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APPROVED

IMPLEMENTATION AND RESOURCE MOBILIZATION PLAN

of the

INTEGRATED AFRICAN STRATEGY ON METEOROLOGY (WEATHER AND CLIMATE SERVICES)

AFRICAN MINISTERIAL CONFERENCE ON METEOROLOGY (AMCOMET)

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2. Introduction

Africa is considered to be one of the most vulnerable continents to the adverse impacts of climate variability and climate change. This is further exacerbated by the limited capacity of relevant government agencies to produce and deliver accurate weather and climate services that meet end-user requirements. There is a strong need for enhanced infrastructure and mechanisms to adequately and effectively manage weather and climate related disasters.

A significant contributor to this inability/incapacity to adequately predict, prepare for and mitigate weather and climate disasters is the general weakness of the National Meteorological and Hydrological Services (NMHSs) and institutions such as Regional Climate Centres (RCCs). These institutions are tasked to produce warnings at different time scales (hours, days, months and in the future years and decades) to different user groups ranging from decision makers to farmers. The institutions often lack the capacity and resources to produce, maintain and develop the required services at the appropriate level and the framework or influence to integrate them in National and Regional Development Plans. Many reports have highlighted the multi-faceted issues most African NMHS and RCCs face.

Most initiatives and programmes promoting Africa's sustainable development explicitly integrated climate risk management and climate change adaptation as a core element. However, it is often not recognized that in many cases the NMHS and associated RCCs tasked to provide the required weather and climate services have not been adequately and sustainably capacitated.

The African Member States, through the 2010 Nairobi Ministerial Declaration and further elaborated in the 2012 Integrated African Strategy for Meteorology (Weather & Climate Services), herein after referred to as the Strategy, agreed that weather and climate services are central to the socio-economic development of their countries and that actions to develop and enhance the National Meteorological and Hydrological Services (NMHSs) to provide better weather and climate services that meet end-user needs, should urgently be undertaken.

In 2012, while preparing the Integrated African Strategy for Meteorology (Weather and Climate Services), the experts representing stakeholders noted that "*the current status of the National Meteorological and Hydrological Services in Africa is concerning, as it is far below the required level of basic operation. Most lack basic weather infrastructure network, telecommunication facilities, databases, human resources and computational capability to run numerical models, strategic plans, operational budget and specialized training". These challenges limit their ability to deliver on their mandates, in particular to provide and disseminate weather and climate services useful for socio-economic development.*

Meanwhile, within the context of climate variability and change, *"African National Meteorological and Hydrological Services are required to produce and apply efficient weather, climate, water and related environmental services to enable societies to reduce the associated risks."*

3. Brief Overview on the Integrated African Strategy on Meteorology (Weather & Climate Services)

To overcome the challenges experienced by the African National Meteorological and Hydrological Services (NMHSs), the Ministers at the First Conference of Ministers Responsible for Meteorology in Africa (April 2010, in Nairobi, Kenya) agreed on the establishment of the African Ministerial Conference on Meteorology (AMCOMET) as a high-level policy mechanism for the development of meteorology (weather and climate services) and its applications in Africa. One of the key roles of AMCOMET is to ensure that the socio-economic benefits of

weather and climate services effectively contribute to Africa's development, while facilitating technology transfer and development of meteorology, climatology and operational hydrology.

AMCOMET, a joint initiative of the World Meteorological Organization (WMO) and the African Union Commission (AUC) is the high-level ministerial body endorsed by the African Union Heads of State and Government and the WMO Congress, as the inter-governmental authority on meteorology, which advises and provides policy and political guidance to African Heads of State and Government on all matters related to the development of weather and climate services and their application in Africa.

The AMCOMET commissioned a pan-African strategy that represents a long-term vision on weather and climate services and reflects the political will of the region. The Strategy was approved during the Second Session of AMCOMET, held in Victoria Falls, Zimbabwe in October 2012 and subsequently endorsed by African Union Summit of Heads of State and Government in Addis Ababa, Ethiopia in January 2013.

The Integrated African Strategy on Meteorology (Weather and Climate Services) positions weather and climate services as an essential component in national and regional development frameworks in Africa. It aims at enhancing cooperation between African countries and strengthening the capabilities of their National Meteorological and Hydrological Services (NMHSs) and related Regional Climate Centres (RCCs). The Strategy serves as the key commitment at the pan-African level to addresses all elements related to the development and exploitation of weather and climate services. Sub-regional and national strategies are expected to cascade from the Strategy, taking into consideration specificities of the sub-regions and nations. See Table 1 below for the strategy's key objectives and pillars of action. The Strategy also serves as a key mechanism for the implementation of the Global Framework for Climate Services (GFCS) in Africa and provides a platform for the recognition and visibility of weather and climate services, building on the existing related initiatives, in particular, the ClimDev Africa Programme.

4. The Strategic Pillars of the Strategy

The Integrated African Strategy on Meteorology (Weather and Climate Services) is built on five (5) interrelated Strategic Pillars (SP), as described in Table 1 below:

Table 1: Goals and Strategic Pillars of the Integrated African Strategy for Meteorology

Overarching Goals	Strategic Pillars / Objectives
Positioning NMHSs and RCCs as key element in the development agenda	**SP1:** Increase Political Support and Recognition of NMHSs and Regional Climate Centres
Contribute to security (Protection of life, livelihoods and property) and sustainable development	**SP2:** Enhance the Production and Delivery of Weather and Climate Services for Sustainable Development
	SP3: Improve Access to Meteorological Services in particular for the Marine and Aviation Sectors
Enhance cooperation between African Countries for effective weather, water and climate services	**SP4:** Support the Provision of Weather and Climate Services for Climate Change Adaptation and Mitigation
	SP5: Strengthen Partnerships with Relevant Institutions and Funding Mechanisms

4.1 The Implementation Plan

The development of this Implementation Plan is an important aspect in the realization of the goals of the Integrated African Strategy for Meteorology (Weather and Climate Services).

The implementation plan lays out a 12-year (2016 – 2027) roadmap and methodology that will encourage policy makers to consider weather and climate services as key components of the development of Africa through effective mainstreaming into operational activities and development plans at the national, regional and continental levels.

To achieve the implementation of the strategic pillars, it is proposed to:

- Effectively integrate weather and climate services into operational activities and socio-economic planning and establishing sustainable business models;
- Develop and put in place regulatory frameworks to improving the legal status of the institutions and enable them to perform their duties properly according to the rules by transforming NMHSs into semi-autonomous agencies and provide adequate funding;
- Strengthen and build the NMHS and RCC capacity, through institutional building and strengthening of observation networks, to ensure the provision of quality weather and climate services to dependent socio-economic sectors;
- Organize and strengthen partnership with concerned stakeholders;
- Enhance and better articulate collaboration among countries.

This plan also lays out the necessary conditions for its successful implementation, including setting-up a coordinating mechanism and identifying stakeholders and their potential roles.

The Implementation Plan further addresses the issues of monitoring, evaluation and risk management; and proposes options for communication strategies and approaches to resource mobilization.

Beyond adequate funding and positioning of weather and climate institutions at national and regional levels, the implementation of the Integrated African Strategy for Meteorology (Weather and Climate Services) implies effective and proactive coordination of the many institutions, programs and initiatives. See **Annex 1** for an overview of AMCOMET's links to existing Programmes and Frameworks and **Annex 2** for the proposed roles and responsibilities of stakeholders with a view to further strengthening collaboration to minimise duplication of effort and maximise investment.

5. Implementing the Strategic Pillars

5.1 Guiding Principles

The Guiding Principles for the Implementation of the Integrated African Strategy on Meteorology (Weather and Climate Services) are as follows:

Principle 1: Full ownership and commitment of African countries / institutions to the development of weather and climate services at the national, regional and continental levels, consistent with the Strategy's principles, and in particular "Be collectively owned by Africa";

Principle 2: Political commitment to the African development agenda and complementarity with other frameworks such as GFCS, Hyogo Framework of Action (2005-2015), Madrid Plan of Action, relevant Sustainable Development Goals (SDGs), Post-2015 Framework for Disaster Risk Reduction, Rio +20 and other future climate action;

Principle 3: Empowerment of Africa nations in reducing disasters risks;

Principle 4: All-inclusive participation of relevant stakeholders in the implementation, monitoring and evaluation of the Strategy;

Principle 5: Development and implementation of nationally designed and resourced programmes that address country-specific needs and priorities;

Principe 6: Effecting institutional change and holistic approaches in implementing the strategy;

Principle 7: Promoting intra-African cooperation and collaboration between all countries and all partners;

Principle 8: Promoting free data and information exchange, including strong cooperation between all stakeholders.

6. Expected Results and Activities under each Strategic Pillar

Strategic Pillar 1: Increase Political Support and Recognition of National Meteorological and Hydrological Services (NMHSs) and related WMO Regional Climate Centres (RCCs). This Pillar aims to increase the recognition of the role that National Meteorological and Hydrological Services (NMHS) should play within the political decision-making arena through the integration of meteorological services' contribution to various economic sectors and in national development programmes. It further aims to increase the active participation of relevant inter-governmental officials and other stakeholders in establishing adequate weather and climate services, both at the national and regional levels, aligned with policies that address development challenges and opportunities.

Strategic Pillar 2: Enhance the Production and Delivery of Weather and Climate Services for Sustainable Development. This Pillar acknowledges the central role of NMHSs as the main providers of weather and climate services in Africa, and aims to improve the effectiveness and efficiency of the production and delivery of such services thereby enabling appropriate responses to the changing needs of government, society and sectoral users through suitable structures and working mechanisms. This pillar further aims to contribute to security (protection of life and property) and sustainable development.

Strategic Pillar 3: Improve Access to Meteorological Services, in particular for the Marine and Aviation Sectors. This Pillar recognises the requirement of the International Civil Aviation Organisation (ICAO) that meteorological authorities need to provide operators, flight crew members, air traffic service units, search and rescue service units, airport management and related aviation stakeholders with meteorological information that meets regulated standards required for international air navigation. The latest is the deadline for aeronautical meteorological services for aviation to be certified leading to ISO-9000 certification was November 2012. In addition, competences of personnel for aeronautical meteorological services should meet international standards and recommended practices of ICAO by 2016. The Quality Management System (QMS) for meteorological Services for international air navigation also requires that meteorological instruments and equipment be regularly calibrated and readings be regularly verified.

AMCOMET is urgently requested to take all the necessary steps to ensure that African countries comply with ICAO requirements. Currently, only 12 African countries are QMS certified and only 3 countries have completed their competency assessments.

Additionally, National Meteorological and Hydrological Services should further provide meteorological forecasts and warnings, which are critical for safety of life and protection of property at sea, integrated coastal management and societal impacts. It is also noted that the International Maritime Organization (IMO), in collaboration with Joint Commission of Oceanography and Marine Meteorology (JCOMM), may demand for ISO-Certification, through QMS, for services on maritime transport.

Strategic Pillar 4: Support the Provision of Weather and Climate Services for Climate Change Adaptation and Mitigation. This Pillar recognises that Africa is one of the most vulnerable regions of the world to the impacts of severe weather and extreme conditions associated with climate change. The majority of the continent's disasters are related meteorological and hydrological extremes. These disasters pose a serious threat to the continent's ability to attain the Millennium Development Goals and sustainable development. While impacts vary across the continent, it is generally agreed that the climate is becoming more extreme; and as such, the overall future of the African continent is uncertain unless adequate preparations are made and sufficient mitigation as well as risk reduction measures are put in place against the anticipated droughts and sea-level rises. Food security and

sustainable food production under a changing climate would be on the top of political agenda over the next decades. Development of appropriate tools for flood and drought monitoring and management would support those objectives.

Accordingly, it is crucial that AMCOMET, in collaboration with relevant African institutions, be actively involved in the African position on climate change in international negotiations, including the African Ministerial Conference on Environment (AMCEN), the African Ministers Conference on Water (AMCOW) and the Conference of African Heads of States and Government on Climate Change (CAHOSCC). In addition, AMCOMET will need to partner with the African Ministerial Conference on Science and Technology (AMCOST) in the research, design and operation of appropriate technology.

Strategic Pillar 5: Strengthen Partnerships with Relevant Institutions and Funding Mechanisms. This Pillar acknowledges the critical role of partnership building and cooperation in the development of meteorology in Africa. The Pillar underscores the success of the Strategy as highly dependent on the strength of the partnerships that AMCOMET is able to forge; both with existing institutions able to support its mandate as well as funding mechanisms able to provide the necessary financial resources to meet its goals. To be effective, the Strategy must be clearly linked with the work of other government departments and agencies, technical partners, the private sector, and other relevant stakeholders, and work in concert with other global and regional frameworks. AMCOMET plays a vital role in harnessing and developing these relationships.

Table 3 below outlines Expected Results and Outcomes, Activities and Key Performance Indicators for the above-mentioned Strategic Pillars. The table further maps out the scale and priority for each activity, potential implementing partners, estimated costs and timeframe for implementation.

There are 14 Expected Results, each with their complementary activities expected outcomes and key performance indicators. Each activity has been assigned to a specific Flagship Programmes; activities have been classified with a view to support the achievement of the broad objectives set out by each Flagship Programme.

7. Flagship Programmes (FPr)

Flagship Programmes serve to support the mobilization of resources to facilitate the implementation of the Integrated African Strategy on Meteorology (Weather and Climate Services). It is noted that many stakeholders will be needed to fully achieve the goals set out by the Strategy, thus, the development of various Flagship Programmes, based on the specific needs of the various regions in Africa is critical provide 'bite-size' initiatives that can be used as tools for collaboration with various development partners. The Flagship Programmes are described in Table 2 below.

Table 2: Flagship Programme Themes and Broad Objectives

Flagship Programme (FPr) Theme	Broad Objectives
Flagship Programme 1 (FPr-1): Improving Policies to Integrate Weather and Climate Services into Development Frameworks	**Systematic** integration of weather and climate issues into development policies, strategies and programmes in Africa at national, sub-regional and continental levels
Flagship Programme 2 (FPr-2): Addressing Disaster Risk Reduction and Sustainable Development	Capacity Development by strengthening weather and climate institutions' capacity and capabilities to produce and deliver adequate services at the user required level for addressing sector-specific needs, and high impact weather and climate events associated with climate change impacts
Flagship Programme 3 (FPr-3): Improve access to and use of meteorological services for transport, particularly in marine and aviation sectors	Improve meteorological forecasts for safety, economy and comfort of air navigation and maritime transport in accordance to recommended practices of ICAO, International Maritime Organisation (IMO) / Intergovernmental Oceanographic Commission (IOC) / Joint Commission of Oceanography and Marine Meteorology (JCOMM)
Flagship Programme 4 (FPr-4): Supporting Climate Change Adaptation & Mitigation and building resilience	Improving knowledge through enhanced observations, keeping abreast of technological advances and develop relevant climate services to support Climate Change adaptation and mitigation including Africa's common climate change negotiating position
Flagship Programme 5 (FPr-5): Partnership and Cooperation	To effectively recognize and consider the important role of all stakeholders and develop and maintain the relationship with donors and other development partners, essential to Weather and Climate Services

Below is a list of Existing Flagship Programmes and Projects whose overall goals are in line with the objectives as outlined above. Further initiatives and projects at the national and sub-regional level are expected to be developed in collaboration with development partners.

Flagship Programme 1 (FPr-1)

Africa Meteorology Day (29 June): With the establishment of the African Ministerial Conference on Meteorology (AMCOMET), some progress has been made in moving weather and climate services from the margins to the centre stage of the Africa's development agenda. However, much work still has to be done to enable the systematic integration of weather and climate related issues to pan-African, sub-regional and national policies, strategies and programmes.

The institutionalization of an Africa Meteorology Day (AMD) will facilitate discussions on the opportunities and challenges in the provision of weather and climate services. Africa Meteorology Day will also broaden the spectrum to include inputs from weather and climate professionals, other relevant stakeholders and partners with a view to accelerating the development of meteorology and its applications. AMD will further support the furtherance of the mission of AMCOMET, in particular in increasing the visibility and awareness of the value added of National Meteorological and Hydrological Services (NMHSs) as well as the need to invest in the necessary infrastructure and capacity development to enable NMHSs to fulfil their mandates.

Flagship Programme 2 (FPr-2):

WMO Information System (WIS): WIS will provide a flexible framework for exchanging information on weather, climate and water that is essential to providing effective information and services to decision makers, weather dependant industry and users. Sustainable information exchange needs coordinated implementation and operations of information systems and sub-national, national, regional and global level. The WIS provides this coordination at the international scales, but relies on implementation and operational activities within each Member.

The **Regional WIS Implementation Plan for Africa**[1] was developed by experts representing each of the sub regions of Africa and was finalised in September 2014. The plan aims to utilise the infrastructure provided by Global Information System Centres (GISCs) in Casablanca and Pretoria as web services to facilitate the rapid implementation of WIS by reducing the immediate need for new local infrastructure in each NMHS and supporting data centres. In the longer term, in addition to operating, maintaining, replacing and enhancing telecommunications facilities for collecting and exchanging information reliably and in a timely manner, continual investment in training and development of the staff responsible for these systems is essential if the required information is to be exchanged reliably. Without the information flow enabled by the WIS, the benefits of other investments would be greatly reduced.

WMO Integrated Global Observing System (WIGOS): The WIGOS vision calls for an integrated, coordinated and comprehensive observing system to satisfy, in a cost-effective and sustained manner, the evolving observing requirements of Member States in delivering weather, climate, water and related environmental services. WIGOS will provide a framework for enabling the integration and optimized evolution of surface- and space-based observations. Together with the WMO Information System (WIS), the programmes will allow continuous and reliable access to an expanded set of environmental data and products, and

[1] WIS Regional Implementation Plan for Africa 2014-2016 (http://wis.wmo.int/file=1139)

associated metadata, resulting in increased knowledge and enhanced services across all relevant programmes.

The **Regional WIGOS Implementation Plan[2] for Africa** has been developed with a view to addressing regional aspects of user requirements, standardization, observing system interoperability, data compatibility, data management, quality management systems and procedures, including performance monitoring and data quality monitoring and proposed improvements in observing networks/systems.

An important role of African NMHSs will be to assess and continuously monitor regional requirements, identify regional gaps and identify capacity development projects within the Region to address those gaps. Regional activities (such as *CLIMDEV-AFRICA, WHYCOS projects, AMESD and MESA, AFRICAN AMDAR, etc.*) having connection with WIGOS will be integrated in the RA I WIGOS Implementation Plan.

AMCOMET, as the overarching framework for coordination, will be leveraged to ensure strong collaboration with regional and sub-regional institutions such as ACMAD, MASA, IGAD, ECOWAS, ASECNA, SADC, ECCAS, AGRHYMET, UMA, IOC, among others, in the implementation of the WIGOS activities in the sub-regions.

METAGRI Operational (MetAgri-OPS): The pilot initiative MetAgri (Meteorology and Agriculture) started in 2008 as a request from the Conference of Directors of Western Africa National Hydro-meteorological Services to develop information and services aimed to increase food security, food production, risk reduction and poverty alleviation into rural areas. About 160 Roving Seminars[3], 7300 farmers and other 1000 persons were trained and total expenditure was around 1 Million Euros provided by the Spanish AEMET Trust Fund at WMO.

The project has evolved into **METAGRI OPERATIONAL** (or METAGRI OPS) aims to provide weather and climate services to the agricultural users (including livestock management, forest, traditional fisheries and rangelands) by the NMHS in close cooperation with other national institutions that have a mandate on food production or food security.

The overarching objective is to ensure that the food producers understand weather and climate information, as well as the use of crop models to establish seed calendars and yield estimations for smallholder farmers, and use it to make informed decisions to secure food production, increase wealth and strength rural communities.

Cooperation with EUMETSAT[4] on training in the use of remote sensing data and products for improved agro-meteorological bulletins and assessments are performed in three sessions that cover 22 countries in Western and Eastern Africa in on-going. Development of communications strategies to collaborate with the media for the broadcast of agro-meteorological and climate information are also underway. Furthermore, evaluation tools are being developed to show economic and societal impacts of the project. Baseline measurements, through the use of weather and climate services, are being performed in pilot countries and are expected to extend to Western Africa and beyond.

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[2] http://www.wmo.int/pages/prog/www/wigos/documents.html

[3] The project includes the following Western Africa countries: Mali, Niger, Burkina Faso, Senegal, Mauritania, Cape Verde, Gambia, Guinea-Bissau, Guinea, Togo, Benin, Nigeria, Liberia, Sierra Leone, Ghana, Côte d'Ivoire and Chad. For more information on the project: http://www.wmo.int/pages/prog/wcp/agm/roving_seminars/west_africa_en.php

[4] http://www.eumetsat.int/website/home/AboutUs/index.html

WMO / AMCOMET African Regional Space Programme on Meteorology: This initiative ***supplements*** the efforts of the *African Regional Space Programme*[5] coordinated by the African Union, through the Human Resource and Science and Technology Commission and in collaboration with AMCOMET and the African Ministerial Conference on Science and Technology (AMCOST). This initiative pays a particular focus on meeting the needs of the meteorological sector and will be used as input to the pan-African Space Programme. The draft concept and its proposed activities also aim to lead to a roadmap for African governments to enable them to developing the components of a space programme, including building a ground segment, training a critical mass of space scientists and acquiring the requisite tools to support the exploitation of satellite data.

The initiative is in line with Strategic Pillar 2 (Enhance the Production and Delivery of Weather and Climate Services for Sustainable Development) of the Integrated African Strategy on Meteorology (Weather and Climate Services), which mentions the need to invest in ground systems, training and analytical tools to make best use of existing satellite and model data and information available from international partners; and in parallel, engage with international partners on the design of Numerical Weather Prediction (NWP) and satellite derived products to better address African requirements.

Flagship Programme 3 (FPr-3):

Aircraft Meteorological DAta Relay (AMDAR): The AMDAR programme, initiated by the World Meteorological Organization (WMO) and its Member States, in cooperation with aviation partners, has led to the development of the AMDAR observing system. The AMDAR system forms an integral part of the WMO's Global Observing System (GOS[6]) and synthesizes key meteorological data collected by commercial aircraft from predominantly existing onboard sensors, to be shared with National Meteorological and Hydrological Services (NMHS), as well as airlines and other authorized users. The AMDAR observing system has great potential to improve upper air observations coverage of air temperature, wind and humidity over Africa, at considerably less establishment and ongoing cost compared to that of radiosonde networks. The vertical profiles derived from an aircraft on ascent or descent are typically of the order of ten per cent or less of the costs associated with profiles from a traditional balloon-borne radiosonde and usually offer a higher temporal resolution of reporting at airports locations, while also providing valuable upper air data enroute. The benefits of AMDAR and aircraft-based observations to meteorology have been determined to be significantly positive, which means that there are flow-on benefits to both the aviation industry and the wider public[7].

The development of AMDAR over Africa will be based on the **Aircraft-Based Observations Programme Regional Implementation Plan** for WMO Region I (A-RIP – Region I), expected to be adopted by WMO Regional Association I under the wider WMO Integrated Global Observing Systems (WIGOS) Implementation Plan.

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[5] The African Regional Space Programme is the pan-African effort to develop its own Regional Space Programme. The **AU Space Working Group** of the African Union has been established, under the auspices of the African Ministerial Conference on Science and Technology (AMCOST) and the African Union Commission on Human Resources and Science and Technology (AUC-HRST), and is in the process of defining a broader policy and strategy that will guide the framework for the formalization of the African Space Agenda. The five thematic areas include: Earth Observation; Navigation and Positioning; Satellite Communications; Space Physics; and Astronomy. It is further noted that the role of AMCOMET, through the AMCOMET Task Force on the Regional Space Programme, is to provide inputs relevant to operational meteorology and linked to the thematic areas.

[6] http://www.wmo.int/pages/prog/www/OSY/GOS.html

[7] See: http://www.wmo.int/pages/prog/www/GOS/ABO/data/ABO_Benefits.html

Implementation of ICAO and WMO requirements on QMS and competency of aeronautical meteorological personnel

The provision of meteorological services in support of safety and efficiency of aviation is among the main tasks of every NMHS. During the last few years, ICAO and WMO established stringent requirements in order to guarantee the quality of the meteorological information and services provided to aviation users, which in turn will support the mandatory Safety Management System required by ICAO to be implemented by all States. To conform to those requirements, each NMHS or other entity providing meteorological service for the international air navigation will have to:

- Put in place a Quality Management System (a QMS based on the ISO 9001:2008 standards is considered the best practice of compliance with this requirement); and

- Ensure that the aeronautical meteorological personnel (AMP), both forecasters and observers, is properly qualified and competent for conducting their duties (i.e., all AMP have passed successfully an assessment against the WMO competency standards that came into force on 1 December 2013).

It should be well understood that a delay in QMS implementation and Competence Assessment affects the credibility of the NMHSs and other aviation meteorological service providers as a destination and has a negative impact on their attempts to establish cost-recovery mechanisms.

As of the fourth quarter of 2014, the achieved level of implementation of QMS in RA I (Africa) is still below 30% with regard to ISO 9001 certification. Similar figures are also valid for compliance on Competency Assessment of personnel serving international air navigation. The lack of compliance with these requirements is considered by ICAO as an “air navigation deficiency” and will be captured through the ICAO safety audit system and respective measures to resolve such deficiencies will be prescribed to respective Members. It is worth noting that the ISO 9001 compliant QMS, once established, would require continuous effort to sustain and undergo regular checks and re-certification, thus, the NMHSs and other service providers should plan resources upfront. Therefore, to achieve a sustainable quality of service provision, it is necessary to implement effective cost-recovery mechanism in each Member State that would allow the service providers to receive adequate funding for the aviation meteorological services.

In view of the foregoing, a concerted effort should be undertaken in Africa to ensure the implementation of the requisite requirements for QMS, competency and qualification of the AMP and cost-recovery.

Achieving the necessary level of compliance for a service ensures the safety, regularity and efficiency of air transport and this depends on the full understanding and support by the national policy makers and governments, as well as strong regional cooperation. This is even more important at the present in view of the foreseen developments related to the implementation of the ICAO Global Air Navigation Plan (GANP) through the Aviation System Block Upgrade (ASBU) methodology with horizon 2028 and beyond.

Capacity development in the field of aeronautical meteorology focused on enhancing the compliance of the African countries with the requisite WMO and ICAO standards and recommended practices should remain a top priority in the Implementation of the Integrated African Strategy on Meteorology (Weather and Climate Services).

Flagship Programme 4 (FPr-4):

Global Framework for Climate Services (GFCS): Since 2012, five GFCS pilot projects were launched in Burkina Faso, Chad, Mali, Niger and Senegal with the aim of developing frameworks for climate services at the national level; as in the framework of the *"Programme of Cooperation for Climate Change Adaptation in West Africa*[8]*."* Activities for enabling climate services at the national level include the rehabilitation of observation networks, provision of training and capacity building to GFCS priority sectors[9], upgrade of climate data management systems, and implementation of demonstration projects focused on the development and the use of customized climate information products in relevant sectors.

WMO is further facilitating the development of action plans to address the gaps and needs identified at the national consultations that kick started the pilot projects. Action plans are available for Burkina Faso; Mali and Niger are in the process of finalizing their plans.

In addition, a national consultation was held in South Africa to identify gaps and needs and to establish the internal coordination mechanisms needed to ensure effective implementation of the Framework at national level. South Africa is in the process of developing a 5-year implementation plan.

The "Climate Services Adaptation Programme in Africa[10]," launched in 2013 in Malawi and Tanzania, is the first multi-agency initiative implemented under the GFCS with funding from Norway (10 million USD). The programme will build capacities of producers and users to develop and apply information and knowledge to support decision-making in food security, health and disaster risk reduction.

Building from the "Climate Services Adaptation Programme in Africa" a joint programmatic approach is being pursued with the Food and Agriculture Organization (FAO) for the Sahel. A comprehensive programme to implement GFCS in the Sahel region, with the involvement of other UN agencies, with regional and national components is being implemented with support from the Norwegian Refugee Council. On 3 August 2014, the Norwegian Refugee Council has deployed a regional coordinator to the FAO Regional Office in Dakar.

[8] http://www.wmo.int/gfcs/west_africa

[9] Disaster Risk Reduction, Health, Water Resources and Food Security

[10] http://www.wmo.int/gfcs/Norway_2

Table 3: Expected Results and Outcomes, Activities and Key Performance Indicators

Strategic Pillar 1 (SP1): Increase Political Support and Recognition of NMHSs and related Regional Climate Centres									
Expected Result 1 (ER1): Legislation and policies formulated and implemented for coherent integration of weather and climate services in National, Sub-Regional and Continental development programmes and agenda									
ER1 Outcomes: 1. Legislation for integrating weather and climate services (WCS) in national and regional development plans is formulated / implemented2. High level coordination committee at the national, sub-regional and continental level established3. Mechanisms and MoUs are established to support NMHS and RCC WCS to implement the Strategy established 4. User Interface Platform / GFCS are implemented			**ERI Key Performance Indicators:** 1. Number of countries and REC with improved legislation that integrate weather and climate services; and with a legal framework for cost recovery of meteorological services; and number of NMHSs and RCCs with Strategic Plans2. Number of NMHS and RCCs with high level coordination committees 3. Number of priority initiatives and programmes within RECs in support of the Implementation Plan of the Strategy 4. Number of countries implementing GFCS at the national level (NFCS)						
Activity No.	**Flagship Programme (FPr) No**	**Description of Activities**	**Scale & Priority**	**Implementing Partners**	**TimeFrame (Years)**				**Existing Initiative / Project[11]**	**Est. Cost ('000 USD)**	**Development Partners**
					2	**4**	**8**	**12**			
1	FPr-1	Developing strategies to mainstream weather and climate services into national development plans and programmes in collaboration with ministries in charge of planning and finance, including other relevant national stakeholders	N, SR, C	National Governments, Partners					NAPs	125	AUC, RECs, WMO, National Governments, EC, UN Agencies
2	FPr-1	Review and improve the legislative and regulatory framework (including fiscal	N, SR, C	REC, National Governments					Surveys and known country best practices	125	AUC, RECs, WMO, National Governments,

[11] Indicative of relevant projects, programmes, and initiatives, lead implementing institutions and is not exhaustive. The Table will be elaborated in future revisions, as more information becomes available.

		frameworks and incentives) for generation and application of weather and climate services, including integration of weather and climate services in all weather and climate dependent sectors at national and sub-regional levels							Mali National Climate Fund		EC, UN Agencies
3	FPr-1	Strengthen collaboration with the Regional Economic Communities (RECs) and Regional Climate Centres (RCCs) for the implementation of the Integrated African Strategy on Meteorology (Weather and Climate Services) and its Implementation Plan for sustainable development	N, SR, C							175	AUC, RECs, WMO, National Governments, EC, UN Agencies
4	FPr-5	Establish the User Interface Platform (UIP) of the GFCS at the National and Regional level to engage with users and enhance the application of meteorological services for sectors such as agriculture, disaster risk reduction, water, health, transport, environment, among others.	N, SR	National Governments, NMHSs, RCCs, RECs					GFCS	25	AUC, RECs, WMO, National Governments, EC, UN Agencies
5	FPr-1	Develop guidelines and support the development of Strategic Plans and related Action Plans for NMHSs and RCCs in alignment with government development agenda, cascaded from the Integrated African Strategy on Meteorology (Weather and Climate Services) and its associated Implementation Plan, respectively	N, SR	WMO					To be completed by Surveys	50	AUC, RECs, WMO, National Governments, EC, UN Agencies

6	FPr-1	Develop a programme for sensitization of parliamentarians on the benefits of weather and climate services in sustainable development	N, SR							145	AUC, RECs, WMO, National Governments
7	FPr-1	Collaborate with Ministry of Education to develop curricula in applied meteorology and operational hydrology at primary, secondary and tertiary levels to enhance knowledge on weather and climate, and environmental sustainability and biodiversity conservation.	N, SR							85	AUC, RECs, WMO, National Governments, UN Agencies

Expected Result 2 (ER2): Visibility and relevance of the NMHSs and RCCs enhanced thereby contributing to sustainable development at the National, Sub-Regional and Continental level

ER2 Outcomes:	**ER2 Key Performance Indicators:**
1. Relevance of NMHSs & RCC WCS is regularly demonstrated and profile raised 2. Communication materials that showcase successful projects highlighting impact / benefits developed and disseminated 3. Communication strategies developed to enhance the visibility of NMHS 4. Policy makers are sensitized and regularly informed	1. Number of NMHS and RCCs with outreach programmes (i.e Public Weather Services) and/or dissemination strategies developed 2. Number of countries with communication materials for public education and awareness campaigns 3. Number of workshop targeting relevant stakeholders, including policy makers, conducted 4. Number of NMHSs and RCCs annually providing the Declaration of "Status of Climate"

Activity No.	**Flagship Programme (FPr) No**	**Description of Activities**	**Scale & Priority**	**Implementing Partners**	**TimeFrame (Years)**				**Existing Initiative / Project**	**Est. Cost ('000 USD)**	**Development Partners**
					2	**4**	**8**	**12**			
8	FPr-1	Establish **Africa Met Day** for advocacy and sensitization of Member States, policy makers, the public and relevant stakeholders on the benefits of weather and climate services in sustainable development and the	N, SR, C	National Governments, AU, RECs						200	AUC, RECs, WMO, National Governments, UN-ECA, AfDB

		role of NMHs as providers of these services, to increase their profile (**proposed date 29 June**)									
9	FPr-1	Enhance Public Awareness and Education through outreach programmes to the users, policy / decision makers, the public and other stakeholders	N, SR, C	RCCs, WMO, NMHSs, AU						50	AUC, RECs, WMO, National Governments, UN Agencies
10	FPr-1	Develop a Service Delivery / Communications Strategy for the dissemination of weather and climate information to stakeholders, in collaboration with the media, as a component of the NMHS Strategic Plan	N, SR, C							50	AUC, RECs, WMO, National Governments
11	FPr-1	Organize workshops for the sensitization of relevant stakeholders, including policy makers, to enhance the understanding and use of weather and climate services for safety of life, protection of property, conservation of the environment, and adaptation to build resilient communities to cope with climate extremes occasioned by adverse climate change impacts	N, SR, C						ADF, CCDA, WCS & Dev	25	AUC, RECs, WMO, National Governments, UN-ECA/ACPC, UN Agencies

12	FPr-1	Prepare and provide policy makers, including parliamentarians and relevant line ministries in governments, with timely, relevant and well packaged information related to: - Impact-based weather and climate forecasts with quantified impacts on the society and weather / climate dependent sectors - Develop Annual Reports on the Status of Climate - Provide annual summary of pertinent activities and events related to weather and climate	N, SR, C	NMHSs					WMO, World Bank, AfDB, & Partners' reports	25	AUC, RECs, WMO, National Governments

Expected Result 3: African weather and climate institutions made sustainable

ER3 Outcomes:	**ER3 Key Performance Indicators:**
1. NMHS & RCC statutes to enable them to fulfill their mandate are improved and sustained 2. Twinning programmes are developed to improve service provision by NMHSs 3. Regular National Budgets are sustained to enhance funding mechanisms to support NMHs at the national level	1. Number of NMHSs and RCCs that have legal frameworks and statutes to fulfill their mandate are improved and semi-autonomous 2. Number of MoUs (Twinning instruments) signed 3. Number of NMHSs with improved funding allocation at the national level

Activity No.	**Flagship Programme (FPr) No**	**Description of Activities**	**Scale & Priority**	**Implementing Partners**	**TimeFrame (Years)**				**Existing Initiative / Project**	**Est. Cost ('000 USD)**	**Development Partners**
					2	**4**	**8**	**12**			
13	FPr-1	Review, map out and / or update existing analysis, related to the legal / financial status of NMHSs and RCCs	N, SR	NMHSs, RCCs					Surveys Identification and sharing of best practices from various relevant African institutions	50	AUC, RECs, WMO, National Governments

14	FPr-1	Transform NMHSs into semi-autonomous government agencies / authorities to increase their efficiency and effectiveness in service delivery, to enhance their contribution to sustainable development	N	National Governments, NMHSs						50	AUC, RECs, WMO, National Governments
15	FPr-5	Develop appropriate funding mechanism at national and regional levels to provide the required resources to sustain and further develop NMHSs and RCCs	N, SR	National Governments, RECs, AUC						50	AUC, RECs, WMO, National Governments
16	FPr-5	Enhance partnerships through twinning instruments and collaboration between African Meteorological (Weather and Climate) Institutions and those in developed countries for capacity building, knowledge sharing and transfer of technology, skills and best practices	N, SR, C	National Governments, RECs, AUC, WMO					INM - Tunis project with EU	100	AUC, RECs, WMO, National Governments, EC, AfDB, EU, Other Bilateral Agencies
17	FPr-1	Ensure commitment of African governments to support multi-functional RCCs (ACMAD, ICPAC, SADC-CSC, Agrhymet, among others) and AMCOMET through assessed contributions to enable these institutions to fulfill their mandates	SR, C	AUC, RCCs					Resolution from AUC and RECs	65	AUC, RECs, WMO, National Governments

Expected Result 4 (ER4): Efficient and Effective Management of NMHSs and RCCs	
ER4 Outcomes: 1. Head of NMHSs are skilled in strategic leadership, management and planning 2. NMHSs and RCCs management staff are skilled in the development of Strategic Plans, Work / Development Plans and in communications 3. Heads of NHMSs are conversant with Result Based Management (RBM) 4. Achievements made and challenges faced by NMHSs and RCCs are regularly bench marked	**ER4 Key Performance Indicators:** 1. Number of training sessions and/or managers trained on strategic leadership, management and communication skills 2. Number of training sessions and/or number of personnel trained in project proposal formulation, strategic planning, writing and implementation 3. Number of NMHSs applying RBM 4. Number of milestones / agreed targets achieved

Activity No.	Flagship Programme (FPr) No	Description of Activities	Scale & Priority	Implementing Partners	TimeFrame (Years)				Existing Initiative / Project	Est. Cost ('000 USD)	Development Partners
					2	4	8	12			
18	FPr-4	Prepare and Conduct training in strategic leadership and management, including communication, for heads of NMHS and RCCs and offer certificates	N, SR	WMO, AUC						100	AUC, RECs, WMO, National Governments, AfDB, WB, BADEA
19	FPr-4	Support human capacity development at NMHSs and RCCs to develop Strategic Plans and related Action Plans	N, SR	AUC, RECs, RCCs						100	AUC, RECs, WMO, National Governments, AfDB, WB, BADEA, EU
20	FPr-4	Hold workshops in strategic leadership for managers of NMHSs, which include training in Result Based Management (RBM) and budgeting	N						Regional and Technical Conferences AfriMET (West Africa – AEMET)	100	AUC, RECs, WMO, National Governments, AfDB, WB, BADEA

21	FPr-4	Support the training of NMHSs and RCCs to improve communications skills	N, SR	AUC, RECs, RCCs						100	AUC, RECs, WMO, National Governments, AfDB, WB, BADEA
22	FPr-4	Support the training of NMHS and RCC personnel in project proposal formulation, writing and implementation	N, SR	AUC, RECs, RCCs						100	AUC, RECs, WMO, National Governments, AfDB, WB, BADEA
23	FPr-2	Organize working visits and study tours to advanced weather and climate centers to learn best practices	N, SR, C	AUC, WMO						250	AUC, RECs, WMO, National Governments, AfDB, WB, BADEA

Strategic Pillar 2 (SP2): Enhance the Production and Delivery of Weather and Climate Services for Sustainable Development

Expected Result 5 (ER5): Enhanced NMHS capabilities to observe, monitor, exchange data, produce and disseminate high quality information and services for sustainable development

ER5 Outcomes:	**ER5 Key Performance Indicators:**
1. Capacities and capabilities of NMHSs and RCCs are assessed 2. Centres in various geographical regions to assemble AWSs are evaluated and designated 3. WIGOS and WIS activities are undertaken (for operationalization of WMO Implementation Plan) 4. Capabilities of NMHSs and RCCs to access existing satellite data and products are enhanced	1. Number of NMHSs and RCCs assessed, and capacity and capability evaluated; with survey reports 2. Number of evaluated and designated centers to assemble Automatic Weather Stations (AWS) 3. Number of NMHSs & RCCs with a WMO operational plan / 4. Number of WIGOS Regional Centres established for increase in data availability (1 per REC) 5. Number of satellite ground receiving stations are installed and operated

Activity No.	Flagship Programme (FPr) No	Description of Activities	Scale & Priority	Implementing Partners	TimeFrame (Years)				Existing Initiative / Project	Est. Cost ('000 USD)	Development Partners
					2	4	8	12			
24	FPr-2	AMCOMET through RCCs and NMHSs carry out a continental-wide survey on the capacities and capabilities of NMHSs and RCCs, including observing networks (land, water and space); telecommunications infrastructure for data exchange; data processing, analysis and forecasting tools; climate data management tools; product and information dissemination systems; including human capacity (skills and competency)	N, SR, C	RCC, NMHSs					WMO	300	AUC, RECs, AMCOMET, WMO, National Governments, RCCs
25	FPr-4	Designate, equip and support centres in Africa that can assemble AWSs and/or fabricate basic meteorological instrument to improve observing network at a cheaper cost	C	AUC						50	AUC, RECs, AMCOMET, WMO, National Governments, RCCs
26	FPr-2	Operationalize the WMO implementation plans related to the WMO Integrated Global Observing System (WIGOS) and the WMO Information System (WIS), Global Climate Observing System (GCOS), and Global Ocean Observing System (GOOS)	N, SR	NMHSs, RCC, WMO					WIS and WIGOS Regional Implementation Plan for Africa	50	AUC, RECs, AMCOMET, WMO, National Governments, RCCs, EU, AfDB, WB, BADEA, Other Bilateral and Multi-lateral Partners

27	FPr-2	Enhance observation capabilities of NMHSs by introducing state of the art Doppler weather surveillance radars network; fully tropicalized and dual polarization	N, SR						AMMA, Best Practices from NMHSs	TBD[12]	AUC, RECs, AMCOMET, WMO, National Governments, RCCs, EU, AfDB, WB, BADEA, Other Bilateral and Multi-lateral Partners
28	FPr-2	Maintain and enhance capabilities of NMHS and RCC to access existing satellite data and products (incl. those from the EUMETSAT Satellite Application Facilities – SAF) and to develop added-value satellite derived products based on existing and future satellite programmes	N, SR						AMESD, MESA, SAF, EUMETSAT	500	AUC, RECs, AMCOMET, WMO, National Governments, RCCs, EU

Expected Result 6 (ER6): Strengthened NMHSs and RCCs capability for efficient and effective delivery of customer tailored products and services (dissemination) to stakeholders, communities, and households

ER6 Outcomes:	**ER6 Key Performance Indicators:**
1. Continental-wide survey related to production of weather and climate services and their dissemination is carried out 2. Resources for improvement of meteorological infrastructure and services are identified and mobilized 3. Capacity and capabilities of NMHSs and RCCs to support Climate Services Information System (CSIS) and User Interface Platform (UIP) are enhanced 4. WMO RCCs in Africa are enhanced and operational 5. Climate Data Management Systems (CDMS) upgraded and training supported	1. Number of NMHSs and RCCs survey report available on the production / generation and provision / delivery / dissemination of services 2. 50% of needed Resources identified and mobilized 3. Number of NMHSs and RCCs supporting CSIS and UIP 4. Number of RCC evaluated and performing at least three of the mandatory functions 5. Number of RTC centers offering support and training in CDMS including number of NMHSs with upgraded CDMS

[12] All cost at TBD will be fine-tuned following assessment activities to provide a more accurate estimation that reflects situation at the sub-regional and national levels

Activity No.	Flagship Programme (FPr) No	Description of Activities	Scale & Priority	Implementing Partners	TimeFrame (Years)				Existing Initiative / Project	Est. Cost ('000 USD)	Development Partners
					2	4	8	12			
29	FPr-2	Carry out a continental-wide survey to assess NMHS and RCC current capability to produce and effectively disseminate customer tailored products and services and to engage with users to enhance these products and services[13]	N, SR	WMO/GFCS, NMHSS, RCC					WMO Examples	50	AUC, RECs, AMCOMET, WMO, National Governments, RCCs
30	FPr-2	Identify and mobilize resources for the necessary improvement of meteorological infrastructure and services, including human capacity development to deliver customer tailored services	N, SR	WMO, RCC, NMHSS					GFDRR Planned Initiatives, AfDB / CDSF Projects	50	AUC, RECs, AMCOMET, WMO, National Governments, RCCs, EU, AfDB, WB, BADEA, Other Bilateral and Multi-lateral Partners
31	FPr-2	Build the capacity and capability of NMHSs to support Climate Services Information Systems (CSIS) and User Interface Platforms (UIP) of the GFCS	N	WMO/GFCS, NMHSs					Mali Case Study	20	AUC, RECs, AMCOMET, WMO, National Governments, RCCs

[13] Can be combined with Activity #25 so final assessment can provide a comprehensive guidance for investment in NMHSs

32	FPr-2	Develop a schedule with the required actions / milestones for the establishment and designation of WMO RCCs in Africa (SADC-CSC, ICPAC, Agrhymet, ACMAD, Central African RCC, IOC RCC)	SR, C	WMO, RECs, RCCs					ISACIP, MESA	10	AUC, RECs, AMCOMET, WMO, National Governments, RCCs, EU
33	FPr-4	Support the capacity of appropriate Regional Training Centers to offer training in Climate Data Management Systems operations to NMHSs	SR, C	RTCs, RCCs						10	AUC, RECs, AMCOMET, WMO, National Governments, RCCs
34	FPr-2	Develop gender mainstreaming in meteorology and climate change programmes, in collaboration with communication / Media experts in order to enhance the resilience of communities to cope with adverse impacts of climate change through DRR initiatives including adaptation and mitigation options	N, SR, C	WMO, RCC, NMHSs							AUC, RECs, AMCOMET, WMO, National Governments, Media

Strategic Pillar 3: Improve Access to Meteorological Services in particular for the Marine and Aviation Sectors

Expected Result 7 (ER7): Enhanced NMHSs capacity to produce and deliver services compliant to ISO 9001 and other associated WMO standards and guidelines, including ICAO recommended practices for air navigation

ER7 Outcomes:	ER7 Key Performance Indicators:
1. All NMHSs compliance with QMS for aeronautical meteorology for air navigation is finalized in line with WMO and ICAO standards and recommended practices 2. AMDAR program implemented and data availability increased 3. Mechanisms for cost recovery of meteorological services in place 4. Regular assessment of the impact of AMDAR data disseminated	1. All African NMHSs that have undergone QMS and are ISO-Compliance certified 2. Number of additional NMHSs with cost recovery adopted 3. Number of NMHSs implementing AMDAR programme 4. Number of additional NMHSs designated as the Service Provider for aviation

Activity No.	Flagship Programme (FPr) No	Description of Activities	Scale & Priority	Implementing Partners	TimeFrame (Years)				Existing Initiative / Project	Est. Cost ('000 USD)	Development Partners
					2	4	8	12			
35	FPr-2	Enforcing a continental wide compliance of QMS (including personnel competencies and equipment calibration certification) for aeronautical meteorology in line with Annex 3 of ICAO Convention (1944) and other associated WMO / ICAO guidelines	N	NMHSs, WMO, ICAO					Best Practices from African NMHSs and Advanced NMHSs WMO Best Practices and Recommendations	1,000	AUC, RECs, AMCOMET, WMO, National Governments, ICAO
36	FPr-4	Implement and operationalize the AMDAR programme for improvement of services for international air navigation[14]	N	NMHSs, WMO, ICAO						TBD	AUC, RECs, AMCOMET, WMO, National Governments, ICAO
37	FPr-5	Sign MoU between NMHS and Airline Companies for enhancement and provision of AMDAR data	N	NMHSs, WMO						10	AUC, RECs, AMCOMET, WMO, National Governments, ICAO
38	FPr-1	Designate, as appropriate, the National Meteorological Service as the weather service provider for the aviation industry	N	National Governments						10	AUC, RECs, AMCOMET, WMO, National Governments, ICAO

[14] Timeframe would vary depending on country readiness, could be approached in an opportunistic manner

39	FPr-2	Undertake regular assessment of the impact of AMDAR data on the quality of forecasts and other weather services provided to air navigation	N	NMHSs						250	AUC, RECs, AMCOMET, WMO, National Governments, ICAO
40	FPr-1	Develop required mechanisms for cost recovery from aviation services[15]	N	National Governments, NMHSs						10	AUC, RECs, AMCOMET, WMO, National Governments, ICAO
Expected Result 8 (ER8): Enhanced capabilities of NMHSs to provide oceanographic and marine meteorological services for maritime transport, safeguarding coastal erosion, pollution management, including oil spills, coastal zone ecosystem conservation (mangrove swamps & coral reefs) and sustainable exploitation of marine resource including fisheries											
ER8 Outcomes: 1. Capacities and capabilities of NMHSs to provide necessary information to monitor marine activities undertaken 2. Safety of life and property at sea, integrated coastal management and societal impacts are improved 3. Data coverage through buoys, tidal gauges and ships to improve monitoring and services for security at sea is enhanced 4. Mechanisms for cost recovery from marine meteorological services established			**ER8 Key Performance Indicators:** 1. Number of survey reports made available about NMHSs providing marine meteorological services 2. Number of additional maritime' sectors effectively using weather and climate services 3. Number of buoys operational and Number of additional voluntary observing ships 4. Number of MoUs on cost recovery from marine activities signed								
41	FPr-2	Carry out a survey to assess the existing capacities and capabilities of the NMHSs in terms of infrastructure for oceanography and marine meteorology that includes observational network (including the deployment of buoys and tidal gauges), telecommunication	N, SR	NMHSs, RCCs					GCOS, GEO, UNESCO AfriMET (West Africa – AEMET)	200	AUC, RECs, AMCOMET, WMO, National Governments, UNESCO

[15] Related to Activity #45, could be developed together for a more streamlined approach

		systems for data exchange, marine forecasts and dissemination services, human capacity, including maritime' users community applications[16]									
42	FPr-2	Implement / enhance the provision of appropriate weather and climate services / information to support: a. Maritime transport and Navigation b. Coastal zone management and development through, for example, the prevention of coastal erosion, oil spills and pollution, prevention of the destruction of coral reefs and mangrove forests and other marine ecosystems c. Use of marine resources for sustainable development through legislation	N, SR, C	NMHSs, RCCs, JCOMM					Best Practices from African NMHSs and JCOMM	TBD	AUC, RECs, AMCOMET, WMO, National Governments, Africa Partnership, AfDB
43	FPr-4	Improve data coverage at sea and large lakes (through additional voluntary observing ships and buoys) and access to satellite products relevant to marine applications	N, SR	WMO, NMHSs					GCOS, GEO, JCOMM		AUC, RECs, AMCOMET, WMO, National Governments, Bilateral Partners

[16] Could be done with Activity #s 25 and 30, for a comprehensive assessment

44	FPr-1	Development of appropriate mechanisms for cost recovery from maritime services[17]	N, SR	National Governments, WMO					Best Practices from African NMHSs	100	AUC, RECs, AMCOMET, WMO, National Governments, ICAO

Strategic Pillar 4: Support the Provision of Weather and Climate Services for Climate Change Adaptation and Mitigation

Expected Result 9 (ER9): Enhanced NMHS capacities and capabilities on climate change science through monitoring, detection, attribution and prediction of climate change

ER9 Outcomes:	ER9 Key Performance Indicators:
1. Climate change quality observation/information through improved capacities (station network and human resource) is increased 2. A comprehensive map of the current research activities is undertaken 3. Climate Change knowledge undertaken as a component of GFCS is improved 4. Greenhouse gas emissions are mitigated	1. An evaluation of Atmospheric constituent existing observing capacity is available 2. A comprehensive mapping of research activity is available 3. Number of NMHS and RCC with GFCS research component 4. Number of NMHS and RCC providing regular information on Climate Change

Activity No.	Flagship Programme (FPr) No	Description of Activities	Scale & Priority	Implementing Partners	TimeFrame (Years)				Existing Initiative / Project	Est. Cost ('000 USD)	Development Partners
					2	4	8	12			
45	FPr-3	Assess and evaluate the existing observation network of NMHSs to identify regions least represented in the global observing systems and sparse station network coverage[18]	N	WMO, NMHSs					WMO-GAW Projects	10	AUC, RECs, AMCOMET, WMO, National Governments, UNEP, UNFCCC

[17] Related to Activity #41, could be developed together for a more streamlined approach

[18] Combine with other capacity assessment activities at implementation stage

46	FPr-3	Increase, strengthen and modernize observation network of NMHSs to enhance observation of various atmospheric constitutes	N	NMHSs						TBD	AUC, RECs, AMCOMET, WMO, National Governments, UNEP, UNFCCC
47	FPr-3	Train operational staffs (meteorological technicians, researchers and engineers) to maintain and expand station network coverage	N	NMHSs					WMO, RTCs	180	AUC, RECs, AMCOMET, WMO, National Governments, UNEP, UNFCCC
48	FPr-4	Map and describe the existing / current research initiatives, program and projects, databases and the different groups (within NMHSs, RBO, Universities and other research centers involved in weather and climate research to strengthen collaboration and develop mechanisms in research operations	SR, C	WMO, RCC, NMHSs					WMO R&D Programmes, GFCS, ROA	10	AUC, RECs, AMCOMET, WMO, National Governments, Universities, RCCs
49	FPr-4	Strengthen NMHSs and RCCs infrastructure using information communication technology (ICT), new and emerging scientific technology and innovations to enhance operational research and development to improve climate change *Research, Modeling and Prediction* as a component of GFCS	N, SR	WMO, RCC, NMHSs					GFCS, EUMETSAT	TBD	AUC, RECs, AMCOMET, WMO, National Governments, Bilateral Partners, AfDB, TICAD V

50	FPr-3	Provide relevant climate information to support policies and activities and mitigate greenhouse gas emissions	N, SR, C	NMHSs, RCCs					NAPs, National Appropriate Mitigation Actions (NAMAs)	10	AUC, RECs, AMCOMET, WMO, National Governments, UNEP, UNFCCC

Expected Result 10 (ER10): Established research, modeling and prediction of climate change to facilitate adaptation and resilience building for society, economy and the environment to cope with adverse impacts

ER10 Outcomes:	**ER10 Key Performance Indicators:**
1. Tailored products produced for users 2. A comprehensive approach for NWP and satellite derived product is developed and implemented 3. Capacity building for young scientists in place 4. Weather and Climate research activity is developed and promoted in the academic community	1. Number of NMHSs & RCC with Research unit or group 2. All RCCs and at least 25% of NMHSs are running climate models 3. All RCC and at least 25% of NMHS are running NWP at finer resolution 4. 5 to 7 junior scientists per country trained in NWP, climate modelling and satellite derived products 5. Number of MoU signed with research partners

Activity No.	**Flagship Programme (FPr) No**	**Description of Activities**	**Scale & Priority**	**Implementing Partners**	**TimeFrame (Years)**				**Existing Initiative / Project**	**Est. Cost ('000 USD)**	**Development Partners**
					2	**4**	**8**	**12**			
51	FPr-4	Establish and capacitate research unit within NMHSs and RCCs	N, SR	RCC, NMHSs					MESA, ISACIP	10,000	AUC, RECs, AMCOMET, WMO, National Governments, UN Bodies, Bilateral and Multi-lateral Partners, EU
52	FPr-3	Improve and implement climate modeling and forecasting tools and scenarios production at RCC and NMHSs / Countries	SR, C	RCC					MESA (AUC, EUMETSAT), ISACIP, WCRP Cordex Programme, Climate Research for Development in Africa (CR4D)	200	AUC, RECs, AMCOMET, WMO, National Governments, CDSF, AfDB, Bilateral Partners, EU

53	FPr-4	Develop a comprehensive approach for strengthening Numerical Weather Prediction, and assimilation of remote sensing / satellite derived data and products	SR, C	NMHSs, RCC, WMO, GFCS					ISACIP, CDSF, EUMETSAT and Partners	200	AUC, RECs, AMCOMET, WMO, National Governments, CDSF, AfDB, Bilateral Partners, Developed NMHSs, EU
54	FPr-4	Implement a short term training program for young scientists in the above domains using the existing capacity and in collaboration with advanced centers	SR, C	NMHSs, RCC, WMO, GFCS					MESA, ISACIP, and Partners	50	AUC, RECs, AMCOMET, WMO, National Governments, CDSF, AfDB, Bilateral Partners, EU
55	FPr-4	Encourage collaborative research initiatives and other relevant programmes between RCCs, NMHSs, academia and universities, and other tertiary institutions, including National and Regional Meteorological Societies	N, SR, C	NMHSs, RCCs					NMHSs, RCCs	20	AUC, RECs, AMCOMET, WMO, National Governments

Expected Result 11 (ER11): Strengthened NMHSs capacity to reinforce coherence for climate change discussions and negotiations to effectively contribute to Multi-lateral Environmental Agreements (MEAs), protocols and other relevant agreements

ER11 Outcomes:	**ER11 Key Performance Indicators:**
1. Material related to WCS to support negotiators and contribute to UNFCCC subsidiary bodies is produced 2. Synergy on UN MEA and UN Conventions established 3. National Meteorological Hydrological Services designated as certifying institutions	1. Number of NMHSs and RCCs effectively involved in Climate Change negotiations 2. Number of NMHSs designated as authorities for certifying climate scenarios 3. Number of workshop related to Multilateral Environmental Agreement (MEA) organized.

Activity No.	Flagship Programme (FPr) No	Description of Activities	Scale & Priority	Implementing Partners	TimeFrame (Years)				Existing Initiative / Project	Est. Cost ('000 USD)	Development Partners
					2	4	8	12			
56	FPr-3	Develop supporting materials (in collaboration with partners) to African group of negotiators (adequate material on Weather and climate services and Climate change adaptation)[19]	N, SR, C	NMHSs, RCC, WMO, GFCS					NAPs, Best Practices from African NMHSs	100	AUC, RECs, AMCOMET, WMO, National Governments, UNEP, UNFCCC, CDSF, AfDB, BADEA
57	FPr-3	Prepare and implement training courses and workshops related to the Synergy on Multilateral Environment Agreements (MEA) in particular the three UN Conventions	N, SR	RTCs					WMO	200	AUC, RECs, AMCOMET, WMO, National Governments, UNEP, UNFCCC, CDSF, AfDB, BADEA
58	FPr-1	Designate NMHSs as national certifying authority for climate scenarios to use in the development plans	N, SR	National Governments, UNFCCC					Best Practices from African NMHSs	50	AUC, RECs, AMCOMET, WMO, National Governments

[19] Combine with Activity 13 at implementation stage

Expected Result 12 (ER12): Mainstreamed climate services into national economic planning and programmes through the implementation of GFCS at the national and regional level	
ER12 Outcomes: 1. GFCS at national and regional level is implemented with stakeholders involvement 2. Mechanisms to building resilience of communities developed 3. RCCs capacitated to support national climate services 4. Dissemination of information improved 5. Socio economic benefits of WCS quantified and disseminated to policy makers	**ER12 Key Performance Indicators:** 1. Number of countries with GFCS implemented at the national level 2. Number of RCCs capacitated to deliver regional climate services and support implementation of national GFCS 3. Number of countries with efficient dissemination systems 4. Number of simulation exercises organized 5. Socio-economic benefits of weather and climate services report published

Activity No.	Flagship Programme (FPr) No	Description of Activities	Scale & Priority	Implementing Partners	TimeFrame (Years)				Existing Initiative / Project	Est. Cost ('000 USD)	Development Partners
					2	4	8	12			
59	FPr-2	Implement GFCS at regional and national levels in accordance with GFCS implementation plan as approved by WMO Extraordinary Congress (October 2012)	N, SR	NMHSs, RCC, WMO, GFCS					RCOFs, GFCS on-going Projects	100	AUC, RECs, AMCOMET, WMO, National Governments, CDSF, AfDB, EU
60	FPr-3	Carry out mapping to identify communities that are most vulnerable to the adverse impacts of climate change and adopt appropriate mechanisms to build the resilience of communities to adapt to and cope with impacts of the changing climate occasioned by global warming	N, SR	NMHSs, NGOs					NAPs	250	AUC, RECs, AMCOMET, WMO, National Governments, UNEP, UNFCCC

61	FPr-3	Develop quantifiable performance indicators to measure the socio-economic benefits of weather and climate services in line with the Madrid Plan of Action (2007) on “Secure and Sustainable Living: Social and Economic Benefits of Weather, Climate and Water Services”, including benefits to environment and ecological systems	N, SR, C	WMO, RCCs, Advanced NMHSs					WMO, World Bank, Advanced NMHSs	550	AUC, RECs, AMCOMET, WMO, National Governments, CDSF, AfDB, World Bank, Bilateral Partnerships
62	FPr-5	Collaborate with experienced partners to improve climate information communication and dissemination	N, SR	NMHSs, RCCs					ISACIP, RCOFs, Other	200	AUC, RECs, AMCOMET, WMO, National Governments, CDSF, AfDB, World Bank, EU, Bilateral Partnerships
63	FPr-3	Prepare, organize and conduct simulation exercises and field days on how communities (extension services) can prepare and respond collectively to weather and climate extremes and related livelihood threats in particular droughts, flooding and sea level rise	SR, C	NMHSs, RCCs, Civil Protection Agencies					World Bank, RCOFs, UNISDR	200	AUC, RECs, AMCOMET, WMO, National Governments, CDSF, AfDB, World Bank, EU, Bilateral Partnerships

Strategic Pillar 5: Strengthen Partnerships with Relevant Institutions and Funding Mechanisms

Expected Result 13 (ER13): Established partnerships between producers of weather and climate services (i.e NMHSs, RCCs) and other institutions (i.e. AUC, ECA), including development partners (i.e. AfDB, WB, EU) to effectively and efficiently produce and deliver services that support sustainable development

ER13 Outcomes:

1. Coordination mechanism at all levels established and operational
2. MoUs, program implementation agreements to facilitate implementation of projects and programmes in partnership with relevant institutions are signed by AMCOMET, RCCs and NMHSs.
3. Information on program implementation is available and Stakeholders are informed
4. An African Weather & Climate Services Web Portal is developed

ER13 Key Performance Indicators:

1. Number of countries & RECs establishing coordination mechanisms
2. Number of MoUs, agreements signed at each level
3. Number of collaborative implementation reports
4. Number of visits to the portal

Activity No.	Flagship Programme (FPr) No	Description of Activities	Scale & Priority	Implementing Partners	TimeFrame (Years)				Existing Initiative / Project	Est. Cost ('000 USD)	Development Partners
					2	4	8	12			
64	FPr-5	Downscale the Implementation and Resource Mobilization Plan of the Strategy, and cascade it at the sub-regional and national levels to foster closer collaboration and working relations between stakeholders	N, SR, C	NMHSs, RCCs					NAPs	708	AUC, RECs, AMCOMET, WMO, National Governments
65	FPr-5	Establish AU and other Regions/Countries Partnerships on Meteorology (Weather and Climate Services).	C	AUC					AUC	50	AUC, RECs, AMCOMET, WMO, National Governments, RCCs, EU, AfDB, WB, BADEA, Other Bilateral and Multi-lateral Partners

66	FPr-4	Design and Develop a web portal, as a node and ensure that weather and climate services information is readily available and friendly accessible to all stakeholders	C	RCCs					Afri-MET, Web Prevent AfClix	250	AUC, RECs, AMCOMET, WMO, National Governments

Expected Result 14 (ER14): Established funding mechanisms, including donor support programs at national and continental scale aimed at developing and strengthening capacity of NMHSs in the production and delivery of services

ER14 Outcomes:	**ER14 Key Performance Indicators:**
1. Funding mechanisms at national level, through government commitment, to support basic meteorological infrastructure that generates basic services for Public Good are developed 1. Funding mechanisms at regional level to support infrastructure for RCCs are developed 2. International funding mechanism, through partnership is accessed 3. Countries that fabricate basic meteorological equipment are identified and supported 4. Agreements between donors on coordination of activities at national and regional level are reached	1. Number of NMHSs & RCCs adequately supported by national and regional funding 2. Number of donors supported projects and programmes 3. 50% of Total amount of funding received

Activity No.	**Flagship Programme (FPr) No**	**Description of Activities**	**Scale & Priority**	**Implementing Partners**	**TimeFrame (Years)**				**Existing Initiative / Project**	**Est. Cost ('000 USD)**	**Development Partners**
					2	**4**	**8**	**12**			
67	FPr-5	Prepare and organize Development Partner Round Tables to support implementation plan and/or create a weather and climate facility as well as improve information exchange between countries and development partners	C	AfDB, World Bank, AUC					CDSF, ClimDev-Africa	252	AUC, RECs, AMCOMET, WMO, National Govts, RCCs, EU, AfDB, WB, BADEA, Bilateral & Multi-lateral Partners

68	FPr-5	National governments to commit themselves through budgetary allocations to support the infrastructure of the NMHSs to produce basic public good services	N	National Governments					Best Practices from African NMHSs	TBD	AUC, RECs, AMCOMET, WMO, National Govts, RCCs, EU, AfDB, WB, BADEA, Bilateral & Multi-lateral Partners
69	FPr-5	Mobilize institutional funding to invest in NMHSs to further modernize and improve service delivery in tailor made products for different clientele	N, SR	National Governments, AUC					ISACIP, World Bank Programmes	TBD	AUC, RECs, AMCOMET, WMO, National Govts, RCCs, EU, AfDB, WB, BADEA, Bilateral & Multi-lateral Partners
70	FPr-5	Enhance partnerships with bilateral and multi-lateral development institutions to mobilize resources	N, SR, C	NMHSs, RCC, AUC, WMO					ISACIP, World Bank Programmes	TBD	AUC, RECs, AMCOMET, WMO, National Govts, RCCs, EU, AfDB, WB, BADEA, Bilateral & Multi-lateral Partners
71	FPr-4	Develop and submit project proposals for modernizing NMHSs and enhancing capacity development, especially in Least Developed and Land-locked Countries to Development Partners	N, C	NMHSs, RCC, WMO					ISACIP, World Bank Programmes	TBD	AUC, RECs, AMCOMET, WMO, National Govts, RCCs, EU, AfDB, WB, BADEA, Bilateral & Multi-lateral Partners

8. Resource Mobilization

The current level of the financing for the development of Weather and Climate services in Africa and the operations of the AMCOMET Secretariat is inadequate. Most African National Meteorological and Hydrological Services (NMHSs) and Regional Climate Centres (RCCs) are under-funded from national budgets and are highly dependent on donor projects. Contribution of Member Countries to RCCs (ACMAD, Agrhymet, ICPAC, SADC-CSC) is often inadequate and inconsistent for them to sustain their services as required by Member States.

In response to this situation, a holistic and transformative resource mobilization programme is required, to draw contributions expected from a variety of partners at the international, regional and national levels in order to ensure effective and successful implementation of the Strategy forming strong partnerships with a focus on long-term engagement.

8.1 Resource Mobilization Objectives

The overall objective of the Resource Mobilization Programme is to put in place an enabling environment for resource mobilization efforts and mobilize adequate resources required for the implementation of the Integrated African Strategy through to 2025. The immediate objectives are to:

- Enhance investment in the weather and climate services in Africa
- Achieve adequate, predictable and sustainable contributions that fully support the implementation of the Integrated African Strategy on Meteorology (Weather and Climate Services);
- Attract necessary resources for implementation of the priority activities and Flagship Programmes identified in the Implementation Plan;
- Supplement and complement WMO and AMCOMET Secretariat's efforts in mobilizing resources for implementation of the strategy; and
- Leverage development partnership and technical cooperation to support the mainstreaming of weather and climate services into development assistance in Africa.

8.2 Challenges in Resource Mobilization

Although resource mobilization is critical for the implementation of the Strategy, a number of challenges need to be overcome for successful resource mobilization efforts, including, among others:

- 33 of 54 African countries are classified as Least Developed Countries (LDCs) with limited financial resources and competing needs (i.e. food, shelter, health and education);
- Low priority is accorded to viable initiatives in the development and improvement of Weather and Climate Services by National Governments
- Current donor focus is on mitigation and adaptation actions rather than operational services
- Lack of Coordination among donors leading to duplication of efforts
- Short-term financing windows are not in-line with long-term development needs (not sustainable or efficient)

- Complexity of donor requirements, including reconciliation of donor and country priorities

Annex 3 provides a mapping potential funding sources and resource partners.

8.3 Dedicated Facility for Weather and Climate Services in Africa

Learning from the existing efforts to support the development of weather and climate services in Africa by various partners, and taking into account the need for increased resources to support the implementation of the Integrated African Strategy on Meteorology, there is a need to envisage the development of a dedicated financing facility for weather and climate services in Africa.

An annual Development Partner Round Table will be hosted by the AMCOMET Secretariat, African Union Commission, World Meteorological Organization, African Development Bank and other partners such as the World Bank to increase awareness and advocate for the resource needs for the implementation of the Integrated African Strategy on Meteorology (Weather and Climate Services).

National Governments should be encouraged to identify and maximize opportunities for technical assistance and cooperation from regional and international sources (technical partners) for the implementation of the Strategy.

9. Monitoring, Evaluation and Risk Assessment

A Monitoring and Evaluation Working Group (M&E-WG) will be established through the AMCOMET platform to track the implementation of the recommendations and activities in the plan and to report on a regular basis (six, twelve months) with corrective measures in place through oversight of the Management Group of the WMO Regional Association I (Africa), which then reports to the AMCOMET Bureau and the AUC.

The M&E-WG will be expected to prepare periodical reports from national / regional reports of implementing parties, as needed (NMHSs, RCCs and other stakeholders, such as WMO, ACPC and AUC).

The reports on the status of Implementation of the Strategy will outline the activities implemented and the key results achieved in order to provide a clearer sense of the overall progress made at different levels. In this regard, governments, NMHSs and relevant organizations would be requested to make submissions on both their activities and the results achieved. This would serve as a measure of the outcomes for the defined Expected Results of the Strategic Pillars or the Flagship Programmes.

The Implementation Plan has already provided “Key Performance Indicators” for the Expected Results to monitor the progress made. A more elaborate monitoring framework, describing the indicators and the data collection methodology, sources and forms of data, collection or transmission methods, will be developed by the M&E-WG, in collaboration with AMCOMET Secretariat. A harmonization of monitoring and evaluation frameworks will be done to ensure consistency, avoid duplication and use of common baselines.

Risk Assessment: The implementation of the Integrated African Strategy on Meteorology (Weather and Climate Services) remains a challenge. This challenge requires the support and active participation of all African countries and their development partners.

Risks assessments would need to be performed for every project or programme undertaken, as the variables at the continental level are too complex to be succinctly described in this section.

10. Communications Strategy

The development and implementation of a comprehensive communication strategy is critical to highlight the benefits of investing in weather and climate services. Programmes and initiatives developed through the implementation of the Integrated African Strategy on Meteorology (Weather and Climate Services) should be used to put forward the primary role NMHSs play and the contribution they make to protection of life and property, and sustainable development.

The Communications Strategy should be dynamic, as it will evolve and be reviewed in the course of implementation of the Strategy. It's initial primary audience will include all stakeholders involved in sustainable development such as the various sectors / departments of governments, development partners at international, regional and national levels, international organizations, inter-governmental organizations, NGOs and policy and decision-makers, the universities and research, the media, communities at large and hence a broader public. Focal Points at national and regional level can play an important role in relaying and disseminating the materials prepared.

Outreach activities, including public education and awareness programmes, should be tailor-made and communications should be conveyed through the appropriate means / media selected from the existing wide range (traditional methods to new social medias) that meets the needs of the targeted audiences.

Such communication materials should also be provided in suitable languages and should be pertinent to the targeted audience when and where necessary. It needs to articulate the economic and social benefits of integrating weather and climate services (based on scientific data) in decision making and planning at different time scale ranging from six hours (Satellite and Radar information) to seven days, month, seasons and decades ahead (using climate models).

Communication Tools and Methods: The current tools used to communicate the Strategy include the AMCOMET website and its related social media (i.e. Facebook, twitter, Flickr, and YouTube). There are also brochures, leaflets and regular e-Newsletters. The AMCOMET website should be fully utilized by all partners, enabling the centralization of the messaging.

These tools should be complemented by direct participation to events, including exhibitions at relevant conference, and stronger links with the media departments within NMHSs, RECs, RCCs, AUC and all relevant partners.

- END -

11. Annexes

11.1 Annex 1: AMCOMET Links to existing Programmes and Frameworks

The Integrated African Strategy for Meteorology (Weather and Climate Services) and its complementary Implementation and Resource Mobilization Plan provides a roadmap for action at the continental level for the period 2015-2025, and builds on the groundwork laid by existing regional, sub-regional and national weather and climate institutions as well as the numerous programmes and initiatives by other relevant stakeholders, in particular the Clim-Dev Africa Program and the Global Framework for Climate Services.

Existing African Initiatives and Programmes:

Several initiatives are being implemented by African institutions; in collaboration with technical and development partners. These institutions are stakeholders and are core-implementing agencies of the Strategy. The implementation of the Strategy will benefit from the results produced and those planned from these initiatives. Examples of past initiatives and projects are Radio and Internet for the Communication of Hydro-Meteorological and Climate Related Information (RANET[20]), Preparation for the Use of MeteoSat Second Generation in Africa (PUMA[21]), African Monitoring of the Environment for Sustainable Development (AMESD[22]), Monitoring of Environment and Security in Africa (MESA[23], COPERNICUS[24]), The Observing System Research and Predictability Experiment (Thorpex[25]) and Climate for Development in Africa Programme (ClimDev-Africa[26]). These activities, in part, already support the achievement of the goals set out by the Strategy, and the implementation of the Strategy will build on the basis of what these initiatives have already achieved. The objectives of these initiatives are in line with those of the Strategy, such as filling the data gaps in specific sectors, developing sector specific products and services, improve service delivery, capacity development, enhance research capacities to improve knowledge, develop instruments to improve institutions' legal framework, and improve cooperation with relevant partners.

However, existing initiatives do not fill important gaps related to the basic network infrastructure, the maritime sector needs and meeting the ICAO Requirement Compliance on Quality Management Systems (QMS) & Competency Assessment and Documentation, among others. It is also noted that the initiatives are structured more on generating information rather than their use. It is further noted that there is an obvious lack of coordination among the institutions and the initiatives undertaken, therefore a clear need for an overarching coordination mechanism.

The coordination mechanisms developed within these various initiatives will be taken into consideration when establishing the Coordination Committees as described in Section 6 of this

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[20] http://www.meteo.go.ke/ranet/Partners/acmad.html

[21] http://www.eumetsat.int/website/home/AboutUs/InternationalCooperation/Africa/PreparationfortheUseofMSGinAfricaPUMA/index.html

[22] http://www.eumetsat.int/website/home/AboutUs/InternationalCooperation/Africa/AfricanMonitoringoftheEnvironmentforSustainableDevelopmentAMESD/index.html

[23] http://www.eumetsat.int/website/home/AboutUs/InternationalCooperation/Africa/MonitoringofEnvironmentandSecurityinAfricaMESA/index.html

[24] A European Earth Observation programme, previously known as GMES (Global Monitoring for Environment and Security)

[25] http://www.wmo.int/pages/prog/arep/wwrp/new/thorpex_new.html

[26] http://www.climdev-africa.org/

document, as they are assets that need to be leveraged. The Implementation Plan will develop the coordination and collaboration across all concerned stakeholders at all levels.

Existing African Frameworks

Under the leadership of the African Union and UN organizations, thematic frameworks has been created and are operational for years, including:

- African Ministerial Conference on the Environment (AMCEN), established 1985
- African Ministers' Council on Water (AMCOW), established 2002
- Council of African Ministers of Education and Training (CAMET), established 2004
- African Ministerial Conference on Science and Technology (AMCOST), established 2003
- Joint AU-UNECA Africa Conference of Ministers of Finance, Planning and Economic Development, established 1994

AMCOMET, through the implementation of the Integrated African Strategy on Meteorology (Weather and Climate Services), complements the mandate of other Ministerial Conferences (water, energy, environment and technology). It focuses on meteorology and its applications, as they are the foundation for the sustainable development of all sectors, including climate change adaptation. AMCOMET provides specific and critical policy guidance and leadership in matters related to meteorology, hydrology and climatology.

World Meteorological Organization Strategic Plan[27] and the Global Framework for Climate Services

The World Meteorological Organisation (WMO) and the African Union Commission (AUC) are of the most important stakeholders of the African Ministerial Conference on Meteorology (AMCOMET). WMO, has since its inception, supported the development of NMHSs in all regions.

The WMO Strategic Plan consists of Five (5) Strategic Thrusts, which contribute to global societal needs, namely, improved protection of life and property, poverty alleviation, sustained livelihoods and economic growth, and sustainable use of natural resources and improved environmental quality. These Strategic Thrusts have been incorporated in the development of the Integrated African Strategy for Meteorology (Weather and Climate Services) and its related Implementation Plan. The Strategic Thrusts are as follows:

- Improving service quality and service delivery (*related to Strategic Pillars 2 and 3 of the Strategy*);
- Advancing scientific research and application, as well as development and implementation of technology (*related to Strategic Pillars 4 of the Strategy*);
- Strengthening capacity building (*related to Strategic Pillars 2 and 3 of the Strategy*);
- Building and enhancing partnerships and cooperation (*related to Strategic Pillars 5 of the Strategy*); and
- Strengthening good governance (*related to Strategic Pillars 1 of the Strategy*).

[27] WMO Strategic Plan - http://www.wmo.int/pages/about/documents/1069_en.pdf

Furthermore, the current strategic priority areas of the WMO, in terms of initiatives also support the implementation of the Strategy. They are as follows:

Global Framework for Climate Services (GFCS): Established in 2009 at the World Climate Conference-3, the *Global Framework for Climate Services (GFCS)* seeks to enable society to better manage the risks and opportunities arising from climate variability and change, especially those societies most vulnerable to climate-related hazards. The GFCS addresses the entire value chain for definition, development and application of climate information and services from global to national levels. In particular, GFCS will strengthen national, regional and global capabilities; generate climate information and products for enhanced decision-making; and facilitate coordination and collaboration among various institutions, including intermediary institutions at the nexus between users and providers, for the generation and use of tailored climate services.

WMO is further facilitating the development of action plans to address the gaps and needs identified at the national consultations that kick started the pilot projects. Action plans are available for Burkina Faso; Mali and Niger are in the process of finalizing their plans. See **Annex 3** for more detailed information on GFCS pilot projects launched in Burkina Faso, Chad, Mali, Niger and Senegal.

WMO Information System (WIS): WIS is the global infrastructure for managing and making available weather, water and climate information. WIS meets the requirements for routine collection and automated dissemination of observed data and products, as well as data discovery, access and retrieval services for all weather, climate, water and related data and products provided by centres and Member countries in the framework of all WMO Programmes.

Data centres contributing to WMO Programme activities are registered in WIS as either National Centres (NCs) or Data Collection or Production Centres (DCPCs). The main difference between an NC and a DCPC is that an NC's principal focus is on providing national services while a DCPC is established to support regional or international activities. A National Meteorological Centre and a National Climate Centre are typical NCs, while Regional Specialized Meteorological Centres and Regional Climate Centres are typical DCPCs. A third type of WIS centre is the Global Information System Centre (GISC) which have been established to host the catalogue of data and products available in NCs and DCPCs, as well as to act as a global communications hub connecting all GISCs via the WIS core network. GISCs may be connected to NCs and DCPCs in their area of responsibility by many technologies, including the GTS as well as the Internet and satellite based systems.

The new functionality of WIS started to be operational in January 2012 with GISCs in Europe and Asia. Presently, there are 368 centres registered to be a part of WIS, including 15 GISCs, 129 DCPCs and 223 NCs. Of these, RAI has two GISCs (Pretoria and Casablanca), 18 DCPCs and 59 NCs. Congress expects all NCs to be WIS enabled by the end of 2015. The Commission for Basic Systems has established a set of competencies common to all WIS centres, in particular the management of: Infrastructure; Data; external interactions, and; Operational service. A major component of WIS implementation in Africa will be through ensuring NMHSs staff have these competencies, especially those related to Data Management which are relatively specific to the WMO community.

WMO Integrated Global Observing System (WIGOS): WIGOS provides an integrated framework for all WMO observing systems and the contributions of WMO to co-sponsored observing systems. WIGOS is not intended to replace the existing

observing systems, but is an over-arching framework for the evolution of these systems, which will continue to be owned and operated by a diverse array of organizations and programmes. WIGOS will focus on the integration of governance and management functions, mechanisms and activities to be accomplished by contributing observing systems, according to the resources allocated on a global, regional and national level.

The WMO Regional Associations will play key roles in the implementation of WIGOS in their respective Region. Thus, Regional Association I (RAI-Africa), through its *Task Team on WIGOS (TT-WIGOS)*, will coordinate planning and implementation of WIGOS on the regional level for Africa, taking into account all WMO future priorities, such as GFCS and DRR. The *Task Team on WIGOS*, under guidance from ICG-WIGOS[28], and with the support of the WIGOS Project Office in the WMO Secretariat, will be responsible for:

(a) The development of the Regional WIGOS Framework Implementation Plan[29] (R-WIP);

(b) The integration of WIGOS regional network components; and

(c) The evolution of their regional networks according to the Implementation Plan for the evolution of global observing systems (EGOS-IP).

Disaster Risk Reduction (DRR): With appropriate use of meteorological, climate and hydrological information as part of a comprehensive multi-sector, multi-hazard and multi-level (local to global) approach, considerable achievements can be realized in disaster risk reduction efforts. The implementation of the Hyogo Framework for Action (HFA) by national governments has led to changes in national DRR policies and legal and institutional frameworks, which provide opportunities for increased recognition of the NMHSs by their governments and stakeholders, which could result in strengthened partnerships and increased resources.

In 2003, WMO Congress XIV (Cg-14) established the Disaster Risk Reduction (DRR) Programme [30] to strengthen the capacities for the provision of meteorological, hydrological, and climate services of WMO Members and WMO's operational and research networks to support various aspects of DRR decision-making. Through this crosscutting programme, WMO is developing an organization-wide coordination framework at the international, regional and national levels. Working with its partners, WMO thus addresses the information needs and requirements of the disaster risk management community in an effective and timely fashion.

Service Delivery: The WMO Strategy for Service Delivery[31], which is aligned to the WMO Strategic Plan, explains the importance of service delivery as most of the utility of weather-, climate-, and water-related information occurs in communicating the information to users and the response of those users based on information received. Ultimately, the utility of weather-, climate-, and water-related information is the degree to which it has a beneficial impact on societal and economic outcomes. If the currently available information is underutilized, value can be increased by improving the forecast, improving communication, and by improving the decision-making process.

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[28] Inter-Commission Coordination Group on the WMO Integrated Global Observing System (ICG on WIGOS) - http://www.wmo.int/pages/prog/www/wigos/icg-wigos.html

[29] http://www.wmo.int/pages/prog/www/wigos/documents.html

[30] http://www.wmo.int/pages/prog/drr/

[31] http://www.wmo.int/pages/prog/amp/pwsp/documents/SDS.pdf

Effective service delivery, therefore, is about providing products and services that bring utility to users and customers.

A complementary Implementation Plan[32] has been developed to guide NMHSs in the assessment of their current service delivery performance and to assist in the development of plans to improve service delivery in line with their strategic objectives. Improving levels of service delivery will provide direct benefits to service users, and, as a consequence, stronger community support for the institutions of the NMHSs.

The core business of NMHSs is built around their public good responsibility to provide essential weather, climate and related information to the community at large. Only by fully understanding why users need our services and how they use them in their decision-making can we provide services that are fit for purpose. By striving to provide services that fully meet the needs of users, NMHSs ensure that they discharge their statutory obligations, and, as a consequence, are held in high regard by the public, their owners and users.

Capacity Development: WMO places high importance on enhancing the capacity and sustainability of NMHSs to deliver on their mission. WMO also promotes capacity development through advocacy with development agencies and partners and facilitating projects to improve the human resources, technical capacities and infrastructure of NMHSs, particularly in developing, least developed and small-island developing states. WMO activities are guided by the WMO Capacity Development Strategy[33] (approved by WMO Executive Council (EC-65) in June 2012) and the WMO Capacity Development Implementation Plan[34] approved the WMO Executive Council (EC-66) in June 2013.

Other UN International Programs (UNECA-ACPC, UNDP, UNISDR, GEO, FAO, UNEP, UNESCO, etc.)

UN institutions already play an important role as key partners through their programmes on monitoring, applications and research in climate matters in particular Disaster Risk Reduction and Climate Change adaptation in support of human security and sustainable development. For instance, UNDP with support from the Global Environment Facility (GEF)'s Least Developed Country Fund (LDCF) has recently launched a project to strengthen climate information and early warning systems in 10 African countries. Their regional (for Africa) activities and programs should be taken into account.

African Development Bank and World Bank Programmes

The African Development Bank and the World Bank are partners in "building the resilience of Africa" and have important programmes to strengthening institutions' capacity, supporting development of tools to reduce disaster risks and adapt to climate change.

Both institutions are currently engaged in initiatives to support weather and climate services in Africa. Recent initiatives by the World Bank and the African Development Bank include, among others, the World Bank Hydromet Modernization Projects in Mozambique and West Africa, as well as the AfDB-led ClimDev-Aftrica Special Fund (CDSF) that is expected to be

[32] http://www.wmo.int/pages/prog/amp/pwsp/documents/IP_for_WMO_SSD.pdf

[33] http://www.wmo.int/pages/prog/dra/CDS.html

[34] http://www.wmo.int/pages/prog/dra/CDS.html

effective soon. Moreover, the World Bank is planning in cooperation with WMO and AfDB an African Regional Hydromet Program to improve hydro-meteorological services in Africa.

The relations developed by these two partners with African Governments and their involvement in very important weather and climate programmes in Africa, their own technical expertise and capacity to mobilise are of a great support in convincing national governments and regional political bodies to support the National Weather and Climate Services and their modernisation.

They should play an important role in supporting directly the implementation of the strategy and its activities.

AMCOMET as Overarching Framework for Coordination

The African Ministerial Conference on Meteorology (AMCOMET) is the regional inter-governmental authority on meteorology and is the body / high-level mechanism that advises and provides policy and political guidance to African Heads of State and Government on all matters related to the development of meteorology and its application in Africa. As such, it can perform the oversight role for the regional coordinating mechanism to ensure the implementation of the goals of the Integrated African Strategy on Meteorology (Weather and Climate Services) and harmonization of all related activities in Africa to avoid duplication of efforts and strengthen coordination among all stakeholders.

11.2 Annex 2: Stakeholders and their Roles and Responsibilities

African Governments have tried, with limited efficiency, to address the issue of weather and climate services, in particular in terms of saving lives, improving security, sustainable development and supporting climate change adaptation and mitigation.

National Meteorological and Hydrological Services (NMHSs) have been established, mandated and supported to provide at a certain level these services. Regional Climate Centres (RCCs) have also been established to support the regional aspects of developing and sharing products and services. Several projects have been developed and implemented jointly with partners for the benefit of African States, in particular, during the last two decades.

Political support of National Governments to initiatives such as the GFCS and AMCOMET, for example, are clear expressions of the political commitment of national governments to enhance the development and use of weather and climate services and to the organizations mandated to provide them (NMHSs, RCCs, among others)

Governments, regional organizations, academic institutions and civil society, as well as multi-lateral agencies and institutions, and development partners have participated in and supported the weather and climate services' efforts.

The Integrated African Strategy for Meteorology (Weather & Climate Services) and its Implementation and Resource Mobilization Plan has been developed with the participation of African governments, Regional Economic Communities, the African Union Commission, the World Meteorological Organization as well as other relevant global and regional stakeholders.

National Entities

Role of the National Government: The national governments, through the Ministry Responsible for Meteorology, and in collaboration with other relevant ministries, departments and agencies are the instruments through which many of the national level actions will be supported and executed. These national entities will be particularly responsible for the execution of actions aiming to mainstream and integrate the weather and climate services in the national development plan and operational activities of all concerned socio-economic sectors. Their primary responsibilities, among others, are to:

- Develop the adequate legal Framework and enforcement of the governance and role of the National Meteorological and Hydrological Services (NMHSs) as the sole designated national authority and chief adviser to governments on matters relating to weather and climate, in particular the provision of official early warnings;
- Ensure allocation of adequate annual budget to support the NMHS and its related bodies to facilitate the actions described in the implementation plan; and
- Undertake concrete actions to ensure weather and climate services are mainstreamed into national development processes, in particular, in national development plans and programmes, and all operational activities that are weather and climate dependent.
- Retention of skilled staff

Building national resilience and adapting to climate change cannot be achieved without mainstreaming weather and climate services into national planning and programmes of all relevant governmental departments and institutions, including private sector policies and decision-making.

Specific Role of National Meteorological and Hydrological Services

The WMO Regional Association I (RAI-Africa), through the Heads of NMHSs, will provide an oversight role in the implementation of the Strategy, including monitoring and evaluation.

The NMHSs, as the national institutions mandated to provide weather and climate services should, assume the leading role at national and regional level in the implementation of the Strategy under the leadership of their line ministry. NMHSs should further ensure the efficient coordination of the defined thematic groups in the National Coordination Committee and take the lead in mobilizing resources and provide the required human resources and facilities to the coordination and implementation teams. They are further expected to execute the funded activities of the implementation plan at national level and handle the tasks related to monitoring and evaluation, and communication.

It is acknowledged that NMHSs are already under resourced; however, the onus is on them to develop the necessary partnerships with relevant stakeholders for national activities that in the end would benefit their national meteorological service.

Role of Regional Economic Communities (RECs)

Regional Economic Communities (RECs) are the building blocks of the African Union Commission (AUC) and facilitate the sub-regional development and implementation of AUC supported programmes and mechanisms. As AMCOMET brings political support, it is critical to establish strong cooperation with the RECs, and to ensure that they are an integral part in the Implementation of the Strategy, which can be done through designation of an AMCOMET focal point through a Memorandum of Understanding (MoU) or similar tool. It is further critical that the Strategy is cascaded into sub-regional strategies, development plans and process following the Strategy main themes, and taking into consideration the specific needs of the sub-region and their related entities. The primary roles of the RECs, among others, are to:

- Develop and reviews policy and legal frameworks to better position NMHSs and RCCs in Sub-Regional Development Plans;
- Strengthen its sub-regional advocacy role in providing adequate funding for NMHSs and RCCs;
- Support the participation of NMHS s and RCCs in Multilateral Environmental Agreements (MEAs) activities at regional and continental levels as well as their effective support to participate to climate change negotiations; and
- Encourage and review integration of weather and climate services into development plans and regularly evaluate their impacts or benefits to society.

Role of regional and sub-regional Institutions (Regional Climate Centres, River Basin Organizations, Regional Training Centres, etc.)

Working collectively through a regional support structure allows countries to maximize their resources and technical expertise to the benefit all Member States. Regional and sub-regional climate centres, beyond their current mandate of coordinating and supporting the NMHSs to implement activities at the national level, should support the implementation of the Strategy, mirroring the RECs activities but at the technical and operational levels.

It is proposed that the RCCs, in coordination with NMHSs and the WMO, and by leveraging the AMCOMET platform, take the responsibility for the implementation of the Strategy in collaboration with the relevant regional and national institutions, by providing technical support and guidance as required by the respective implementing agencies (NMHSs).

Central Role of the African Union Commission (AUC), World Meteorological Organization (WMO) and the African Development Bank (AfDB)

African Union Commission (AUC) and World Meteorological Organization (WMO), joint partners in the establishment of the African Ministerial Conference on Meteorology, through which the Integrated African Strategy on Meteorology (Weather and Climate Services) has been developed, have the primary role to support the activities outlined in the Strategy's complementary Implementation and Resource Mobilization Plan, for the AUC at the political level and the WMO at the technical level.

It is imperative for the WMO to ensure a very close collaboration exists between the Strategy and the GFCS. It is important that stakeholders see the Strategy and the GFCS as complementary, with the GFCS defining the Global Framework and the Strategy defining the pan-African framework. It must be stressed that these two are not a duplication of efforts, in particular, for access to funding and strategic partnerships.

Since the time when African Development Bank (AfDB) identified climate change as a cross cutting issue that negatively impacts the bank's goal of alleviating poverty and promoting sustainable development in Africa, it has accumulated a large experience in conducting and implementing projects that address climate risk management and adaptation in Africa. As such, the skills developed by the bank in implementing such projects must be taken into account; strengthened partnership with the AfDB is therefore critical to the successful implementation of the Strategy.

Role of AMCOMET Secretariat

The AMCOMET Secretariat, in close collaboration with the African Union Commission (AUC), in its role of overall coordination and oversight for the implementation of the Strategy at continental, sub-regional and national levels, bears the responsibility of facilitating the decisions taken during AMCOMET Sessions, in particular as they relate to the implementation of the Strategy. It is therefore critical that the AMCOMET Secretariat have a minimum number of dedicated staff to ensure this coordination.

11.3 Annex 3: Mapping potential funding sources and resource partners

As an initial step to support resource mobilization efforts for the present Implementation Plan, there is a need to map out potential funding sources and resource partners. To ensure a sustained implementation of the Strategy, it is critical that a wide range of development funding sources be targeted, building on existing international, regional and national development mechanisms, including:

National Budgets and Funding Instruments: As part of their upmost responsibility to ensure protection/security of their population and their own investments and those financed by development partners from weather and climate disasters, National Governments should consider funding their NMHS within the framework of their national development planning processes and development cooperation programmes. In committing national funds to their NMHS operational budget and meeting their commitments in contributing to the budget of RCCs, national governments in Africa will greatly contribute to the implementation of the Integrated African Strategy for Meteorology at national level.

Bilateral Development Mechanisms through Official Development Assistance programmes and in-country budgets of overseas missions and embassies: Most bilateral agencies have extensive experience in Africa, some with solid programmes on climate change adaptation and mitigation, as well as weather and climate services. Bilateral cooperation agencies play an important role in mobilizing partnerships and resources for the implementation of the Strategy.

Multilateral Development Financing Mechanisms, including Development Banks and Agencies: As an important financier of Africa's development, the **African Development Bank** has increased its investments on climate change and climate services. From its core development financing instruments in particular, the African Development Fund (ADF), the Bank is providing significant resources for initiatives related to climate change adaptation and mitigation. Moreover, by creating the ClimDev-Africa Special Fund (CDSF), the Bank is committed to strengthen national and sub-regional institutional capacities to overcome the lack of necessary climate information, analysis and options required by policy and decision makers at all levels within the context of threats of climate change. Therefore, the African Development Bank would constitute one of most important potential funding sources for the implementation of the Integrated African Strategy on Meteorology (Weather and Climate Services), as strongly recommended during the 3rd Session of AMCOMET.

In recent years, the **World Bank** has also increased its hydro-met project portfolio, focusing on the modernization of National Meteorological and Hydrological Services (NMHSs) in different parts of the world, including Southeast Europe, Central and South-East Asia and Western and Eastern Africa. The Bank, through the Global Facility for Disaster Risk Reduction (GFDRR) and the Pilot Programme for Climate Resilience (PPCR) plays an important role in support to NMHSs and RCCs. Currently, as part of the Sahel Initiative, the World Bank is assisting some Sahelian countries of West Africa and regional institutions in the areas of water resources and hydro meteorological services in support to climate resilience. Given the Bank's growing interest in weather, climate and hydrological services, it can be an important partner for the implementation of the Integrated African Strategy on Meteorology (Weather and Climate Services) through well-coordinated and structured efforts between AMCOMET and WMO.

The **Arab Bank for Economic Development in Africa** (BADEA) financed projects submitted in priority by recipient countries and within the framework of their development plans as well as regional projects that contribute to the integration of African economies. BADEA also provides technical assistance in the form of grants. It is important to approach and raise awareness of BADEA on the need to mainstream weather and climate Services into national

and regional development plans thereby ensuring commitments for the implementation of the Integrated African Strategy on Meteorology (Weather and Climate Services).

Other resource potential funds from the Arab world that may be targeted are: Islamic Development Bank (IsDB), Arab Gulf Program for United Nations Development Organizations (AGFUND), OPEC Fund for International Organization (OFID), Abu Dhabi Fund, and Kuwait Fund for Arab Economic Development

Climate financing Instruments, including in particular the Global Environment Facility, the Adaptation Fund, Climate Investments Funds (CIFs), National Climate Funds (NCFs) and the Green Climate Fund: In the recent years, climate finance has become an important focus of the international community. While several funds are operational, the delivery of resources to address climate services is still very low. These funds are broadly focused on climate change without clearly targeting climate services. This situation needs to be improved with a greater focus on, and access to, these climate-related funds for climate services. Climate change financing provides a major opportunity for greater long-term investment in climate services, including the newly established Green Climate Fund.

Climate financing instruments need to be viewed as opportunities for the implementation of the Integrated African Strategy on Meteorology (Weather and Climate Services), including the following mechanisms that are operational: Adaptation Fund, for which WMO, AfDB, OSS and other have been designated as Multilateral and Regional Implementing Entities; Climate Investment Funds, in particular the Pilot Program for Climate Resilience (PPCR), Global Environment Facility, and eventually the Green Climate Fund.

Coordination between National and Regional levels is imperative to prepare and submit project proposals that meet the various requirements under those funding instruments.

A Guidebook for the Design and Establishment of National Funds to achieve Climate Change Priorities has been developed and published by the UNDP, entitles *Blending Climate Finance Through National Climate Funds* (September 2011):

"NCF is a mechanism that supports countries to direct finance toward climate change projects and programmes by facilitating the collection, blending, coordination of, and accounting for climate finance. NCFs provide a country-driven system that can support climate change goal setting and strategic programming; oversee climate change project approval and implementation, measure performance, offer policy assurance and financial control of climate change funds, and assist with partnership management".

Countries may use the UNDP proposed approach to constitute such National Fund as support to the implementation plan of the Strategy. For example, Mali has created one such fund in 2012 and Sweden has contributed to it in December 2013.

Private Sector Finance and other innovative funding mechanisms: There is a need to leverage private sector engagement in the efforts to support weather and climate services in Africa, building on lessons learnt from recent experiences with programmes such as Aircraft Meteorological DAta Relay (AMDAR) Programme [35] and Mobile Weather Alert. Both programmes have clearly demonstrated the value of leveraging the core competencies of the

[35] http://www.wmo.int/pages/prog/www/GOS/ABO/AMDAR/AMDAR_System.html

private sector to meet the needs of marginalised communities in providing accurate weather and climate services, including early warnings.

- **Aircraft Meteorological DAta Relay (AMDAR) Programme[36]:** The AMDAR programme is an internationally coordinated WMO initiative the core aim of which is the collection and global distribution of high-quality meteorological and environmental data gathered from commercial aircraft along aviation corridors. The public–private partnership between WMO, NMHSs and the airline industry offers an important source of basic upper-air information for the WMO community, providing over 230 000 observations from over 3 000 reporting aircraft on a daily basis. The data from this programme can support a wide range of meteorological application areas, such as numerical weather prediction (NWP), aviation forecasting and nowcasting.
- **Mobile Weather Alert:** The Uganda Department of Meteorology, World Meteorological Organization (WMO), MTN, Ericsson, National Lake Rescue Institute and the Kalangala Fishing community came together in a unique public-private partnership, and combined mobile technology, weather forecasting and local know-how, to provide a localized weather alert service to fishing villages on Lake Victoria. WMO and Ericsson in partnership with MTN, Uganda Department of Meteorology and the National Lake Rescue Institute have made possible the delivery of daily weather forecasts and well-timed warnings in local languages. The unique weather information service will enable fishermen and traders to make informed decisions on, for example, when and where to fish in Lake Victoria, thus helping to save lives and preserve livelihoods.
    - Other private funds would need to be targeted and approached

United Nations Organizations: Other international partners for some specific activities of the strategy are the UN Agencies, who have extensive experience in managing and implementing development projects.

Existing African Union (AU) Privileged Partnership: Through the African Union, the continent of Africa has privileged and strategic bilateral partnerships with a number of developed countries. These can serve as an enabling mechanism to access available bilateral funding opportunities. These include, among others, Tokyo International Conference on African Development (TICAD V), Africa-EU (EDF/ACP, Pan-African Initiative), Forum on China Africa Cooperation (FOCAC), Africa-Arab Cooperation, Africa-South America, Africa-US (AGOA), Africa-Korea, Africa-Turkey and Africa-India.

[36] http://www.wmo.int/pages/prog/www/GOS/ABO/AMDAR/AMDAR_System.html

12. Table of Acronyms

ACMAD	African Centre of Meteorological Applications for Development
ACPC	African Climate Policy Centre
AEM	Aeronautical Meteorology Division
AeMP	Aeronautical Meteorology Programme
AfDB	African Development Bank, Tunis
Afri-GEOSS	Africa Global Earth Observation System of Systems
AgM	Agricultural Meteorology Division
AgMP	Agricultural Meteorology Programme
AGN	African Group of Negotiators
AGRHYMET	Regional centre for agriculture, hydrology and meteorology, Niamey
AMCEN	African Ministerial Conference on Environment
AMCOMET	African Ministerial Conference on Meteorology
AMCOW	African Ministerial Council on Water
AMDAR	Aircraft Meteorological Data Relay
AMESD	African monitoring of the Environment for Sustainable Development
ASECNA	Agency for Aerial Navigation Safety in Africa and Madagascar
AU	African Union
AUC	African union Commission, Addis Ababa
AusAID	Australian Agency for International Development
CAHOSCC	Conference of African Heads of States and Government on Climate Change
CCAFS	Climate Change Agriculture and Food Security
CCDA	Climate Change and Development in Africa Conference
CCDU	Climate Change and Desertification Unit
CDM	Clean Development Mechanism
CDMS	Climate Data Base Management System
CDSF	ClimDev Special Fund
CGIAR	Consultative Group on International Agricultural Research
CIF	Climate Investment Funds
CILSS	Comité Permanent Inter-Etats de Lutte contre la Sécheresse dans le Sahel
CIMO	Commission for Instruments and Methods of Observation
ClimDev-Africa	Climate for Development in Africa
CLIPS	Climate Information and Prediction Services
CLIVAR	Climate Variability and Predictability Study (WCRP)
COF	Climate Outlook Forum

UNFCCC COP	Conference of the Parties of the United Nations Framework Convention on Climate Change
DCPC	Data Collection or Production Centre (of WIS)
DfID	UK Department for International Development
DRR	Disaster Risk Reduction Programme
EAC	East African Community
EC	Executive Council (WMO)
UNECA	UN Economic Commission for Africa
ECOWAS	Economic Community of West African States
EU-ACP	European Union-African Caribbean Pacific
EWS	Early Warning Systems
FAO	Food and Agriculture Organization of the United Nations
FEWSNET	Famine Early Warning Network
GCN	GLOSS (Global Sea-Level Observing System) Core Network
GCOS	Global Climate Observing System
GEF	Global Environment Facility
GEO	Group on Earth Observations
GEOSS	Global Earth Observation System of Systems
GEWEX	Global Energy and Water Cycle Experiment (WCRP)
GFCS	Global Framework for Climate Services
GISC	Global Information System Centre of WIS
GTS	Global Telecommunication System
GUAN	GCOS (Global Climate Observing System) Upper-Air Network
HFA	Hyogo Framework for Action
HFW	Hydrological Forecasting for Water Resources Management
ICAO	International Civil Aviation Organization
ISACIP	Institutional Support to African Climate Institutions Project
ICPAC	IGAD Centre for Climate Applications and Prediction
IGAD	Inter-Governmental Authority on Development
IOC	Intergovernmental Oceanographic Commission (UNESCO)
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organization for Standardization
JCOMM	Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology
LDCs	Least Developed Countries
LoA	Letter of Agreement
M&E	Monitoring and Evaluation
MDG	Millennium Development Goal

MDSC	Multi-Disease Service Centre
MESA	Monitoring of Environment and Security in Africa
MoU	Memorandum of Understanding
NAP	National Adaptation Plans
NASA	US National Aeronautical and Space Administration
NEPAD	New Partnership for Africa's Development
NGO	Non-governmental organization
NMHS	National Meteorological and Hydrological Services
NMS	National Meteorological or Hydro-meteorological Service
NWP	Numerical Weather Prediction
PPCR	Pilot Program on Climate Resilience
QMS	Quality Management System
RA	Regional Association
RAI	Regional Association I, Africa
RBOs	River Basin Organisations
RCC	Regional Climate Centres
REC	Regional Economic Community (ECOWAS, SADC, IGAD etc….)
RSMC	Regional Specialized Meteorological Centre
RTC	Regional Training Centre
SADC-CSC	Southern African Development Community - Climate Services Centre
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNISDR	United Nations International Strategy for Disaster Reduction
VCP	Voluntary Cooperation Programme
WAMIS	World Agrometeorological Information Service
WB	World Bank
WCRP	World Climate Research Programme
WFP	World Food Programme, Rome
WHO	World Health Organization
WIGOS	WMO Integrated Global Observing System
WIS	WMO Information System
WMO	World Meteorological Organization, Geneva
WMOSP	WMO Space Programme

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