia where three key considerations for climate finance readiness in Namibia were discussed (ODI *et al.*,2013). These are:

Planning: The need to align climate finance with national strategies and objectives.
Aptitude: Maximising existing national capacities to identify appropriate climate change investment choices and the suite of capacities to deal with climate finance.
Access: Sourcing, receiving and spending funds widely.

Annex 2 of the NCCSAP provides detailed recommendations for supporting these activities.

It is highly recommended that all government ministries and agencies set aside a specific fraction of their budget toward the implementation of the NCCSAP. Responsible agencies are also encouraged to source additional funding elsewhere in addition to their national budget. This could be through donors, multilateral, bilateral investments in partnership with the MET to ensure that enough funds are available for the implementation of the NCCSAP. The Environmental Investment Fund of Namibia and the National Planning Commission are two good platforms to form partnership with or to be approached when it comes to hosting the availed funds for climate change and other related financial resources.

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Annexes:

Annex 1: Costed CRM capacity development action plan

Costed Plan of Action (PoA): Interventions, desired results and indicators (table) – Source AAP (MET, 2011)
Activities are worked out in detail for year 1 and then monitoring and evaluation of progress towards the end goals (after 5 years) described for each intervention area will determine the next annual activities. The cost estimation is based on an approach that aims for high quality delivery. This is needed as Namibia was one of the forerunners in CRM in the African Adaptation Program and could not borrow from experiences in other African countries.

Table 2: Proposed costed CRM capacity development action plan.

Strategic interventions area	Priority interventions in Year 1	Short and long term desired results	Performance indicators for Year 1	Estimated Costs in US Dollars[2]	Key responsibility
Coordination	• Composition of coordination team building on experiences in AAP PMU, DRM and MET • Partnership meetings on appreciative planning for CRM capacity development with key stakeholders • Monitoring and Evaluation plan using trainers to monitor progress, demand and gender approach • Knowledge Management and Marketing Communication plan (see under Demand and ICT)	**After 1 year:** CRM capacity development coordination team positioned close to OPM with all relevant expertise and access to the highest decision making levels. **After 5 years:** National CRM and Adaptation coordination team and strategy have emerged; CRM capacity development is guided by CRM strategy and coordinated through a partnership of relevant stakeholders in a special CRM College.	**Year 1** • Core capacities present in coordination team • MET/DEA lead dialogues on establishing national CRM coordination mechanism with OPM (DRM) • high level decision makers think-tank on CRM and DRM issues, especially on long-term preparedness and adaptation • Initial talks on CRM college • Follow-up on consultancy package 6 recommendations on NCCC and RCCCs and capacity support programme (modelled on P3 learning approach and modules) • Set-up of modern and effective CC/ CRM/CCA information/learning/	200.000 (coordination team)	To be decided by AAP P6 and key institutions, e.g. MET, OPM, DRM

Demand	• Marketing communication plan for key audiences in priority sectors • PR plan to generate free publicity on strategic moments • Continuous update of agenda of events that are key for lobbying and publicity • Implement AAP ongoing work-plan activities	**After 1 year:** OPM and NPC ask coordination team for advice on CRM capacity development paragraphs and specific sector interventions to be included in National Development Plan. **After 5 years:** Ministries and governmental institutions ask coordination team for advice on priorities and approaches for their CRM capacity development planning.	• Continue and roll out Ambassadors programme including on a regional level and integrating the AAP Youth into a nation-wide CRM campaign • CRM guidance for NDP4 (already ongoing under AAP output 3) • Targeted awareness and information sessions for NDP4 sector planning groups • Publicity in media	200.000	Coordination team (Media relations expert, financial expert and lobbyist)
Human resources	• Continue ambassadors programme based on the sustainability discussions held during AAP package 3 (report forthcoming) • Develop one Alumni and 'new-intake' stream • Develop regional outreach component of Ambassadors programme • Work with tertiary education institutions (i.e. Polytechnic and UNAM) on improving CRM related curricular and approaches (already ongoing or in place) • Continue Training of Trainers (TOT) and outreach work applying the toolkits developed through AAP package 9 • Training and coaching of local/ regional trainers in monitoring of progress, demand and gender	**After 1 year:** 50% of the budget for individual learning is spent at the regional and local level and focused on community resilience. Experience is used to adapt the adequate support from the national level. **After 5 years:** 80 % of the budget for individual learning is spent at the regional and local level. The major approach is learning-by-doing and leading by example. Each governmental institution has its own CRM capacity development plan.	• Number of ambassadors raised from 80 to 300, including trainers of local and regional level (150 ambassadors national level; 150 local and regional level; gender balance at both levels) • Number of local and regional training sessions on AAP 9 doubled compared to 2011 • Key tertiary institutions participate in CRM partnership (see Coordination) • RSSC program to bring experts (e.g. in GPS and GIS) of different government institutions to exchange experiences and engage in peer learning • Half yearly monitoring reports per region on progress, demand and gender • Longer term capacity development plan for various target groups for year 2 based on monitoring and evaluation activities from M&E plan	400.000	Coordination team (Process and learning manager, Gender, KM, M&E expert)

Institutional change towards a CRM learning institution	• CRM leadership training for senior management in key government institutions • Coaching of early adaptors who need guidance on first steps towards change towards a learning organization • Roll out Ambassadors activities as mentioned under 4. Human Resources	**After 1 year:** Credible and consistent leadership styles, trust, career opportunities, transparent internal and external communication. **After 5 years:** Open door policy, actively listening and proactively responding to the needs and problems of the workforce; leaders trust workforce and understand that everyone has a different learning style and curve.	• 10 members of senior management trained • Learning organization on the agenda of high level CRM think-tank • 1 pilot project for coaching	100.000	Coordination team (Process and learning manager)
CRM response technologies and tools	• Invest in roll-out of community toolkits • Based on CRM mind-map, develop CRM technology and tool plan • Use established partnerships with communities of practice to test and further develop technologies and tools • Use AAP activities on sectoral risk and vulnerability assessments as 'learning and doing' experiences for Ambassadors	**After 1 year:** CRM technology and tool plan focused on community resilience in place to guide investment in new tools and technologies, preferably to be acquired through partnerships with other countries, universities and private sector. **After 5 years:** Demand-based tool development and training both for community resilience as well as for decision support for policy makers.	• Information on CRM response generated through activities of the M&E plan • First strategic alliances with private sector and research institutions in Namibia and abroad • CRM response knowledge, technology and tool plan based on demand from sectors and local communities with priority interventions for year 2	50.000	Coordination team (Process and Learning manager, Lobbyist and Gender, KM, M&E expert)

ICT	• Invest in an overall knowledge-management strategy to enhance and make CRM knowledge flow freely between supply and demand • Make relevant AAP material available on-line and for radio stations in a user friendly way • Use all AAP pilot activities to test and apply ICTs to generate interest and awareness for them • Computer training for scenario development (follow-up AAP P2)	**After 1 year:** Knowledge management strategy in place with a clear role for ICT focused on improving community resilience. Monitoring and annual usability check is organized. **After 5 years:** User-driven ICT systems in place that are low cost and have optimal effect according to annual usability checks. All systems are open source and or provided through partnerships with other countries, universities and private sector.	• First series of radio courses for local training on CRM • First CRM bank of visuals, short videos and learning tools • Enhanced AAP and CRM web portal with interactive applications • First plan for CRM mobile phone applications • Usability study of existing ICT tools on CRM • Action plan for year 2 • 100 technical staff trained in computer skills for DRM and CRM • Strategic alliance with meteorological institute on ICT tools for weather forecasting	200.000	Coordination team (Gender, KM, M&E expert)
Finances	• Initially use AAP funds where available for strategic interventions • Seek additional strategic cooperation partners' support for priorities identified • Convene 'financing' conference (with Namibian and international partners) • Integrate required costs into GRN budgeting; include into NDP4 awareness seminars • Private sector, NGO a.o. partners to identify their responsibilities and contributions through learning modules at Ambassadors event	**After 1 year:** CRM integrated in National Development Plan with budget implications for ministries and departments to contribute to CRM capacity development. **After 5 years:** CRM integrated in budgets of all government institutions with dedicated budget lines for coordination and various specific capacity development interventions.	• Regular interaction between CRM CD Coordination team and key budget holders in relevant ministries • Focal point in Ministry of Finance for CRM, and co-convenor of Financing Conference appointed • Funding proposals for year 2 accepted by bilateral and multilateral donors • First PPP established	50.000	Coordination team (Lobbyist and financial expert)

Dealing with sector needs	• Undertake sector (institution) specific CR analysis • In participatory way (led by individual institutions) CDPs are developed (they need to be "internalised"). This can only happen when the specific demand is created through other AAP and related foundation work • Facilitate an exercise that fosters CRM CD budgets in NDP4 and institutional budgets	**After 1 year:** Selected priority sector institutions have undertaken a first CR analysis and developed their own capacity development plans. **After 5 years:** All sectors in Namibia have engaged in a comprehensive analysis of their sector capacity needs and are implementing response plans.	• Initial risk sector or sector institution relevant risk studies undertaken. • Build the foundation for institution specific "internalised" CRM CDPs. • For at least 3 key sector Ministries CRM CDPs internalising the seven [3] entry points approach are developed and under implementation. • The NDP4 process specifically gives cognizance to CRM CD needs and includes budgeting guidelines.	100.000	Coordination team with relevant line ministries and NPCS
TOTAL				**1.3 Mil**	

Annex 2. Namibia's Financial Readiness Needs and Recommended Supporting Activities

While important steps to address climate change are being taken in Namibia, there is progress to be made in implementing emerging goals and strategies, and incorporating climate change considerations into investment decisions. Climate finance readiness support has the potential to bring actors that have developed substantial expertise and competence in development finance together to embrace the challenges of climate compatible development. In-depth stakeholder interviews and an informal roundtable discussion between these stakeholders identified a number of needs that might strengthen national stakeholders' ability to use climate finance effectively.

Climate finance readiness efforts should therefore focus on the role that international climate finance could play to help decision-makers and investors in Namibia incorporate climate risk into development planning and investment. As a more general observation, Namibian stakeholders observed that many internationally financed capacity building initiatives related to climate change have had limited sustainability. It may therefore be particularly important to consider the nature of the partnerships that are forged, with a focus on building collaboration with national institutions (many of which have significant capacity, but are under-resourced). It is therefore recommended that support for the following activities might strengthen readiness to use climate finance effectively.

1. Planning: Incorporating climate considerations into the national development vision and sector strategies

Stakeholders saw a significant need to support efforts that are getting underway to link the climate change considerations outlined in the national climate change strategy with the national development plan and Vision 2030, as well as key sector strategies (particularly related to energy, infrastructure and agriculture). Furthermore, stakeholders recommended a need to support efforts to prioritise amongst some of the activities anticipated in the CCSAP, in order to allow more meaningful implementation. Such initiatives would need to be informed by better information and data about climate change and its potential investment and finance implications.

Supporting activity	***Description***
1.1 Support a work program for officials from key line ministries (Energy, Water, Infrastructure, Public Works), with expert support, to explore options for integrating climate change into sector plans.	This work programme could first establish how climate change affects the goals and objectives of a given line ministry before analysing the links and tensions between existing sector plans and the priorities outlined in the climate change strategy and action plan. From this basis, a project pipeline could be developed as priority mitigation and adaptation opportunities will have been identified at sector level that can be costed. Appropriate resources for delivery and execution could then be requested in the next sector budgeting process. Such a program would ideally be supported by the NPC, since it bears overarching responsibility for the development of sector plans and budgets. Stakeholders observed that a number of activities with potentially positive impact have already been identified, and climate finance readiness support could allow their realisation.

1.2 Develop simple tools applied in key sector ministries to understand the climate implications of policies and proposed investments.	This effort could build on the experiences of the Threshold 21 model to incorporate environmental and social considerations into development planning at a macro level. It could also build on experience with Strategic Environmental Assessments (SEAs). SEAs could be completed for plans and policies, the implications and opportunities of climate change in the infrastructure, public works and energy ministries, in particular. Such tools would ideally be developed in partnership with Namibian research institutions and technical experts (potentially with inputs from well-respected international technical institutions). Such tools can provide a better basis from which to discuss the potential options to reduce potential conflicts between climate change and development strategies.

2. Planning: lesson learning through peer exchange

Stakeholders have noted the need to raise awareness of the material implications of climate change for investment choices in key sectors, and to deepen understanding of the institutions and systems that other middle income countries are establishing to support investment in climate change solutions.

Supporting activity	*Description*
2.1 Promote the sharing of lessons through exchanges on institutional arrangements for climate finance in peer-countries.	Many stakeholders observed that there might be value in exposing senior government officials to the systems that other middle-income countries in the region are putting in place to plan, coordinate and finance their response to climate change. The government has already begun to consider whether it might be able to learn from South Africa's experience in establishing a climate change finance strategy (which includes a Green Fund, and renewable energy finance policy support mechanisms, and the introduction of a carbon tax). Similarly, Kenya's experience establishing a climate change response strategy, and attracting international and private finance to help support its response may also be relevant. Short, 3 to 5 day exchange programmes with relevant counterparts in for permanent secretary-level staff might be one mechanism to this end. Alternatively, one could explore trainings or workshops that draw in a small number of experts from peer-countries to discuss their experiences.

3. Aptitude: raising awareness and maximising existing national capacities

Stakeholders noted a general paucity of technical human capacity, particularly within government. There are limits to trainings as a solution to this challenge, because overextended staff can seldom spare time to participate in such programs. Mentoring programs focused on collaborative implementation, and programs that seek to deliver additional support to persons entrusted with championing climate finance issues within their institution may be more useful and impactful.

Supporting activity	*Description*
3.1 Support strengthened coordination of climate change activities.	Stakeholders agreed on the need for stronger systems that allow coordination across government on issues of climate change, building on the strong existing efforts of the MET, and leveraging the technical capacity that it has developed. The OPM and the NPC may have a role to play in facilitating better coordination across institutions. The OPM could bring high level political commitment to the process, and authority to drive such a coordinated process, the NPC could play a role in facilitating the process at the level of planning and budgeting. This approach was used effectively in the Namibia Country Pilot Partnership for Integrated Sustainable Land Management (CPP –ISLM).
3.2 Support the establishment and strengthening of climate change focal points within ministries, particularly the National Planning Commission.	There is a need for all relevant ministries and parastatals to establish climate change focal points (individuals or units) and strengthen their capacity to integrate climate considerations into sectoral planning, and to represent sectoral concerns in cross-sectoral discussions around climate change. This could also help state-owned enterprises deliver on these responsibilities through small grants for requisite administrative and coordinating support systems, or for technical assistance and peer exchange on key issues. Again, partnerships with Namibian private sector organisations, research institutes and NGOs might also be useful means to support capacity strengthening of focal points.
3.3 Establish a centralised climate data repository.	There is a need to put in place systems for more coordinated data and information collection, so that data on climate change vulnerability (particularly climate impacts and risks) can be gathered in a consistent and centralised manner. Such efforts might start with biophysical data, and expand to include socio-economic data over time. Technology needs could also be supported, including for common use software and equipment to facilitate data gathering, as well as require investment in agreeing data quality standards up front.

4. Accessing climate finance: costing and prioritising actions

The lack of funding or budget allocation for CCSAP is a substantial impediment to its implementation. Developing a strategy that is realistic and implementable requires that the costs and benefits of various proposed activities be analysed in order to narrow the list of activities down to a smaller number of key realistic priorities. Access to climate finance could be used both to support government to address climate change dimensions of development strategies and to support quasi private actors such as parastatals, who deliver most of the infrastructure services in the country and some public finance to do more to address climate change.

There is also a second need for finance to support private sector players and civil society organisations deliver programs at scale. The sets of activities best suited to be financed through international climate funds will require further deliberation. A process to seek accreditation of the Desert Research Foundation of Namibia (DRFN) as a National Implementing Entity for the Adaptation Fund is underway.

Supporting activity	***Description***
4.1 Highlight climate related risks and opportunities and strengthen due diligence and appraisal systems for private investors and financial institutions working in key sectors including energy, infrastructure and agriculture.	Private sector involvement in climate change mitigation and adaptation has been limited. New analysis highlighting climate related risks involved with current investment priorities can raise awareness of low carbon and climate resilient approaches. *Research* could focus on options to address and respond to these risks starting with leading private sector investors and companies. Collaboration with institutions such as KfW and the International Finance Corporation might be opportune and strategic in this regard. The strengthening of national development finance institutions due diligence and appraisal systems to understand climate related risks and opportunities could be undertaken in parallel. There may also be scope to invest in an exploratory program with private banks that are engaging on low carbon investment, such as Nedbank through its Go Green Initiative. Working with the Environmental Investment Fund to engage private sector and NGO actors, particularly related to clean energy, and to strengthen resilience to climate risk in its existing portfolio might also be useful.
4.2 Explore the viability of instruments to enable execution of the national climate change policy and strategy, and as a means of achieving greater involvement of the National Planning Commission.	In the first instance, this would explore budget support through the National Planning Commission of costed climate change actions. Justification stems from the use of budget support for public goods interventions by development partners in Namibia with some success. The analysis would identify what such an approach might require, and whether it could help realise efforts to resource and incentivise the National Planning Commission to take on climate change issues.
4.3 Assess and strengthen institutional capacity to access and effectively deploy international climate finance including prospectively from the GCF.	Namibia is trying to position itself as a leader on climate change issues, and to access international funding to support its objectives in this regard. Namibia has expressed interest in direct access to these funds. Taking stock of efforts to seek direct access to the Adaptation Fund, such efforts would analyse the minimum requirements of fiduciary and associated standards for the GCF. Similarly, analysis of minimum environmental and social safeguard practices could build on the policies that the Global Environmental Facility has.

4.4 Strengthen capacity to monitor and evaluate the outcomes of climate finance.	There is a need to ensure that monitoring and evaluation is based on the achievement of results, rather than on the completion of activities or on spend. A component that supports the monitoring and evaluation of climate related dimensions of policies could be incorporated into efforts to develop sector-level climate change implementation plans as proposed in readiness need 1.1 above. This should also build on efforts to strengthen climate related investment information, as proposed in readiness need 4.3 above, which should provide a basis for assessing the impact of programs and policies.

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