

# Africa Adaptation Initiative

Enhancing Action on Adaptation in Africa



September 2018

## Discussion Paper

Africa State of Adaptation Report (SoAR)





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## Acronyms

AAI	Africa Adaptation Initiative
AEPP	Africa Environment Partnership Platform
AF	Adaptation Fund
AfDB	African Development Bank
a-NDC	Adaptation component of NDC
AGN	African Group of Negotiators
AMCEN	African Ministerial Conference on the Environment
AMCOMET	African Ministerial Conference on Meteorology
ARC	African Risk Capacity
AUC	African Union Commission
CAHOSCC	Conference of African Heads of State and Government on Climate Change
CCFFs	Climate Change Financing Frameworks
CIS	Climate Information Service
CSIR	Council for Scientific and Industrial Research
COP	Conference of Parties
CORDEX	Coordinated Regional Downscaling Experiment
CPEIR	Climate Public Expenditure and Institutional Reviews
EWS	Early Warning System
GCF	Green Climate Fund
GEF	Global Environmental Facility
GFCS	Global Framework for Climate Services
IAMs	Integrated Assessment Models
INDC	Intended Nationally Determined Contributions
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
NCs	National Communications
NDCs	Nationally Determined Contributions
NAPs	National Adaptation Plans
NHMS	National Hydrological and Meteorological Services
ODI	Overseas Development Institute
SoAR	Africa State of Adaptation Report
SDGs	Sustainable Development Goals
TCFD	Task Force on Climate-related Financial Disclosure
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States (of America) Dollar (currency)
WISER	Weather and Climate Services in Africa
WMO	World Meteorological Organisation

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# Africa State of Adaptation Report (SoAR)

## Discussion Paper – September 2018

### Prepared for:

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This document may be accessed online at the AAI website page: [www.africaadaptationinitiative.org](http://www.africaadaptationinitiative.org)

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Enhancing action on adaptation in Africa

## About This Discussion Paper

This discussion paper has been prepared to inform participants attending the Africa Adaptation Initiative (AAI) Roundtable Meeting, side event at the 73rd United Nations General Assembly (UNGA), on September 24th, 2018 in New York. It contains preliminary findings and insights from authors of the forthcoming AAI Africa State of Adaptation Report (SoAR) to be published in December 2018. The specific focus of this paper is to provide participants with the evidence base for the Value Proposition document for the AAI and the proposed flagship programmes.

Since the mission of the AAI is to support African countries to plan, programme and implement adaptation actions, it was decided that in 2018, the AAI would embark on a process of producing the first Africa State of Adaptation Report (SoAR). The report will articulate a baseline of adaptation actions, while highlighting where further support is needed. The report will also provide an analysis of adaptation action on the continent, adaptation priorities as outlined in national documents, and an analysis of how much Africa is already investing in adaptation from domestic and international resources. It will offer analytical data and advocacy tools to support the case for greater investment for adaptation actions in Africa, as well as highlighting current activity on the continent. The proposed launch of the first edition of the report is during the upcoming United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties, CoP 24, at Katowice, Poland in December 2018.

Measuring the cost of adaptation can be difficult as it is a complex journey towards a holistic goal, unlike mitigation actions which can largely be set against a single outcome of reduced emissions. Many adaptation actions are held within an interlinked web of environmental, social, cultural, economic and political constraints. Past global emissions already commit Africa to adaptation costs of USD 7-15 billion per year by 2020 (UNEP 2015). Currently, approximately USD 1-2 billion a year has been flowing to Africa for adaptation action, through a variety of sources. However, the UNEP 2014 emissions gap report showed global emission reduction efforts are not yet at the level of what is required to put the world on track to hold global warming below 2°C by the end of the century from pre-industrial levels. By 2050, Africa's adaptation costs could rise to USD 50 billion per year for the scenario of holding global warming below 2°C, and up to USD 100 billion per year by 2050. If the world does not manage to deviate from the current path, that could lead to more than 4°C warming by 2100 and unimaginable adaptation costs.



**Africa Contains 7 Out Of 10** of the African nations are now at high risk of debt distress following debt build-up from disasters, including climate vulnerabilities. **Sierra Leone, South Sudan, Nigeria, Chad, Ethiopia, the Central African Republic, and Eritrea.**

The focus of this note is to share insights from the research about where the gaps are on key intervention areas underpinning a comprehensive adaptation response. This is based on the four pillars of the **AAI**:

-  1. Enhancing climate information services,
-  2. Strengthening policies and institutions,
-  3. Increasing on the ground action, and
-  4. Facilitating access to financing and investments.

It also includes country and sectoral (coastal zones, agriculture, health, water) perspectives to provide the big picture about what is happening in the priority sectors for adaptation on the continent. Our objective is to inform discussions amongst African leaders and institutions, as well as our development partners about how to close the adaptation gaps in priority sectors, and each pillar and to indicate the opportunities for further investment towards more resilient futures.



# Key Messages

## Africa is rising but economic growth is threatened by climate change

African economies have been growing at an above global average rate in the last 10 years. In Sub-Saharan Africa, economic growth is recorded at 4.7 per cent. Continued increased growth is critical to the socio-economic development of the continent, and its contribution to global prosperity. [The impacts of climate change threaten this development trajectory towards sustainable development objectives, primarily due to the resource based structure of many African economies.](#) Economic losses for some African regions are expected to reach 2.3 per cent of GDP even if no temperature increases are experienced from today's climate. The situation has more dire effect for a 4°C world, where GDP losses would range from 4.9 per cent to 26.6 per cent in different parts of Africa by the end of the century.

## Global average temperatures are also rising, leading to significant changes in the climate change system

Climate science confirms that global average surface temperatures have increased by approximately 0.61°C since preindustrial times, as measured in 2015. [With the continent being a huge landmass, average temperatures are projected to rise rapidly, at 1.5 to 2 times the global rate of temperature increase in Africa.](#) The impacts of climate change can therefore be expected to be drastic in Africa during the 21st century under low mitigation futures scenarios. The decision by African governments to prioritise adaptation is therefore well considered, and also crucial to global prosperity and stability.

## Africa is at risk from floods, droughts, disease and extreme weather related disasters

The key risks for the African continent have been identified as being to water resources, due to droughts in an environment of increasing water demands.

There is a risk to food production and food security driven by unfavourable climatic conditions, diseases and pests, as well as flood impacts, and; health risks due to an increase in the range of water and vector borne diseases. The potential to reduce these risks in the near term (2030-2040) is much higher. The imperative to act for Africa is now. For the continent to mitigate these risks, it is important that adaptation action and investments are accelerated, however this should be based on informed planning and decision making based on sound science.

## Better climate information services are needed to make better decisions to respond to climate related threats

For Africa to achieve enhanced climate services to inform decision making including the co-benefit of building big data and Artificial Intelligence skills for a future economy the enhancement of the World Meteorological Organisation (WMO) initiatives on the continent, ranging from the development of observation infrastructure, and the development of national frameworks in line with the GFCS for the provision of climate information services, would be a sound and effective entry point. [Observation infrastructure already exists, however the distribution and types of instruments is sparse and rudimentary, with the different regions, such as Mediterranean Africa, the Sahel, the Horn of Africa, the Gulf of Guinea, and midaltitude southern Africa not adequately covered.](#)

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## More investment is needed for African Climate Governance Systems across the continent and within countries

The investment in computing infrastructure that covers at least the five regions in the continent will benefit the building of human capacity and information technology infrastructure to disseminate of climate services information. Investments in both the deployment of observation and computing infrastructure cannot only be measured in financial returns, as most finance instruments would, but by their contribution to social and economic transformation.

The African Climate Governance Systems does not lend itself to conventional financing, as it is primarily a social good, so it is important to explore innovative opportunities for increased funding to tackle the understanding of risks posed by the climate system. Furthermore, due to the expanse of the climate system, opportunities for amplifying the benefits across the region by building a broad range of capabilities (infrastructure, information services, and human capacity) cannot be overemphasized.

## Africa needs to accelerate its ability to plan for long-term shifts in the climate system and increased variability

Remarkably, African countries are still making progress in translating climate science information into action, even with limited infrastructure capacity. The continent is lagging behind on a comprehensive planning regime that covers economy-wide, subnational and sector specific planning. Therefore, it is important to expedite climate adaptation planning and integration in development planning.

With emerging obligations such as the communication of NDCs arising from the Paris Agreement, the support through the GCF Readiness Programme amongst others, this state of affairs could rapidly improve. The African Climate Governance System has a role of ensuring that the continent makes best use of such opportunities through knowledge-based support and facilitating coordination between various players in adaptation planning.

The major gap in terms of adaptation action is that most of the projects implemented in Africa so far relate to technical assistance, policy development, and advocacy, rather than the implementation of actions on the ground, especially at sub-regional and regional levels. While those areas remain important, they are certainly not the overriding priorities in terms of addressing climate impacts. There is also an overlap in the focus of the various initiatives, therefore strategic partnerships hold promise for increasing the effectiveness of programme investments and strengthening capacity building at all levels across multiple countries.

## African governments are already investing in adaptation at a rate that is about 10 times Official Development Assistance (ODA)

African governments are spending close to 2 per cent of GDP on adaptation projects and activities, with bilateral ODA, which is not necessarily additional for climate change reaching \$7.2billion in 2016. The proportion of public expenditure on adaptation however remains at about 10-times ODA.

Public expenditure has also been shown to be effective more than ODA in delivering adaptation benefits; this could be attributed to leveraging existing institutional arrangements for social protection systems. This suggests an appropriateness of a budgetary support modality for adaptation finance, compared to the project based support, which has proved effective for mitigation, including through instruments such as the Clean Development Mechanism.

Policy and normative guidance for adaptation finance by Multilateral Development Banks, Donor Agencies and UNFCCC Finance Mechanism need to respond to emerging understanding of effective adaptation instruments and integration of climate adaptation considerations in development planning. As such, the funding criteria of these institutions need to recognise the importance of 'integration' compared to 'additionality' for adaptation projects.

Despite the strides being made, the funding gap however remains high, in a range between 40 per cent 90 per cent. It is therefore imperative to increase investment in adaptation in Africa now.

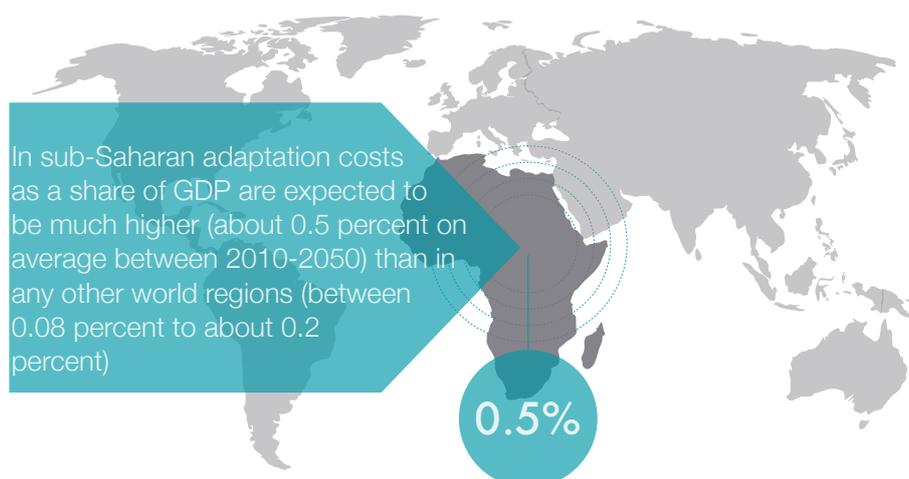
## Why Adaptation Matters for Africa

According to the World Economic Forum Global Risks Report 2018, failure of climate change mitigation and adaptation poses the greatest present risk to humankind and economic development. That risk is perceived to be on a similar scale to the threat of weapons of mass destruction, but with a higher probability of occurrence. A global effort to increase funding for climate change adaptation in developing countries is important for the whole world, as climate change is a driver of other closely related threats, such as large-scale mass migration, disease outbreaks, and extreme events. These threats, not only have the potential to destabilise global value chains, but also impact on trade, economic growth and social stability across the world.

The Africa region has recently experienced the third highest economic growth (4.7 per cent) after the emerging economies in Asia in the last 10 years (IMF, 2017). However, the threat of climate change poses a severe threat on this otherwise impressive trajectory towards future prosperity. This is a time of rising optimism about Africa, where renewed political will for better governance is making the prospect of reaching sustainable development goals by 2030 more plausible. The decision by African governments to prioritise climate change adaptation is not only limited towards economic ambitions or tensions about development imperatives, but also an increasing recognition that African countries must adapt to climate change in order fulfil their global responsibilities to the future well-being of the planet and all humanity.

The Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), published in 2015 confirms that global average surface temperatures have increased by approximately 0.61°C since preindustrial times. Temperature increases across the African continent are however projected to rise rapidly, at 1.5 to 2 times the global rate of temperature increase (James and Washington, 2013; Engelbrecht et al., 2015).

Climate change is projected to have a drastic impact on Africa during the 21st century, under low mitigation futures (Niang et al., 2014).



If urgent action is not taken, the relative damages for Sub-Saharan Africa, India, and Southeast Asia will be especially severe. The world is currently on a trajectory of up to 1.1 per cent reduction in GDP by 2100 and up to 6.1 per cent reduction should emissions commit us to a 4°C world. For some African regions, GDP losses are expected to reach 2.3 per cent even if no temperature increases are experienced from today's climate. The situation is more dire for a 4°C world, where GDP losses would range from 4.9 to 26.6 per cent in different parts of Africa (Kompas, et al, 2018).

### THE COST OF INACTION: THE CASE OF UGANDA



At a national level, over a 40-year period (2010 – 2050), damages are estimated to be between US \$ 273 and US \$ 437 billion for the agriculture, water, energy, and infrastructure sectors if no action is taken.

As a percentage of GDP, these values represent between **2.8 and 4.4 per cent of the total GDP.**

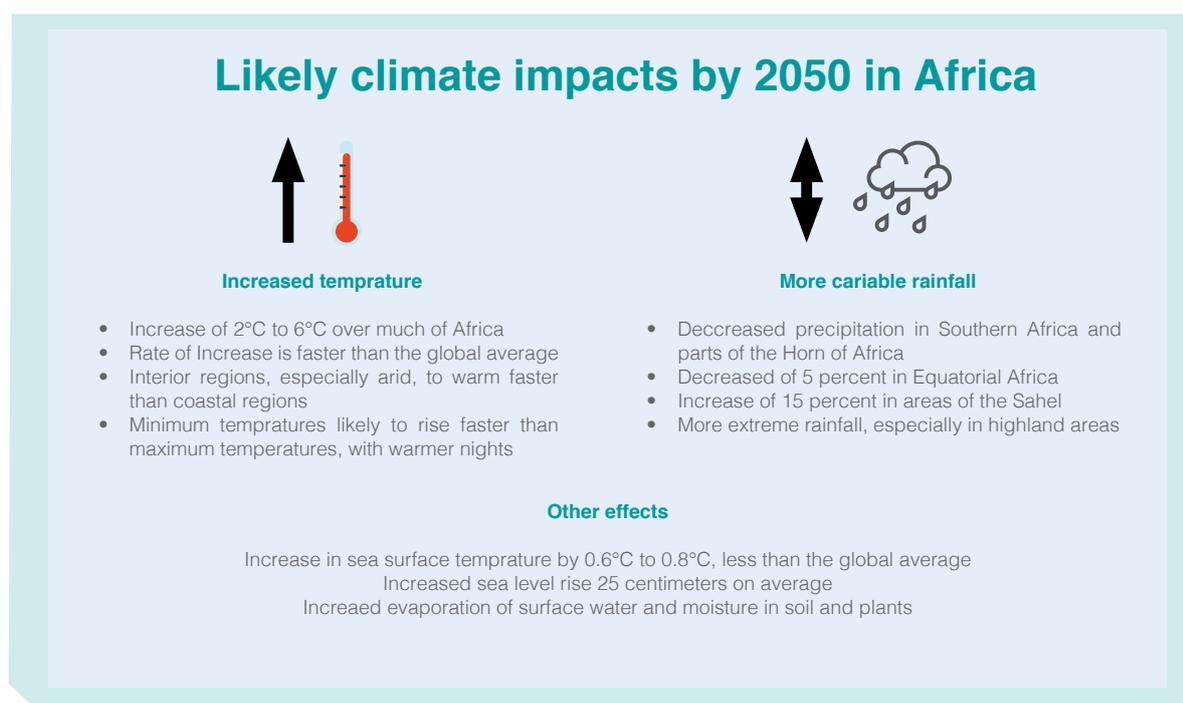
From a sectoral perspective, agriculture exports may be significantly affected by climate changes in coffee growing areas placing a notable strain on the economy. Extreme weather events such as drought will threaten agricultural yields. Water demand is also expected to increase 10-fold from 2010 to 2050, affecting the levels at Lake Victoria, Lake Kyoga and Albert Nile watersheds.

The IPCC (2014) identifies three key risks for the African continent. The first concerns water resources, due to droughts in an environment of increasing water demands.

The second key risk is food production and food security driven by unfavourable climatic conditions, flooding and drought, agricultural diseases and pests. The last key risk is health, due to an increase in the range of water and vector borne diseases.

Since these risks are foreseeable and we are capable of developing clear safeguards to ameliorate the worst effects, it is therefore imperative to support African countries that are committed to rising up to the challenge of climate change.

Risk expands but opportunity awaits. Emerging Evidence on Climate Change and Health in Africa



Source: USAID Report (April 2017)

*‘There are several obstacles to building resilience in climate change. ‘First, the people who are most vulnerable, ... often lack access to climate information...*

*Second, we need to stop treating climate resilience as just an environmental issue. Climate change is undermining hard-won development gains...*

*A third major obstacle is finance. I’ve seen cases where communities galvanize to identify what’s at risk and options to reduce these risks. But then they lack the budget to take the necessary actions’*

Christina Chan,  
World Resources Institute 2017

The African perspective of a comprehensive adaptation response comprise of; informed decision making that is informed by sound research and science; strong governance, policy and institutional arrangements; implementation of adaptation programmes/projects beyond planning; and increasing adaptation investments. It is from this perspective that an assessment of adaptation gaps in reviewed.

# 1

## Adaptation Response: Climate Information Services (CIS) in Africa

Africa is ready for scaling-up investment in climate infrastructure, climate services information and climate information services.

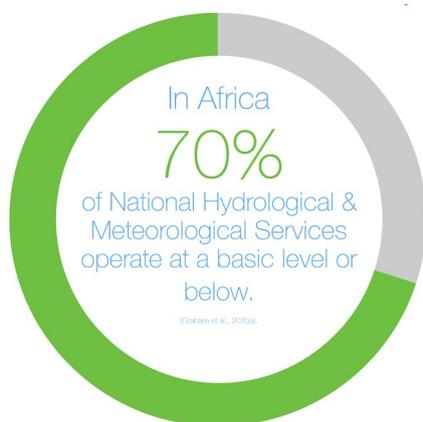
- **Observation infrastructure:**

Despite efforts toward the development of better observational networks on the continent, there are indications on the ground, that in the past six years, observational infrastructure has not met the optimum standards for effective forecasts and early warning systems (African Ministerial Conference on Meteorology AMCOMET, 2012; Dorsouma, 2014; Gra-ham et al., 2015a; World Bank, 2013a). Of the 1,017 land-based observational networks in the world, only ten per cent are in Africa. The state of affairs is even worse for upper air network stations; where of the 171 stations in the world, only 14 are in Africa (WMO, 2015). It is therefore critical to make further provisions to enable the use of satellite data and the continuous measurements of air quality and atmospheric chemistry.

In addition, more than 70 per cent of African National Hydrological and Meteorological Services (NHMSs) were operating at either below or basic levels and the few available monitoring stations were obsolete by 2012. The land-based observational network on the continent was only one-eighth of the minimum density required by the World Meteorological Organization (WMO, 2015). This translated into a station density of one per 26,000 square kilometres, with stations so far apart that establishment of local trends becomes difficult. The World Bank highlighted a case in point of Mozambique where one-third of the observational network was operating and the existing network required rehabilitation, calibration and upgrading by 2013.

Beyond the inadequacy of infrastructure, in many African countries there is a lack of both the human and institutional capacity needed to produce high quality climate and climate impact analyses (Graham et al., 2015a). The quality is affected by several factors including continuity in data sets, quality control and digital data archiving.

Addressing the inadequacies in observational infrastructure and networks feature as central priorities in 4 out of the 5 National Adaptation Plans of Action (NAPAs) in Africa **Benin, Niger, Rwanda and Sierra Leone.**



US\$ 100 - 150 M



US\$ 100 - 150 million per year is needed to improve and modernize NHMSs in Africa  
(AIDB et al. 2015)



ONE STATION PER 26,000 KM<sup>2</sup>

THE LAND-BASED OBSERVATIONAL NETWORK IS ONLY 1/8 OF THE MINIMUM DENSITY REQUIRED BY THE WMO  
(AMCOMET 2012)

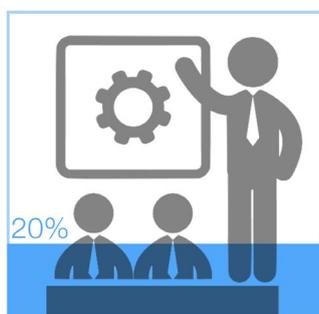
- **Climate Information Services**

Climate information services include the communication of useful information on climate parameters, as well as risk and vulnerability assessments and long-term projections, seasonal and near-term forecasts, and trends to decision makers and other users. African countries are beginning to build capacity in running climate models. In addition to South Africa, two other countries, Kenya and Ethiopia, have the capacity to run short-range prediction models (Graham et al., 2015).

From a climate change projections perspective, Climate Research Program's Coordinated Regional Downscaling Experiment (CORDEX) is operational and generates data, although this is a voluntary effort leading to potential sustainability and operational risks.

Fortunately, there is already an ongoing initiative for the development of an African-based Earth System Model by the Council for Scientific and Industrial Research (CSIR) in South Africa, and related improved regional climate modelling capacity in Africa, however, there is still a need for one or more climate web-based modeling and data-servers to support collaborative research and model parameterisation for different regions in Africa. The dissemination of Climate Research Program's Coordinated Regional Downscaling Experiment (CORDEX) and IPCC Coupled Model Intercomparison Project (CMIP) would benefit from regional servers and the web portals hosted by agencies with whom the required infrastructure, human capacity and up-time reliability can be developed (AAI 2016).

More efforts at continental level towards improvement of climate information services also lies in tailor made application modelling products for Africa across variable timescales. The timescales include multi-decadal timescales, decadal prediction; seasonal prediction; and sub-seasonal prediction (the next 30 days; short-range and medium-range prediction (up to 14 days ahead) [AAI 2016]. These projections will be on a range of phenomena from streamflow, dam-levels; crop yield indices; severe drought; heat wave days; severe drought events to dry spell days, among others (Ibid).



Only  
**20%** of  
climate data are  
used in decision  
making  
(Graham et al., 2015a).

Current financial resources required  
to improve NHMS in Africa is  
estimated at US\$ 1 billion

(AIDB et al. 2014)



Amongst the cited barriers to adequate climate information services for decision making are low funding levels.

- **Improving Human Resources and Training of Climate Scientists**

Efforts are underway in Africa to heighten the technical and knowledge skills of climate scientists in order to improve climate projections and provision, to the requisite standard for managing the infrastructure for climate services. For example, the University of Cape Town (CSAG) and the Council for Scientific and Industrial Research (CSIR) have become continental leaders in the development and training of scientists and technicians for climate information services (see South African case study below). To achieve those levels of service, long-term investments in institutions is required, rather than a short-term approach.

AMCOMET have declared the need for home grown climate information services (e.g. generating own data) in Africa and this highlights the need for capacity enhancement for African researchers and scientists and their institutions. Centres of excellence need to be identified in all five regions, and research projects and training modules developed to enhance their role as mentoring hubs for other institutions on the continent. They would take the lead in facilitating access to training for climate scientists, modelers and technicians.

Specific aspects of climate analysis that have been singled out as critical for improvement include, the ability to calculate growing days, streamflow and dam levels, consecutive dry days and heavy rain days amongst others. This knowledge gap is compounded by an inability to interpret data used for climate models in many African universities, a consequence of insufficient allocation of resources, limited technical capacity and staff, and lack of investment in infrastructure and postgraduate training (Jones et al., 2014a).

Local climate information is essential for understanding local climate processes, impacts, and potential future changes in individual countries. The HydroMet Institute of Training and Research supports the training of local WMO class one meteorologists, senior technicians and provides short courses in various disciplines of meteorology.

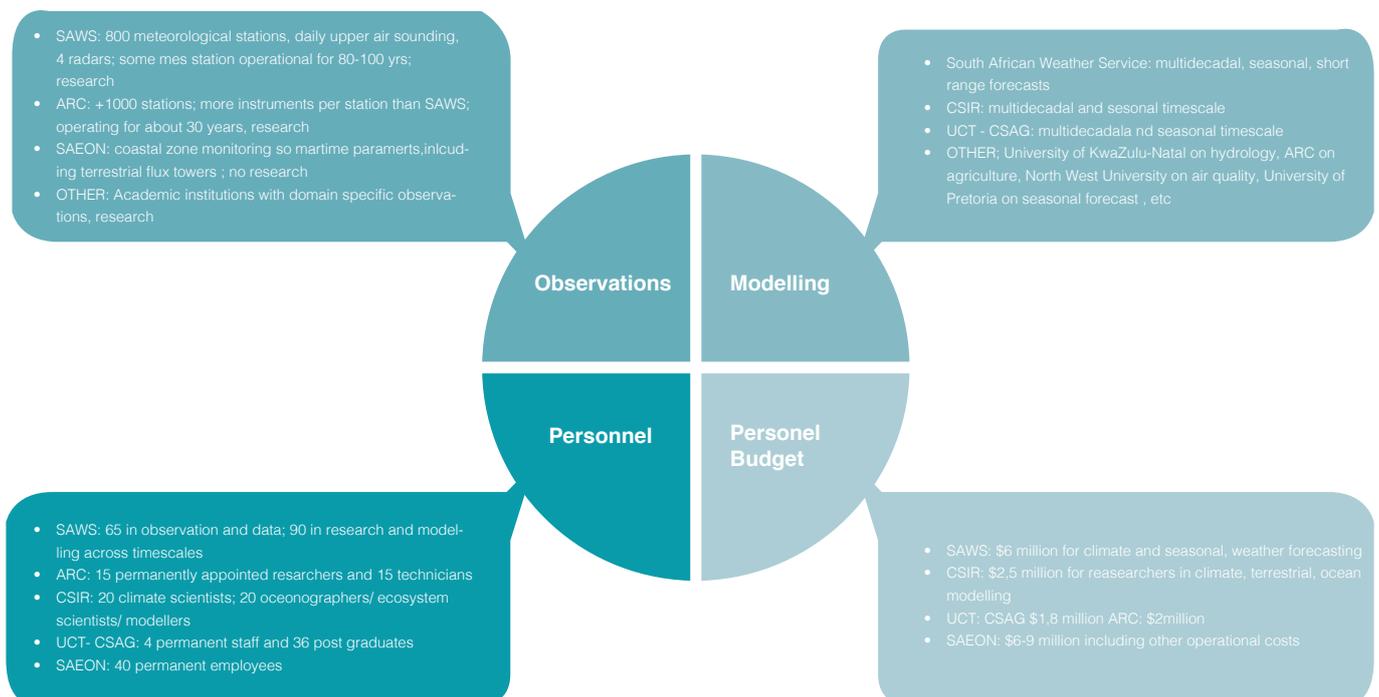
Such institutions should be better resourced and their most successful courses scaled up across the continent.



# Case Study: The South African Climate Services System

SAWS - South African Weather Service; ARC - Agricultural Research Council;  
SAEON - South African Environmental Observation Network; CSIR - Council for Scientific and Industrial Research.

Figure 1: The South African Climate Services System



## The Opportunity: New Regional Partnerships for CIS

Opportunities exist for enhancing regional capacity on climate modelling and downscaling in the multi-decadal timescales. The scientific basis for understanding risks associated with a changing climate at seasonal and near-term key risks, particularly in respect of water, health and food production. The development of this capacity present additional benefits developing highly sought out technical skills on big data manipulation and data mining, which are often cited as essential for jobs in the future.

The South African case study shows how enhanced climate service provisions, could stimulate growth in a new and necessary sector in the workforce, creating jobs for young graduates. Since the system already exists and is built upon robust observation infrastructure, any further investment could quickly yield benefits, with new funding being used for purchase of new types of instruments that are still needed to expand the network for Southern Africa.

Due to the variable nature of African climate systems, the replication of such a system would be necessary for different climatic regions to cover Mediterranean Africa, the Sahel, the Horn of Africa, the Gulf of Guinea, and tropical to mid-altitude southern Africa. A funding platform for the Global Framework for Climate Services (GCFS) could leverage existing institutional arrangements and technical expertise to achieve regional competence.

# 2

## Adaptation Response: Institutional Capacity Building in Africa

Many African countries are increasingly rising to the challenge of developing integrated adaptation plans that are aligned to their national long-term visions and goals. The pace must increase with further support.

- **Developing Adaptation Plans**

Effective implementation of adaptation planning starts with a comprehensive and effective planning regime across various levels of governance and across sectors. In line with the Paris Agreement, all parties are expected to engage in the formulation and implementation of the national adaptation plan (NAP) process.

The Copenhagen Climate Conference spurred adaptation planning through its decision X/CP.15 (UNFCCC, 2009) that provided for the funding of national adaptation plans of action through the Global Environment Facility (UNFCCC, 2009). This translated to a state where, currently **56 per cent of African States have developed National Adaptation Plans of Actions (NAPAs)**. Since the Global Climate Fund (GCF) Readiness Programme has now been extended to assist developing countries through a \$3 million grant allocation for the development of National Adaptation Plans (NAPs), (GCF, 2018), the adaptation planning landscape is likely to increase significantly. There is however scope for the development of guidelines in preparing these plans as the NAP guidelines address only the process of developing plans, rather than guidelines and tools for their development.

An analysis conducted by the African Climate Policy Centre (Girma, 2018) on the Nationally Determined Contributions (NDCs) of 16 African States, revealed that only 13% of the African states surveyed have NAPs.

**While 87% either do not possess a National Adaptation Plan (NAP) or they are currently preparing them.**

Our analysis for the SoAR indicates that **African states lack sectoral and subnational strategies for the effective implementation of the adaptation component of Nationally Determined Contributions (a-NDCs)**. This constitutes a challenge for successful implementation of the NDCs and adaptation action since many climate change activities are implemented at the sectoral level. The preparation of national and sectoral climate change related policies and plans are therefore crucial for NDC implementation. Effective adaptation planning can help countries design critical actions to address a country's specific climate impacts and vulnerabilities, as well as the financing strategies that focus and catalyse adaptation investment, including within the GCF project pipeline (GCF, 2018).

- **Defining Adaptation Priorities**

The UN Economic Commission for Africa (UNECA) and UNDP in analysing NDCs submitted by African countries have identified common themes across the continent in terms of adaptation requirements and priorities.

This creates an opportunity to pool resources and support countries as a collective, for the development of climate policies and to build their capacity to access adaptation funding. **Figure 2 highlights that agriculture is the most targeted sector for adaptation across the continent, followed by forestry, and water resources, with a significant prioritization of health, transportation & infrastructure.**

The analysis by Girma (2018) is supported by other studies, including the World Bank study that identifies water supply and flood management as one of the top three adaptation risks and costs in both the wetter and drier climate scenarios, with Sub-Saharan Africa footing by far the highest costs economics of adaptation to climate change (EACC), (World Bank 2008). This has implications on multi-country activities that the African Climate Governance System could facilitate.

Figure 2: Adaptation INDCs by sector



Source: Girma 2018

## The Opportunity: Capacity Building Programme for NAPs

The importance of climate change adaptation (CCA) is influenced by how the issue is framed in particular contexts. To the extent that it is viewed as a public safety issue or a development issue can mean that it has greater resonance within national and local policies. In many cases, the most attractive adaptation actions are those that offer development benefits in the relatively near term, as well as reductions of vulnerabilities in the longer term (Mimura, N. et al 2014).

African countries are progressing in translating climate science information into action despite lagging in the development of adaptation plans. As such, due to the nascent nature of the practice, there are limited literature and assessments of continent-wide state adaptation planning and readiness for climate actions. With emerging obligations such as the communication of NDCs arising from the Paris Agreement and the support through the GCF Readiness Programme amongst others, this body of knowledge available for examination should improve.

There are now more opportunities for supporting African countries not only in accessing funding for planning, but also in the development of tools and guidelines to support national adaptation planning, such as targeted materials for policy makers.

African countries have obligations in terms of adaptation components of nationally determined contributions (a-NDCs), biennial update reports (BURs), and National Communications albeit with degrees of flexibility in substance, vehicles, and periodicity. However, with adaptation being a continental priority, maintenance of momentum is key. [From the analysis of the NDCs of African States, 15 per cent and 85 per cent of countries employed an economy wide approach and a sectoral approach respectively.](#) The existence of sectoral adaptation plans was identified in the NDCs of 30 per cent of African States.

According to UNFCCC (2015), adaptation components of NDCs were received by the UNFCCC Secretariat from the NDCs of 46 African States. The adaptation components received from African states among those from parties from other continents included information on key impacts and vulnerabilities. As per the information provided by the African states among other parties, parties are transiting to full scale planning and implementation of adaptation efforts. In the NDCs, 47 per cent of African states referred to the development of a nationwide adaptation plan (NAP) with majority of these countries envisaging to have completed the process by 2020.

A greater proportion of African States have submitted both the first and the second national communications to the UNFCCC Secretariat. All of the national communications submitted had a section on climate change adaptation.

With the GCF Readiness Programme assisting developing countries through a **\$ 3 million** grant allocation for the development of National Adaptation Plans (NAPs), the adaptation planning landscape is likely to improve significantly

## Case Study:

# Integrating Climate Change Adaptation In Development Planning For Ethiopia



Picking ripe coffee (harvesting) at Yayu, South Eastern Ethiopia (Image: Jeremy Torz, Union Hand-Roasted Coffee).

Ethiopia is one of the countries most affected by climate change. Its vulnerability to the reduction of rainfall and the drastic absence of precipitation is evident. It was among the first African countries to present a climate change strategy at COP 21, with a very ambitious goal, to reduce 64 per cent of its greenhouse gas emissions by 2030, even though its emissions are estimated at 0.3 per cent of global emissions.

To achieve this goal, Ethiopia launched the National Climate-Resilient Green Economy Strategy (CRGE) in 2011. The CRGE is aimed at accelerated and sustainable development accompanied by green growth that would promote Ethiopia to the level of a middle-income country by 2025.

The implementation of this strategy is valued at USD \$ 150 billion and is supported by partners such as the United Nations Development Program (UNDP), the UK Department for International Development (DFID), Norwegian Government and the Austrian Government.

### **The development of the green economy in Ethiopia is based on four pillars.**

**Agriculture:** increasing crop and livestock productivity to ensure food security and improve farmers' livelihoods while reducing emissions (smart agriculture).

**Forestry:** protecting forests and increasing reforestation for economic and ecosystem services. This involves a reduction in the use of firewood and the substitution with other sources of energy for adaptation.

**Energy:** developing electricity generation to integrate renewable energy into national and regional markets.

**Transport, industry and infrastructure:** adopting efficient and modern energy technologies. The government has developed significant investments in improving transportation, for example the Ethiopia and Djibouti cross-border railway line is the first fully electrified line in Africa.

A total amount of \$ 1.1 million was allocated to strengthen its climate information services and early warning systems and increase adaptation to climate change. Ethiopia has also launched the implementation of its National Strategy for Climate Change Education in 2016, which is aimed environmental awareness through schools, in order to encourage citizens to become supporters of a green and resilient economy by 2030.

# 3

## Adaptation Response: Implementation in Africa

**The continent is investing in prioritised adaptation action, more investment needed to meet full scale of the challenge.**

- **Actions on the Ground**

The need for adaptation has been unanimously endorsed especially among African countries since the beginning of negotiations under the UNFCCC around the 1990s. Consequently, African governments have made strides in the past decade in adaptation and related investments from the UNFCCC, especially through the completion of NAPAs and the initiation of NAPs and mainstreaming adaptation into development efforts (Ford et al., 2013). This has led to an increase of reports on adaptation in Africa since 2006, which are driven by national governments, international institutions and NGOS.

Since 2013, experts have reported that there was also an increase in several adaptation programmes across the continent, especially in agriculture, disaster management and water. This gives an indication of African governments taking adaptation in climate policy more seriously. An analysis by Ford et al., expands further highlighting the dominance of adaptation work on the ground, with a focus on assessing vulnerability, supporting stakeholder workshops and developing tools rather than the concrete actions on the ground (Berrang-Ford et al. 2011; Lesnikowski et al. in press, 2011). However, it is important to note that these simply constitute the first critical steps for adaptation and must be used to encourage more concrete adaptation activities on the ground.

**The majority of interventions were in the agriculture and water sectors, but there is limited evidence of work on health systems, energy, ecosystems and coastal management.** There is an indication of a gap in reported adaptations for infrastructure development, especially for disaster and flood risk management across the continent. The analysis of the state of adaptation by Ford et al., 2013 indicates that progress on adaptation across the continent is uneven by country, region and sector. There are distinct groups of leading nations recording between 14 to over 30 adaptation actions, balancing on the ground activities and concrete adaptations consistently over the observed period, as opposed to another group reporting fewer than 9 adaptation actions, mostly on the ground activities.

The analysis goes further to highlight that the top adapters tended to be low-income countries receiving comparatively higher levels of adaptation financing. There is however a deficit in adaptation at low to upper-middle-income countries, except for South Africa, a fact which emphasises the importance of increasing investment and financing for adaptation to assist other African countries in poorer regions. There is also some evidence that among other factors, international financing (through World Bank, UNFCCC) has a catalytic role in placing adaptation further up the national policy agenda (Fankhauser and Burton 2011; Huq et al. 2003; Kumamoto and Mills 2012).

**Transboundary adaptation actions are at a nascent stage, with only three per cent of the documented adaptations in partnership between two or more nations by government, NGOs, or international institutions being cross-national.** This needs urgent attention in Africa given the transboundary nature of use and climate impacts on natural resources, such as the management of water resources which tends to be highly politicized and a recurring source of conflict (Ford et al., 2013).

It is also important to note that when examining the state of adaption in Africa, there is a combination of preparatory work such as research, stakeholder engagement, analysis, etc. and concrete actions. The latter are projects that respond to emerging or pressing needs. Countries in Africa that have reported the highest number of adaptation actions also tended to be leaders in implementing concrete adaptations as opposed to conducting preparatory assessments on envisaged adaptations (Ford et al., 2013). Among the countries listed are Kenya, Ethiopia, Mozambique and Ghana. Countries such as Mali, Namibia, Senegal, Sudan, Uganda and Zimbabwe, were notable for reporting substantially more actions than groundwork.

Despite such strides, adaptation still exists with limited involvement of lower levels of government or subnational agencies (Ford et al., 2013). North Africa has the least capacity in terms of knowledge for adaptation policy making in the region. Most of the projects implemented in Africa so far relate to technical assistance, policy development, and advocacy, rather than the implementation of concrete actions especially at sub-regional and regional levels (AAI 2016). While these areas remain important, they are certainly not the overriding priority in terms of addressing climate impacts.



- **Activities in the Agriculture Sector**

Approximately 30 per cent of all reported adaptations are from agriculture, mainly in the semi-arid regions. These generally include national assessments of impacts and adaptation opportunities within the sector, institutional guidelines for adaptation, and recommendations or public awareness program for adaptive measures to reduce risk.

Reporting of sub-national initiatives focuses on reducing vulnerability within the sector for resilient livelihood systems and disaster risk management in the Sahel, the Horn of Africa and other parts of Eastern Africa, and especially in the large river basins. For example, in Niger, research by IIED focused on identifying existing community 'champions' representing local agricultural adaptation actions already present in the region to build on and promote existing adaptive capacity mechanisms, as well as engaging in print and electronic media to disseminate to the public on adaptation options.

Project activities in Ethiopia, Tanzania and Kenya have mainly focused on food security, climate change mainstreaming in local and community development and country specific implementation of adaptation activities. These activities also resonate with FAO core principles modelled to enable increase in resilience to climate change through adoption of technologies for soil health and fertility and water conservation. These and other pilot projects around Africa have also targeted diversification and livelihood income, backed by strong institutional networks to incrementally deal with vulnerability to climate (FAO 2014).

FAO has also implemented successful projects on conservation agriculture in the drier areas of southern Africa (particularly Zimbabwe and Lesotho) since 2000. The aim of the projects was to reduce farmers' vulnerability to drought and soil degradation through the intensification of sustainable production. Zimbabwe subsequently developed a conservation farming strategy and set up a Zimbabwe Conservation Agriculture Task Force, which implemented projects between 2004 and 2008 and saw an increase in average yields by 50 to 200 per cent for over 40,000 farming households (FAO 2014). Similar successes were noted in Lesotho from the year 2000, where in 2007/2008, these farmers produced excess grain that they sold to the World Food Programme for profit (FAO 2014). The question that needs attention in this respect is to what extent such programmes can be replicated in other countries both in and outside the region.

A serious omission indicated by Ford et al., 2013 in terms of the documented adaptation programmes in the agriculture sector is that there appears to be little consideration for vulnerable groups in these programmes. While special attention is generally accorded to women in many southern and Eastern African countries (Malawi, Namibia and Eritrea), adaptation programmes outlined in some in West African countries such as Mali among livestock farmers, there remains a question of how gender sensitive adaptation programmes to climate change is (ibid.).

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Only about **20 per cent** of documented programmes **consider socioeconomically disadvantaged populations** (children, elderly and indigenous populations) and only about **ten per cent consider the vulnerability of women**.

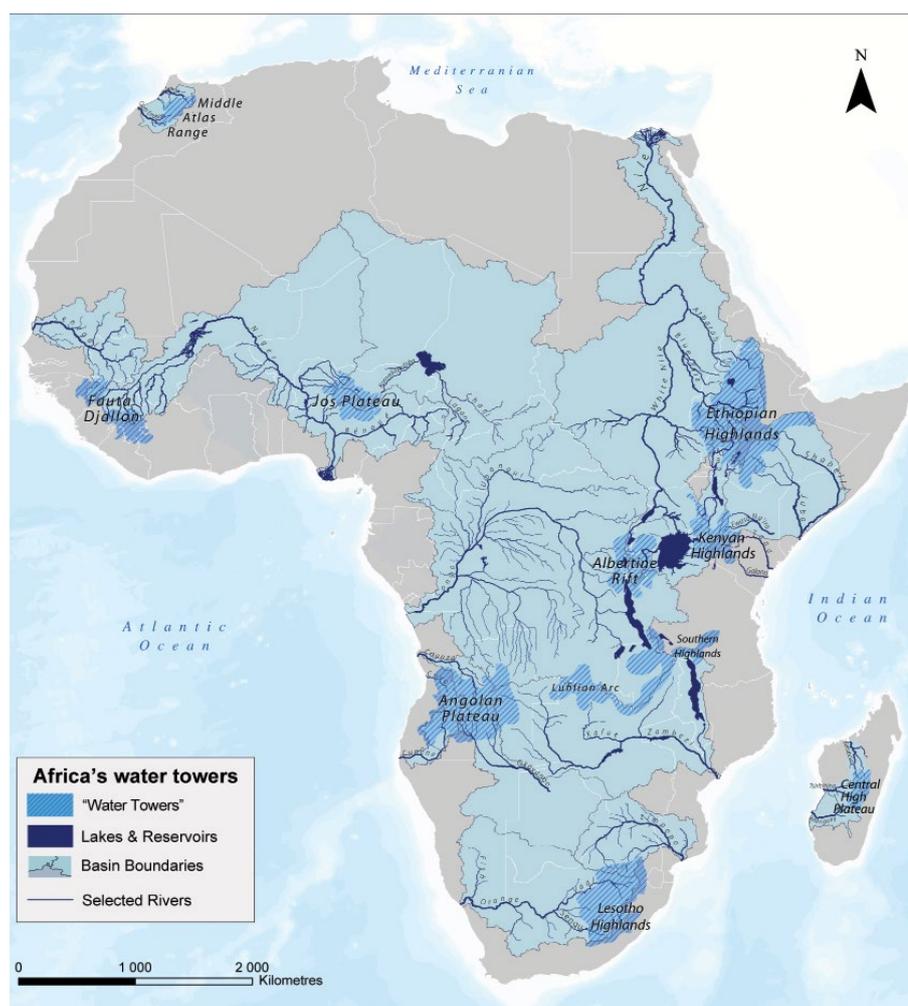
This therefore requires appropriate responses when designing any regional adaptation programmes in the future. Lessons learned from successful programmes across the world have to be applied and gender disaggregated statistics and data (quantitative and qualitative) collected and analysed at all stages of the project cycles. This is to ensure effective tracking, according the relevant criteria to monitor gender participation, empowerment and the impact of mainstreaming of gender needs in such programmes.

- **Activities in the Water Sector**

Despite the high prioritisation of the water sector in African country’s NDCs, a review of actions on the ground for individual countries in specific regions shows less activity for adaptation projects in the water sector than for agriculture, with the majority of projects for individual countries mostly seen in the West African region (AAI 2018). These projects mainly focus on research and capacity building, generally on scientific understanding about water management and livelihoods for decision making in the context of climate-resilient infrastructure. There is some focus on water management in themes such as, Basin Water Management; Land, Water and Livelihoods; Agriculture, Water and Cities; and Water Management and Environment. About 100 adaptation initiatives associated with water management, extraction, treatment and general use were identified by 13 per cent of the literature reviewed. Several the projects focused on water management in large African rivers such as the Nile, Limpopo, Orange and Niger.

The IPCC reports indicate that southern Africa is likely to be the hardest hit region by reduced rainfall, implying the need for more country and region-specific programmes that target water harvesting and irrigation technologies, including research and capacity building in these areas at all levels. Recent droughts and water shortages in South Africa in 2017 and 2018 have highlighted this need very harshly for many people.

**Figure 2:** shows several of Africa’s “water towers.” They were identified by relative elevation (generally 200–800 m above the surrounding area); precipitation above 750 mm; and runoff above 250 mm. They were also selected for the contribution they make to water re-sources for populations beyond their delineated boundaries.



Source: UNEP. (2010). “Africa Water Atlas”. Division of Early Warning and Assessment (DEWA).

## • The Importance Of Regional Cooperation on Transboundary Waters

Regional cooperation on transboundary waters is a public good that benefits all parties and can open new opportunities for riparian states to sustainably develop water resources. Some 276 river basins cross the political boundaries of two or more countries and are home to about 40 per cent of the world's population. However, roughly two-thirds of these do not have a cooperative management framework.

Water is one of the most shared resources on earth. As the climate changes and water resources become scarcer, the need for effective and equitable governance becomes ever important. Though there is no blueprint for how transboundary cooperation should be done, it is important that:

- The respective riparian states feel ownership of, and political commitment to, the processes of promoting cooperation,
- The benefits of water and productive outcomes of water are shared,
- The respective riparian states shift focus and move from challenges and constraints to opportunities,
- Broad partnerships are built for negotiated outcomes among and within riparian states, and
- Trust and personal relations are developed among riparian delegations from states and between domestic water user groups.

While there are many international water cooperation agreements in place, disagreements and disputes still occur. It is therefore important that societies set in place domestic, bi- and multilateral mechanisms to support peaceful and effective mediation. Cooperation is especially critical in water-scarce regions where the upstream and downstream impacts of consumption and pollution are magnified. Effective and sustainable global, regional and basin-level legal and institutional frameworks, and effective can also be conducive to stable and reliable cooperation, increasing security for competing uses and preventing conflicts.

## Case Study: The Transboundary Agro-ecosystem Management Project for the Kagera River Basin 2010 – 2014



The Kagera River Basin is a key freshwater resource base and biodiversity area shared by Burundi, Tanzania, Rwanda and Uganda and it provides agriculture-based livelihoods to approximately 16.5 million people.

Challenges facing the basin include land degradation, deforestation and encroachment into wetlands for agriculture purposes.

FAO has partnered with the multilateral partners to address these challenges through the Kagera project that promotes new land management techniques and increased yields as well as encouraging the adoption of new technologies and approaches.

Two major benefits from the partnership are the new geographical information system that finds previously overlooked areas where sustainable land management technologies can be applied, including close monitoring of project impacts on ecosystems and livelihoods.

### At the outset, the projected targeted:



- 30 per cent increase in vegetation cover
- 20 per cent increase in carbon stores over 30 500 hectares of land
- 10 per cent increase in crop, livestock and other product yields
- Training to nearly 125 000 people, ranging from local farmers to technical staff and policy makers.

- **Activities in the Coastal and Fisheries Sector**

Programmes on coastal zones and fisheries in Africa generally target the need for science, technology and innovation (STI) knowledge generation, brokerage, circulation, and socialization for commercialisation of scientific and indigenous knowledge into new technologies. There are also programmes that target more than 40 marine related institutions from twenty-five countries in Africa to address the challenges faced in accessing data and information for coastal management and research that is locally relevant, strengthens scientific knowledge, engages multidisciplinary teams, and can inform public policy and planning processes. Notable efforts are the collaboration that promotes the implementation of Indian Ocean Tuna Commission (IOTC) Resolutions in the South West Indian Ocean (SWIO) countries, enhancing their compliance with their international fisheries obligations.

There are significantly fewer adaptation programmes in the coastal zones and fisheries sector, notably due to the concentration of coastal areas in a few countries across the continent. The Africa wide programmes are well distributed across the regions, with two of the programmes housed by hubs, one in South Africa (CORDEX) and the other in Kenya (ATPS). Notably, seven of the eight programmes in this category pay attention to research and capacity building through stakeholder engagement, including a focus on communities and the youth. Similar efforts can be replicated in other countries that are not necessarily covered by these programmes, but also scaled up within the same countries that they are housed.

## Worldfish: Nile Tilapia Programme in Egypt



**A hatchery worker holds Abbassa Nile tilapia grown at a hatchery in Egypt. WorldFish project.  
Photo by Heba El-Begawi, 2013**

By 2025, African governments hope that 40 per cent of the total fish consumed in Africa will be met by aquaculture. Ongoing research and training provided by the WorldFish-run Africa Aquaculture Research and Training Center in Egypt will be critical to achieving this goal. Since opening in 1998, the centre has developed a faster-growing strain of Nile tilapia and trained over 1690 individuals from 105 countries in aquaculture techniques.

Ahmad Sharaky Tilapia Hatchery is one of 130 hatcheries and 50 fish farms that received a fast-growing strain of tilapia through the Improving Employment and Income through the Development of Egypt's Aquaculture Sector (IEIDEAS) project funded by the Swiss Agency for Development and Cooperation.

The improved Abbassa strain of tilapia grows up to 28 per cent faster than Egypt's best commercial breed, and is expected to bring much-needed economic, food and nutrition security benefits to millions of Egyptians. Ahmad Sharaky Tilapia Hatchery received the improved strain in 2012 and the hatchery subsequently expanded operations and saw improved production as a result.

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## The Opportunity: Strengthening Transboundary Cooperation with Regional Partners

Another successful project implemented by WorldFish is the work on the Barotse Flood-plain in Zambia, which provides the region's 250,000 inhabitants with a critical source of income and food, particularly fish. But fishers, processors and traders have limited means to preserve fish, meaning around one-third of fish is often lost during processing and trading, jobs that are mostly done by women. As part of the FAO funded Cultivate Africa's Future (CultiAf) project (late 2014 to early 2017), WorldFish worked with 256 fishers, processors and traders from six fishing camps in the Barotse Floodplain to trial fish processing technologies such as salting, ice and solar drying tents.

Research finds that the improved technologies can reduce losses and decrease the time burdens of women. This research is critical to increasing the likelihood that the benefits of small-scale fisheries are optimized for both women and men.

Recommendations for improving concrete adaptation actions across Africa are:

- Develop adaptation actions that are informed, but focussed beyond just preparatory assessments of adaptation actions;
- Prioritize partnerships with international organizations such as GWP, FAO and World Fish to enhance adaptive capacity at national level;
- National governments should lead on more projects that focus on concrete adaptation actions in the water, health and coastal zones and fisheries sectors;
- Consider the development of adaptation actions that have the capacity to reduce poverty for vulnerable communities, for example, increasing irrigation and water harnessing technologies, which is critical for food security in arid and semi-arid areas on the continent;
- Strengthen African academic and training institutions to develop some centres of excellence and to build partnerships with government agencies to implement adaptation initiatives.

A strong implementation partner for adaptation actions on the ground in Africa is the UNDP, which manages the UNDP Africa Adaptation Programme. It has up to twenty institutions as implementation partners, among them, WMO, UNDP, ALM, Africa-adapt, CORDEX, AGRYMET and CDKN, among others. Lessons can be learnt on how to replicate activities to other non-project countries (UNDP 2016).



Strategic partnerships are highly recommended as a pathway for increasing effective adaptation actions on the ground.

This optimizes investments and broadens the scope capacity building programmes at all levels across at least twenty African countries.

- **Activities in the Health Sector**

It appears that programmes on health are not as widespread as those of other sectors. It is now critical for the African continent to allocate and increase funding mechanisms toward the health sector for climate adaptation across the entire region, beyond the current focus on West and East Africa. Perhaps there is also need for a more comprehensive inventory of health projects by region and individual country to make the information more accessible. The available projects generally focus on provision of global information as a basis for decision making in a number of emergency humanitarian aid areas, including: Public health Energy Agriculture Weather Water Climate Natural Disasters Ecosystems Accessing.

This challenge is not unique to Africa given that out of the 1912 initiatives in an assessment of non-Annex I parties to the UNFCCC, **80 per cent of health adaptation efforts is preparatory action as opposed to tangible project activities and only 15 per cent of adaptation initiatives were health related** (Lesnikowski et al. 2011).

## Risk expands but opportunity awaits. Emerging Evidence on Climate Change and Health in Africa

### Africa-specific health impacts

Likely to increase the burden of specific diseases, climate change will also act as a multiplier of existing health vulnerabilities, such as poor water and sanitation, food insecurity, and limited access to health care and education. Climate change is likely to aggravate and already poor health situation:



**Now:** Malaria deaths have declined since the mid-2000s, but it remains a leading cause of mortality across the continent.

**Future:** Increased malaria in highland areas, especially in East Africa where as many as 45 to 65 million more people may be at risk by 2050.



**Now:** Children in sub-Saharan Africa are 14 times more likely to die before age 5 than children in development regions.

**Future:** 10 million more children under age 5 at risk from under nutrition as a result of climate change.



**Now:** Most virulent in Africa, meningococcal meningitis epidemics can reach 800 cases per 100,000 people, compared to a rate of 3 cases per 100,000 in industrialized nations.

**Future:** Increased risk of meningococcal meningitis outbreaks as up to 8 percent of Africa becomes more arid and more suitable to the bacteria that causes the disease (by 2080).

Source: USAID Report (April 2017)

There is also an important component of capacity building to develop effective managers of health and development initiatives in the Africa Region, through bridging training with service delivery programs, focusing on the needs of the most vulnerable communities in the society. These projects aim to address issues of livelihood improvement through capacity building. However, Amis et al., 2014 highlight that southern Africa (with the exception of South Africa), appears to be the region where there is slowest progress in implementing health sector adaptation as compared to other regions.

In many cases, most of the countries in the region have benefitted from South African efforts towards adaptation in the health sector, where most of the institutions working on this aspect are located (Amis et al., 2014). African governments report in their National Communications (NCs) - health adaptation accounts for 15 per cent of all the reporting in the NCs - that health is a key sector when it comes to climate change adaptation, but lament that it is lagging behind in adaptation actions, implying that there is a lack of recognition in their national priorities for adaptation.

# 4

## Adaptation Response: Adaptation Investment In Africa

**Africa is investing its own resources on climate change adaptation, and public expenditure is effective in delivering adaptation benefits.**

- **Global Policy Perspective**

African governments are already investing in adaptation and spending close to two per cent of GDP, with bilateral ODA, which is not necessarily additional for adaptation finance reaching \$7.2 billion in 2016. The proportion of public expenditure on adaptation however remains at about 10 times ODA.

The funding gap remains at high levels, with some studies estimating it to be in the range of 40 per cent whilst some set it and around 90 per cent. This affirms the need for accelerated investment in adaptation. This could even be higher in light of unclear and inconsistent accounting rules in apportioning parts of ODA as climate finance, an area that the UNFCCC through its Standing Committee on Finance could provide policy guidance on.

Public expenditure has also been shown to be effective more than ODA in delivering adaptation benefits. This could be attributed to the contribution public expenditure delivers through social protection systems, suggesting the importance of consideration of the budgetary support modality is adaptation finance, compared to the traditional project-based support which has proved effective for mitigation using instruments such as CDM.

Policy and normative guidance of adaptation finance however needs to be built in financing institutions, such as MDBs and UNFCCC Finance Mechanism to ensure policy consistency. The funding criteria in a number of their instruments require a demonstration of 'additionality' in projects to be financed in a similar manner as it is for mitigation. However, experience shows that it is not only challenging to separate development activities for climate action in its entirety, let alone adaptation. As such, some policies may counter the policy objective of integrating adaptation in development planning.

Considering that a significant portion of the continent's population remains dependent on rain-fed agriculture and subsistence farming coupled with widespread poverty, there is a critical need to enhance the adaptive capacity of vulnerable populations to the impact of climate change. Despite this need and the growing economic losses as a result of climate change in the past decade, the current levels of adaptation finance continue to be low (Forbes, 2017). Adaptation finance may be defined as finance private or public, international or domestic that targets development that reduces climate risk and promotes climate resilience objectives (Pillay et al., 2017).

Notwithstanding the issues in mobilizing sufficient adaptation finance, governments across Africa are making significant progress in enhancing the effectiveness of public flows focused on adaptation-related expenditure. According to the United Nations Development Programme's (UNDP) African Public Expenditure report on Adaptation (APEA), 20 per cent of the potential negative climate impacts could be avoided if current levels of adaptation expenditure are maintained (UNDP, 2017). This suggests that African governments have been partially successful in directing public finance towards initiatives that will reduce future vulnerability.

To ensure that the progress gained by African governments in terms of financing adaptation is maintained, it is critical that the international community continues to work towards closing the adaptation funding gap. **The adaptation gap is prevalent across most countries in Africa. Based on sectoral and national studies, UNEP (2016) estimates that developing country adaptation needs under a 2°C scenario are likely to be between USD 140 to 300 billion annually by 2030, and between USD 280 and 500 billion by 2050.** Therefore, the current levels of public expenditure will not be sufficient to meet these adaptation needs and deliver the remaining 80 per cent of adaptation benefits required by expenditure.



Mobilize up to **US\$ 16 billion** by 2020 under the African Climate Business Plan  
(World Bank 2015)



**3X**

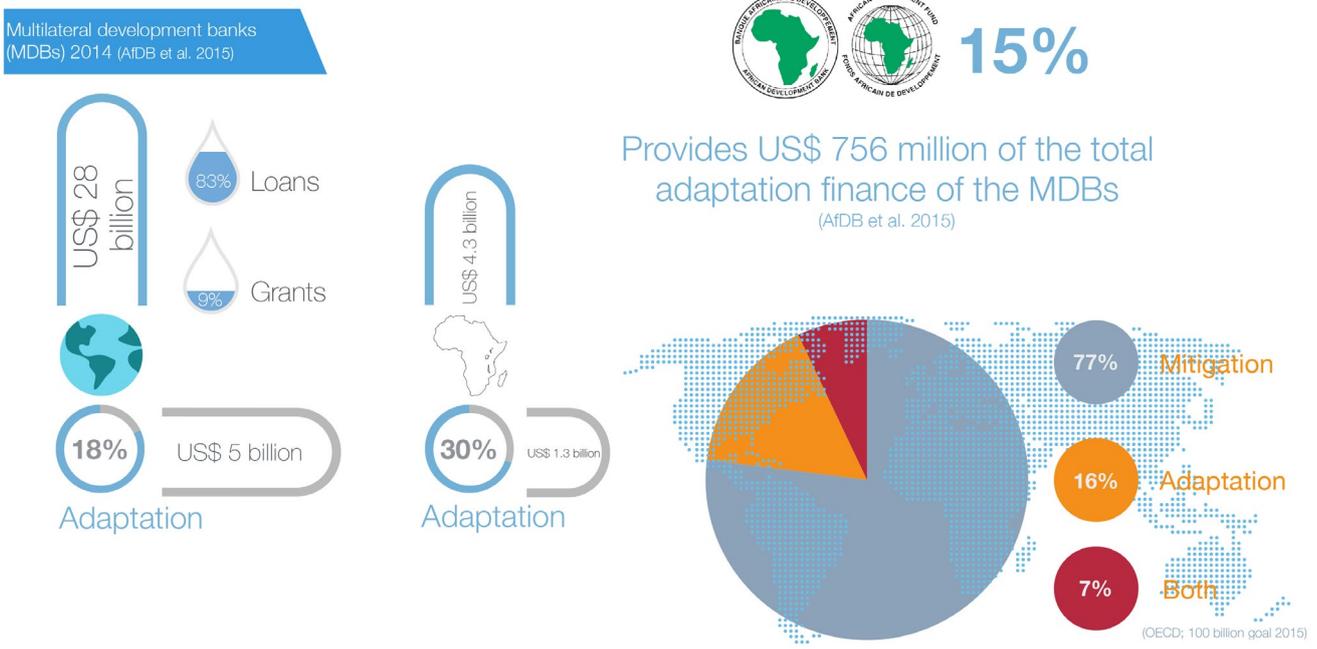
Disbursement of **US\$ 5 billion** annually by 2020, 1/2 towards adaptation  
(AfDB et al. 2015)

This therefore requires appropriate responses when designing any regional adaptation programmes. Numerous studies have been undertaken which have attempted to quantify the potential economic impacts of climate change. Climate change will not affect regions and sectors uniformly; therefore, regional studies must also assess the cost of inaction, as opposed to action regarding climate change (CIER, 2007). The Stern Review, which is one of the flagship studies undertaken on this topic, suggests that overall costs and risks of climate change could be equivalent to five per cent of global GDP with this percentage rising to 20 per cent if wider risks are also considered (Stern Review, 2006). Other regions agree with these trends: A study on the Asia-Pacific region demonstrated that without climate action, GDP would be decreased by 3.3 per cent by 2050 and 10 per cent by 2100 (ESCAP, 2015) while in Uganda, the GDP would be reduced by between 2.8 and 4.4 per cent. As suggested by Stern (2006), investments in adaptation can significantly reduce the future risks and economic costs thereby maintaining development gains.

• **Tracking adaptation finance spend and benefits**

Despite the high prioritisation of the water sector in African country's NDCs, a review of actions on the water sector in African countries has been undertaken. Despite the common usage of the term "adaptation finance", there is no universally accepted definition (CPI, 2011; Nakhooda et al., 2013). In contrast to mitigation finance, where projects have greater tangibility owing to their ability to deliver emission reductions, adaptation-related finance is dependent on the context of its application and is often difficult to untangle from general economic and development activities. For example, within bulk water infrastructure projects such as dam constructions, there is significant difficulty in understanding the contribution of a dam to alleviating climate vulnerability of users if factors related to exposure to relevant climate hazards such as extreme heat and drought are elucidated or taken into consideration.

The untangling of adaptation-specific financial flows from development finance budgets is particularly difficult owing to the fact that adaptation activities deliver also development benefits (UNDP, 2017). Insights into adaptation tracking and methodologies have improved significantly in the last decade, however these need to find space in climate finance policy landscape. This has been catalysed for the most part by the common principles for tracking adaptation finance, which has been agreed by international and national financial institutions and the OECD's Rio Marker for bilateral ODA targeting adaptation. At present, the tracking of domestic spend on adaptation is poorly captured with only a few studies being undertaken. This includes a report by the Overseas Development Institute (ODI) on climate public expenditure reviews on four African countries (Ethiopia, Ghana, Tanzania and Uganda) and UNDP programme on delivering Climate Public Expenditure and Institutional Reviews (CPEIR) in certain African and Asian countries.



- **An African perspective on adaptation benefits and public expenditure**

Within the overarching framework of the OECD/DAC methodology, expenditure is evaluated in terms of its relevance to climate change and then further broken down in mitigation and adaptation relevant flows. Adaptation expenditure can be described as spend that results in development gains and benefits under the current climate conditions. As climate impacts become more apparent, the development benefits will increase. The APEA study shows that adaptation benefits within the total benefits were assessed by understanding how benefits with and without climate change were considered (UNDP, 2017).

Table 1 illustrates calculated estimates for adaptation expenditure regardless of the sector as well as the weighted adaptation benefits accruing from this expenditure expressed in percentage GDP. The weighted adaptation benefits can be seen as the total benefits that relate to adaptation, rather than routine development. Where data was available (29 out of the 42 countries), total weighted adaptation expenditure was calculated to be between 0.1 per cent and 0.5 per cent of GDP.

The average across all African countries for weighted adaptation expenditure is 0.18 per cent of GDP and 0.19 per cent for the 34 LDCs. It is important to note the continent difference in the weighted adaptation expenditure between domestic flows and ODA (Official Development Assistance). This suggests that domestic flows have been more effective in delivering adaptation benefits beyond the development gains than donor aid.

Table I: Overview of adaptation-related Public Expenditure subset between all African countries and LDCs

	All African Countries		All LDC Countries	
	Domestic	ODA	Domestic	ODA
Total PE	27.97	2.53	22	5.15
CCA Expenditure	3.4	0.94	3.9	1.92
CCA Weighted Expenditure	0.18	0.11	0.19	0.23

The methodology used to assess climate change related in public budgets required an initial analysis of sector ministries that commission climate change relevant programmes and projects. These expenditures were classified as high, medium or low depending on how relevant the 'spend' was in addressing climate risks. Weights were then assigned to the high and medium expenditures to reflect the percentage of the activity that was climate change relevant. Lastly, weighted high and medium expenditure were either classified as adaptation- or mitigation-related. The studies undertaken by the ODI only assess the climate expenditure rather than the benefits from this expenditure. This case study also reports on the weighted adaptation expenditure as outlined in the APEA.

Table 2: Weighted Expenditure of African Countries on Adaptation related expenditures

Country	Absolute (\$ mn)	% of government expenditure	% of GDP	% Domestic Source/ International Source	Exp weighted by CC%	Exp weighted by ABS	Years
Ethiopia	440	10.8	1.8	80/20	1.83	0.37	2008 – 2011
Tanzania	383	5.5	1.4	38/62	1.43	0.05	2009 – 2012
Ghana	276	2.3	0.67	-	0.67	0.20	2011 – 2014
Uganda	25	0.9	0.15	91/9	0.15	0.16	2008 – 2011

Despite the common rhetoric that climate change activities are mostly financed by international financial flows, the analysis illustrates that the largest source of climate change re-lated spend is from the domestic public budget of African countries. In the case of Ethiopia and Uganda, 80 per cent and 91 per cent of climate change related spend was obtained from the domestic flows, respectively (Table 2). It is important to note that within three of the four African countries analysed, adaptation was the highest component of climate change related expenditure (Ethiopia (87 per cent), Ghana (68 per cent) and Tanzania (48 per cent)) (Figure 3). This finding is corroborated by other studies where domestic spending on climate change tends to be much higher for adaptation than for mitigation (World Bank, 2012; Bird, 2014).

- **An International Adaptation Finance Flows to Africa**

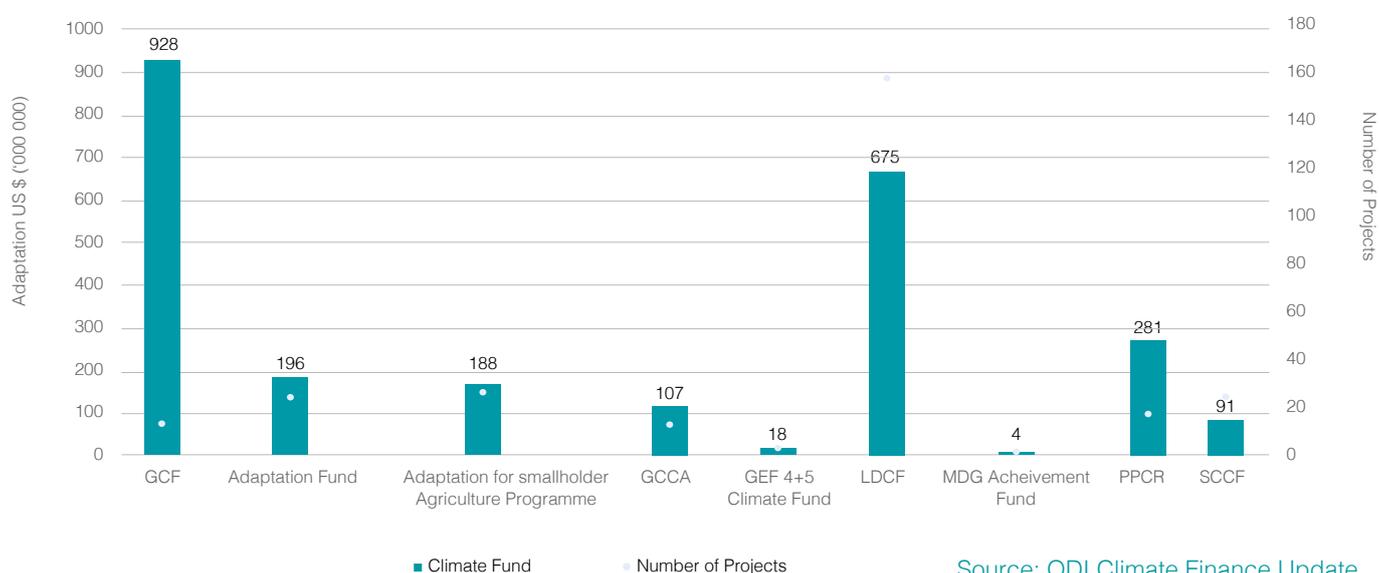
The OECD tracks adaptation by distinguishing between projects which have a principle and significant adaptation policy objective. Table 3, which outlines the African adaptation-related bilateral ODA of DAC members, suggests that there is growing donor recognition of the adaptation finance needs of African countries. This is reinforced by the growth of funded activities which are principally adaptation projects rather than projects which only deliver adaptation co-benefits.

In 2016, the total adaptation-related bilateral ODA using the OECD methodology was US \$ 7.2 bn with this amount growing by 26 per cent from the 2015 ODA flows. There may be underestimations in the ODA flows for adaptation as the data for certain countries such as the United States is not available in the reporting system; there could also be overestimation based on methodological choices used in accounting. Most ODA flows have been invested directly into projects rather than sector specific budgets with the European Union, France, Germany, Japan and the United States being the major donors of adaptation finance.

In response to climate change, the international community has established multilateral funds, which allow for financial resources to be disseminated to developing countries as part of commitments under the UNFCCC. These multilateral climate funds include: the Global Environment Facility (GEF), Green Climate Fund (GCF), Adaptation Fund (AF), the Least Developed Country Fund (LDCF) and Special Climate Change Fund (SCCF). Currently, the Green Climate Fund (GCF) (USD 928 million) and the Least Developing Country Fund (USD 675 million) are the climate funds that are the greatest source of adaptation finance for African countries.

These values suggest that adaptation finance flows need to be scaled up significantly if the USD 100 billion commitment, with a 50 per cent allocation to adaptation is to be met. Multilateral Development Banks are also important sources of climate finance outside the UNFCCC. The World Bank, for example, currently manages the Climate Investment Funds and recently developed its own strategy the African Climate Business Plan to further increase its resource mobilisation efforts for climate adaptation and resilience initiatives in Africa.

Figure 3: Total adaptation financial flows to African recipients from international climate funds



Source: ODI Climate Finance Update

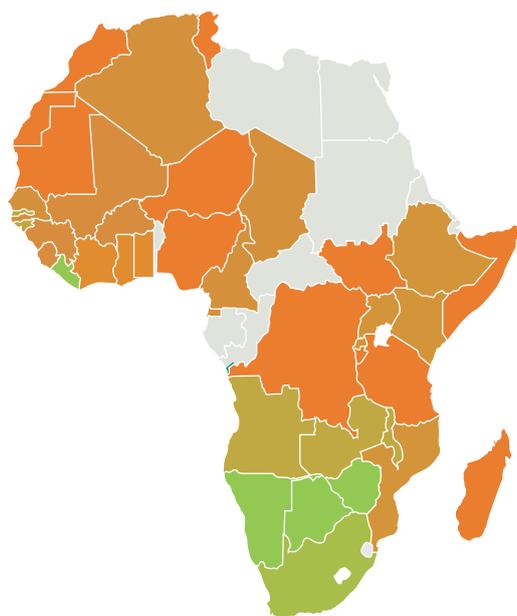
- **Understanding Africa's Finance Adaptation Finance Gap**

According to the World Bank, developing countries require between USD 70 billion and USD100 billion, while the UNEP Adaptation Gap reports states that this value could four to five times higher. There is a wide range of literature which has attempted to quantify the adaptation gap. The use of integrated assessment models (IAMs) in this regard is well documented, most notably in the Stern Review and the World Bank Economics of Adaptation to Climate Change studies.

More recently, Climate Change Financing Frameworks (CCFFs) that stem from UNDP's Public Expenditure and Institutional Reviews (CPEIRs) have been delivered in some Asian and African countries, closely aligned with the National Adaptation Plan process. Perhaps the most well known studies on the adaptation gap are the UNEP Adaptation Gap Report series. These reports were undertaken in 2014 and 2016.

A greater understanding of the adaptation finance gap gives insights to international donors and actors about sectors that require adaptation finance flows, thereby allowing entities to meet international commitments on funding adaptation-related programmes in more effective ways. Some sectors urgently require financial support as the impacts of climate change are occurring at a faster rate than predicted. Adaptation finance gap assessments can illuminate which sectors face increasing exposure as well as the level of finance required.

### Adaptation Gap



The **adaptation gap** can be defined as the difference between the level of adaptation that is currently undertaken and the envisioned needs to avoid climate change impacts noting the competing demands and resource limitations.

The adaptation finance gap specifically refers to the difference between the costs and the finance required to deliver a certain adaptation target.

Table 3: Summary of Adaptation Gap metrics from prominent studies

Study	CC Spending Needs	Current Spending (USD)	Adaptation Gap (%)
CCFFs	5 – 10% GDP		80 – 95
UNEP AGRs		1 – 2 bn	96 – 98%
APEA		1.8 bn	40 – 99.4%
ODI		1.3 bn in 4 African countries across 4 years	

- **The Private Sector and Adaptation**

One of the avenues essential to closing the adaptation gap is encouraging the private sector to make more adaptation and resilience related investments. However there are several factors that deter private actors:

**Adaptation investments are viewed as being public goods.** For example, the delivery of flood prevention projects are usually deemed to be the responsibility of disaster risk management units within government entities;

**Revenue Generation and Intangibility** – Adaptation projects may not yield significant returns on investment, which is the primary driver for influencing the private sector. Benefits may also be intangible with metrics such as avoided economic losses not being sufficient to entice investors;

**The private sector in Africa** – Considering that a large proportion of countries in Africa are classified as either low to middle-income countries, the strength and diversity of the private sector is limited. Furthermore, private sector actors focused on resilience and adaptation investments may not be classified as such. For example, a business focused on the manufacture and sale of rainwater harvesting equipment may be classified under “manufacturing” as an adaptation category does not exist; and,

**Credit ratings in Africa** – Credit ratings pose a significant challenge to most African countries. Lower credit ratings result in terms and conditions of debt and other financing options being unfeasible and unaffordable. This results in adaptation investments, which may have a marginal return on investment being too risky for impact or responsible investors.

It is of critical importance that African governments consider how public sector financing can more effectively be used to catalyse private sector adaptation investment. This could be undertaken by:

Creating stronger incentives and demand for adaptation investments by the private sector. This could be facilitated through demand creating mechanisms such as the Higher Ground Foundation’s Vulnerability Reduction Credits or the African Development Bank’s Adaptation Benefits Mechanism;

The risk-based approach to financing of the insurance sector may provide useful learnings to the adaptation finance area. In the African context, the African Risk Capacity (ARC) provides a useful example of how disaster risk financing approaches can be used to reduce long-term climate vulnerability;

Promoting legislation and policies that facilitate the uptake of assessments by financial institutions of climate risk within their portfolios. The recommendations made by the Task Force on Climate-related Financial Disclosure (TCFD) could be a useful resource; business models for SMMEs that are delivering resilience products or services;

Promoting greater capacity within financial institutions on understanding how resilience and adaptation investments that have the potential to deliver marginal returns on investments could be structured to attract private investors.



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