



WORLD
METEOROLOGICAL
ORGANIZATION



KENYA METEOROLOGICAL DEPARTMENT

Strategic Plan

2018-2022

AUGUST 2016

Version 6.0 (Adapted to Africa)

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FOREWORD

The Kenya Meteorological Department's (KMD) contribution towards realization of the national goals set out in the Kenya Vision 2030 is captured under two flagship programmes. That is, the "Advertent Weather Modification Programme" and the "Modernization of Meteorological Services Programme". This Strategic Plan and the third Medium Term Plan (MTP III) 2018-2022 focus on advancing these programmes by through six strategic themes. The challenges faced by KMD in its role as a National Meteorological Service will also be addressed through strategic objectives as set out.

The role of KMD has in recent times assumed a high profile due to Climate Change, environment and sustainable development issues that today set the agenda for most global fora and will continue to shape debate for the foreseeable future. Indeed, our country has experienced episodes of adverse weather and extreme climate events and the associated impacts such as unprecedented drought spells, famine, flash floods, falling crop yields, among other severe phenomena all attributed to vagaries of weather and climate change. It is in this context that this Strategic Plan is designed.

My Ministry and the Government will continue to provide all the support needed to make the contribution of KMD towards realization of the national goals set out in Vision 2030 a reality.

Charles Sunkuli, MBS
PRINCIPAL SECRETARY
STATE DEPARTMENT OF ENVIRONMENT

PREFACE

The purpose and mission of a National Meteorological and Hydrological Service (NMHS) is set out in the World Meteorological Organisation (WMO) convention (1947, revised 2007), that is the provision of early warning weather and climate information and services for the safety of life, protection of property and conservation of the natural environment as a contribution to sustainable development of the 191 member countries of WMO. This Strategic Plan, therefore, facilitates a focused approach and provides a roadmap to the implementation of the Kenya Meteorological Department (KMD) mandate to provide timely weather and climate information and services.

The Strategic Plan sets out KMD's vision, mission, goals and objectives for the period 2018-2022 to ensure achievement of national goals set out in the third Medium Term Plan (MTP III). The Strategic Plan links the KMD planning, programmes, budgeting and performance management cycle to the Annual Operating Plans and reporting mechanisms. The Plan builds on the commitments set out in the Kenya Vision 2030, WMO Strategic Plan 2016-2019, the Sendai Framework of Action (2015-2030), the UN Sustainable Development Goals (SDGs) and the Ministry of Environment and Natural Resources Strategic focus (2017-2022). These instruments present opportunities for enhancing sustainable development processes for the well being of the Kenyan people.

This Strategic Plan identifies challenges and external factors that face the provision of meteorological services including advancements in technology and the ever-emerging new innovations. The plan developed strategic themes that will guide the KMD, as the National Meteorological Service in its endeavor to meet the expectations and goals for service delivery.

This Strategic Plan is anchored on the efforts, skills and competencies of staff at KMD and stakeholders for their dedication and commitment to the advancement of the science of meteorology and to their collective effort towards achievement of the goals of the third MTP.

Peter G. Ambenje
Ag. DIRECTOR
KENYA METEOROLOGICAL DEPARTMENT

ACRONYMS AND ABBREVIATIONS

Acronym	Definition
BSC	Balance Scorecard
CIDP	County Integrated Strategic Plan
EAC	East Africa Community
KMD	Kenya Meteorological Department
LFA	Logical Framework Analysis
M&E	Monitoring and Evaluation
MOUA	Memoranda of Understanding and Agreements
MTEF	Medium term Expenditure Framework
MTP	Vision 2030 Medium Term Plan
NMHS	National Meteorological and Hydrological Services
NOAA	National Oceanic and Atmospheric Administration
PESTLE	Political, Economical, Socio-Cultural, Technological, Legal and Environmental
PMF	Performance Measurement Framework
RA	Regional Associations
RTC	Regional Training Centre
RBM	Result Based Management
SDE	State Department of Environment
SDG	Sustainable Development Goals
SWOT	Strengths, Weaknesses, Opportunities, Threats
TBD	To Be Determined
TC	Technical Commissions
TOC	Theory of Change
TOR	Terms of Reference
WMO	World Meteorological Organization

EXECUTIVE SUMMARY

The KMD strategic plan provides a roadmap for the provision of weather and climate information and services for the period 2018-2022. The plan provides a new strategic direction for KMD, taking into account the Constitution of Kenya (2010), the Third Medium Term Plan of Vision 2030, the Ministry of Environment and Natural Resources Strategic Plan 2013-2017 and other planning documents including the Jubilee manifesto, the Sector Plan, the WMO Strategic Plan 2016-2019, the Sendai Framework of Action (2015-2030), the UN Sustainable Development Goals (SDGs) among others.

A participatory, consultative and all-inclusive process that included views from both internal and external stakeholders was adopted in the preparation of this Strategic Plan.

The formulation process entailed a comprehensive review of the KMD Strategic Plan 2013-2017 to identify achievements; gaps in implementation; challenges experienced and lessons learnt (a summary is provided in the Plan). A review of the operating environment and situational analysis of meteorological services focusing on policy, legal and institutional framework were undertaken taking cognizance of national priority goals as set out in the constitution, Kenya VISION 2030, MTP III and the Jubilee manifesto. KMD identified the following mandate, vision, mission and goals for the plan period 2017-2022

Mandate: The mandate of the KMD is to provide timely early warning weather and climate information for safety of life, protection of property and conservation of natural environment. This mandate is anchored on Executive Orders on the structure and organization of the Government of Kenya and the World Meteorological Organization Convention. The Convention also recognizes the NMHSs to be single and authoritative voices and sources on matters of severe weather and extreme climate events in WMO's member countries.

Vision statement: "A world class weather and climate service that contributes to sustainable economic development".

Mission statement: "To provide our customers and stakeholders with prompt, accurate and reliable weather and climate products and services for safety of life, protection of property and conservation of the environment".

Goals: The plan identifies six goal statements that form the backbone of the strategic framework from which 10 objective statements are organised into strategies and targets for the plan period. the goals are:

To provide an integrated planning framework in order to enhance service delivery and customer satisfaction;

To integrate emerging technologies into the improvement of provision of meteorological services and information in order to meet user needs';

To Mitigate adverse impacts of severe weather and extreme climate events;

To enhance the capacity of meteorological personnel for performance improvement;

To enhance operational knowledge and techniques in order to improve the understanding of weather and climate applications; and

To engage in partnerships and collaborations for mutual benefit

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1. INTRODUCTION

1.1 Strategic Planning

Strategic planning is an organizational management activity that is used to set priorities, focus energy and resources, strengthen operations, ensure that employees and other stakeholders are working toward common goals, establish agreement around intended outcomes/results, and assess and adjust the organization's direction in response to a changing environment. It is a disciplined effort that produces fundamental decisions and actions that shape and guide what an organization is, who it serves, what it does, and why it does it, with a focus on the future. Effective strategic planning articulates not only where an organization is going and the actions needed to make progress, but also how it will know if it is successful in its stated mandate.

1.2 Purpose of the Strategic Plan

The purpose of the strategic plan is to set overall goals for the organization entity and to develop a plan to achieve them. It involves stepping back from the day-to-day operations and asking, where the entity is headed and what its priorities should be.

Strategic Planning is intended to accomplish three important tasks namely:- clarify the outcomes that an organization wishes to achieve; select the broad strategies that will enable the organization achieve those outcomes; and, identify ways to measure progress of the achievement process.

In addition, many organizations use the process of strategic planning to affirm their links to stakeholders by involving them in the development of the plan.

1.3 Methodology of the Strategic Plan

The first aspect of the process entailed a comprehensive review of the KMD's Strategic Plan 2013-2017 to ascertain actual outputs, outcomes and results achieved by the implementation of the planned activities. The review identified gaps in implementation, challenges and constraints experienced, lessons learnt and best practises to inform the next planning period. The main output of the review is a separate End-Term Evaluation report. However, key achievements are highlighted in chapter 5 of this Strategic Plan. Secondly, this Strategic Plan will be aligned to the third Medium Term Plan (2018-2022) and the Sector Plan (2018-2022) for Environment, Water and Sanitation which shall form the basis for identifying development priorities and establishing deliverables under the KMD's Performance Management System. To ensure its full implementation, this Strategic Plan is linked to the Government budget system through the Medium Term Expenditure Framework (MTEF).

2 BACKGROUND

2.2 Organization History

The present Kenya Meteorological Department (KMD) was established as a small colonial service for East Africa way back in 1929, then known as the British East African Meteorological Service (BEAMS) responsible for the provision of meteorological and climatological services to various sectors of the economy.

In 1948, the British East African Meteorological Service became a department within the British East African High Commission and was renamed the East African Meteorological Department (EAMD). In 1964, EAMD was placed under the newly established East African Community (EAC). Following the break-up of the then Community in 1977, all the common services collapsed and their functions were transferred to the jurisdiction of the respective Partner States of the former Community. In Kenya, the Kenya Meteorological Department (KMD) was established as a department under the Ministry of Power and Communications.

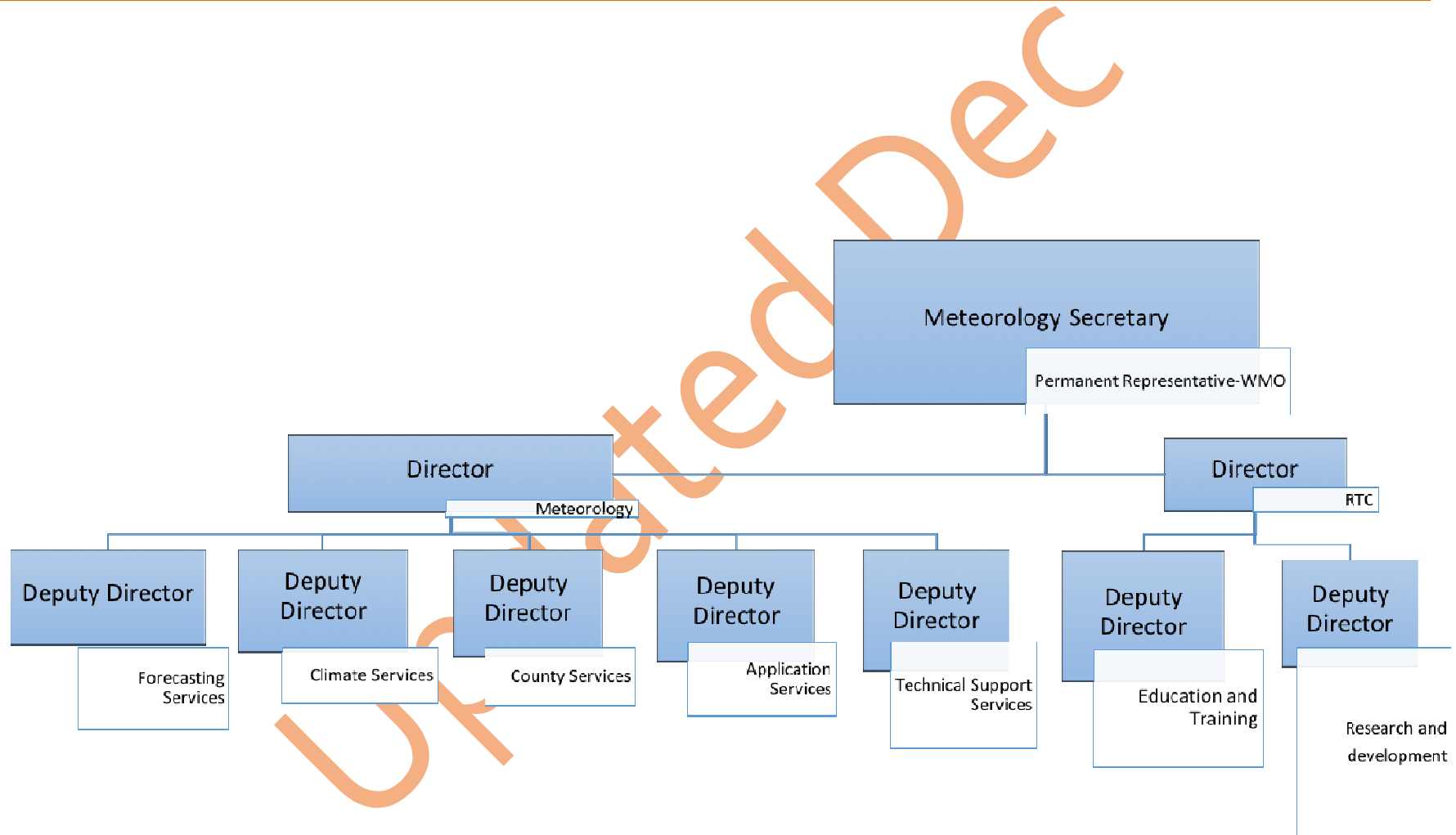
In the years 1977 to date, KMD's channel of communication with the Government has changed hands from the Ministries of Power and Communications to Transport and Communications; Information, Transport and Communications; Transport and following the reorganization of the Government

vide the executive order No. 1 of May 2008, the department was placed under the then Ministry of Environment and Mineral Resources

In 2016, the Government rationalized the portfolios, responsibilities and functions of all the ministries and other government agencies vide Executive Order No.1 of May 2016. Consequently, the Ministry of Environment and Natural Resources was established, where the Kenya Meteorological Department was placed under the State Department of Environment (SDE). This is in line with the Government's key policies as envisioned in the Constitution of Kenya (2010), Vision 2030 and the Medium Term Plans (MTPs) that emphasize the need for efficiency and better management in the utilization of natural resources to enable the Government achieve its strategic objectives of growth, productivity, efficiency and improvement in service delivery.

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2.3 Organization Structure



2.4 Review of Key Achievements

Main achievements of the organization over the past strategic planning period include: -

- i. Audited by the German Weather Service (DWD) on implementation status of the WMO Information system (WIS) Data Collection & Production Centre (DCPC) to facilitate approval by the WMO Commission of Basic Systems (CBS)

- ii. Upgraded the PUMA system to PUMA2015.

- iii. Undertook digitization of various weather data registers as follows:
 - a. 10 years (1995-2004) of SYNOP registers
 - b. Rainfall, Agromet, Pressure and Wind registers up to May 2016]

- iv. Acquired/installed new meteorological infrastructure listed below:
 - o Acquired and installed 48 synoptic AWSs
 - o Acquired and installed Nzoia river flood forecasting and early warning system
 - o Acquired and installed 2 upper air observing systems (garissa and Lodwar)
 - o Acquired and installed 5 seismic stations
 - o Acquired 1 mobile air quality laboratory
 - o Acquired and installed 17 Hydro AWS and 3 river flow gauges for Nzoia river basin
 - o Commissioned 3 additional manned observatories at Ngong, Kitui and Nganyi Meteorological stations
 - o ISO certified for the provision of Aeronautical meteorological services
 - o Acquired and installed 3 forecaster work stations and 5 Pre – flight Pilot briefing systems
 - o Completed renovations of RTC hostel rooms
 - o Completed additional floor expansion for KMD headquarters' administration block
 - o Completed Embu and Kitui county weather and climate information centres
 - o Constructed RANET offices at Garbatulla, Samburu, Matungu, Garissa
 - o Completed Perimeter wall for KMD Headquarters' and Garissa Meteorological Station
 - o Completed renovations and additional floor for research centre at RTC
 - o Decentralized meteorological services to the 47 counties.
 - o Renovated staff house at Lodwar, Voi and Moyale
- v. Developed blended curricula for Hydrometeorology, continuous professional development course in Aeronautical meteorology, satellite application, basic AWS training course for technicians and operators and the training course for the CDMs
- vi. Formulated Research proposal on drought monitoring system for Kenya
Compiled annual research reports
- vii. Participated in the training project for MESA

- viii. Developed gridded weather data sets by blending observed and

-
- ix. Published a paper titled 'Verification of daily weather product over various parts of Kenya during the short rains of 2014 and 2015' in the Journal for Meteorology and Related Sciences
 - x. Collaborated with various national regional and international institutions including the WMO, EUMETSAT, UKMET OFFICE, ICPAC, UON, TAHMO, USAID, NDMA, NDOC, REDCROSS, Care International, Line Ministries, ACMAD
 - xi. Recruited and trained new technical staff (10 Meteorologists, 30 Meteorological Assistants and 14 Meteorological Telecommunication Officers)
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Lessons learned

The following lessons were learnt from the implementation of the 2013-2017 strategic plan:

-
- i. Prudent planning and efficient use of resources is key to the successful implementation of the strategic plan
 - ii. Adoption of a man-machine interface model and training the staff on multitasking addresses, to some extent, the issue of dwindling human capital
 - iii. Embracing technology and automation of processes enhances service delivery and leads to cost savings
 - iv. Continuous human skills development enhances service delivery
 - v. Extending QMS to cover all operations of the department will improve quality of services
 - vi. Maintaining, enhancing and creating partnerships and cooperation with stakeholders and development partners improves capacity and contributes to other mutual benefits
 - vii. Effective communication is key in maintaining a motivated work force
 - viii. Public awareness and outreach leads to attitude change and promotes team work and sharing of information as well as improve public image and visibility
 - ix. external factors impede the effective implementation of the KMD succession management strategy and adversely affects skills development and service provision
 - x. Low budgetary allocation for operation and maintenance negatively affects servicing of installed systems and interrupts smooth and continuous data flow in real time
 - xi. There is increased demand of accurate and timely early warning weather and climate information, from an enlightened clientele, due to severe impacts of climate variability and change
 - xii. Establishment of Regional Meteorological Coordination Offices is necessary for proper management and coordination of county meteorological services.
 - xiii. Enhanced operational and applied research in the science of meteorology and related geo- sciences will address mitigation of severe impacts of climate variability and change
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xiv. A new organization structure is necessary to address the emerging needs, trends, international best practices and challenges

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3 ENVIRONMENTAL SCAN

3.2 SWOT ANALYSIS: Assessment and Analysis of the Organization’s Strengths, Weaknesses, Opportunities and Threats

Table 1: SWOT Analysis

INTERNAL	
STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> ○ Presence in all the 47 counties ○ Well trained and experienced technical staff; ○ Recognition by Government of Kenya, WMO and other stake holders as the single authoritative voice and source on weather and climate matters; ○ Fairly well established infrastructure for weather, climate, and air pollution monitoring, and multi hazard early warnings including severe weather and extreme climate events, tsunamigenic warnings, volcanic ash; ○ Designated Regional and global responsibilities on weather and climate issues including education and training in meteorology and related geo-sciences by WMO; ○ A modern well stocked National Meteorological Library; 	<ul style="list-style-type: none"> ○ Inadequate meteorological facilities and equipment; ○ Inadequate physical facilities; ○ insufficient land space for expansion of Meteorological Infrastructure in the field ○ partial implementation of Quality management system for all functions of the meteorological service; ○ Lack of an act of parliament for regulation and provision of meteorological services; ○ Irregular maintenance and servicing of equipment and instruments ○ Inadequate spatial network for systematic weather, climate and air pollution monitoring and dissemination); ○ ○ Slow implementation of man

<ul style="list-style-type: none"> ○ Affiliation to National, Regional and International Organisations such as UoN, KALRO, NDMA, KCAA, KEMRI, KMFRI, NEMA, WMO, ICAO, IOC/UNESCO, JCOMM, ICSU, ACMAD, IGAD, IPCC, ICPAC, EAC, COMESA, UK Met. Office, DWD, USAID ○ ISO certified for the provision aeronautical meteorological services ○ Refurbished 60 bed self contained Hostel ○ Adoption of competency based training programmes at RTC 	<p>machine interface</p>
EXTERNAL	
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> ○ WMO Designated Regional responsibilities: Data collection and production centre(DCPC); Regional Instrument Centre (RIC); WMO Regional Training Centre (RTC); WMO Regional Specialized Meteorological Centre (RSMC) for cross equatorial monsoonal flows and tropical cyclone WMO Regional Centre of Excellence in African Satellite Meteorology Education and Training (ASMET); Specialized Regional meteorological centre for severe weather forecasting demonstration project for East Africa; ○ National focal point for Tsunami Early Warning designated by IOC/IOTEWS ○ Hosting of ICPAC, IGAD – Hydrological Cycle for Observing Systems (HYCOS) and WMO Sub-regional Office for Eastern and Southern Africa; Kenya Meteorological Society (KMS); 	<ul style="list-style-type: none"> ○ Underfunding to the Department; ○ lack of implementation of the well planned succession management strategy ○ Lack of an act of parliament for regulation and provision of meteorological services Lack of sufficient capacity in Information and Communications Technology (ICT); ○ Slow pace of transformation to a Semi-Autonomous Government Agency (SAGA); ○ Emerging competition in the provision of meteorological services; ○ Encroachment on meteorological station land by private developers; ○ Vandalism on meteorological installations; ○ Gender imbalance. ○ Insecurity in some outlying areas

<p>National Climate Change Resource centre</p> <ul style="list-style-type: none"> ○ Recognition that Climate Change is now a reality and the role of KMD as the premier institution in climate change science, monitoring, detection, attribution and prediction ○ Recognition of training needs in view of emerging issues such as climate change, new technologies (AWS, Radar, Satellites), green economy and WMO priority areas, ○ Societal demand from an increasingly informed clientele for meteorological information and services to address adverse impacts associated with increasingly severe weather and extreme climate events; ○ Recognition that about 90% of natural disasters are weather and climate related; and the need to strengthen early warning services for multi-hazard approach to Disaster Risk Reduction (DRR) ○ Recognition that about 60% of the socio-economic activities are weather and climate sensitive and the requirement for government to invest in meteorological infrastructure. ○ Participation in national, regional and international activities of institutions such as WMO, ICAO, UNESCO/IOC, WHO, EAC, ICPAC Support from development partners in enhancing meteorological services ○ Implementation of Sustainable Development Goals (SDGs) 	<p>of the country</p>
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3.3 Pestle Analysis

Preamble to be inserted

Table 2: Pestle Analysis

Political Factors	Economic Factors
<ul style="list-style-type: none"> ○ Devolution of services and some activities to counties ○ Re-organization of Ministries/Departments/ Agencies 	<ul style="list-style-type: none"> ○
Socio-cultural Factors	Technological Factors
<ul style="list-style-type: none"> ○ Religious and cultural beliefs ○ Level of education and public awareness among some of the users of KMD services and information ○ Gender and youth issues ○ Accessibility to Meteorological Information 	<ul style="list-style-type: none"> ○ Rapid development of technologies and innovations ○ Difficulties in the sustainability of obsolete technologies ○ Phobia by staff of new and emerging technologies
Legal Factors	Environmental (ecological) Factors
<ul style="list-style-type: none"> ○ <i>Institutional Framework/Policy</i> ○ <i>Legislations and regulations in technological field</i> ○ <i>Enforcement, compliance and implementation of Multilateral Environmental Agreements (MEAs)</i> 	<ul style="list-style-type: none"> ○ Climate Change and attendant impacts. ○ Participation in environmental fora dealing with biodiversity, convention to combat desertification and climate change detection processes including both adaptation and mitigation; ○ Building partnership in Reduction of Emissions from Deforestation and Desertification (REDD ++) Agriculture, Forestry and Other Land Use (AFOLU) and carbon markets. ○ Building partnerships in minimization of pollution and

	ozone depleting substances.
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3.4 Stakeholders Analysis

Table 3: Stakeholder Analysis

Stakeholders	Interests	Expectations	Potential
Ministries, Departments and Agencies (MDAs) and county governments	<p><i>Strengthen support and collaboration</i></p> <p><i>Weather and climate products, services and information.</i></p> <p>Meteorological training and consultancy</p> <p>Capacity development</p>	<p>Accurate and timely early warning for decision support</p> <p>Skills and capacity enhancement</p> <p>Closer collaboration</p> <p>Access to meteorological information and data for Decision support</p>	<p><i>Promote decentralization opportunities, inter-ministerial, county governments coordination and collaboration</i></p> <p>Improved infrastructure</p> <p>Capacity development</p> <p>Closer collaboration</p> <p>Share information</p>
<i>Private sector</i>	<p><i>Innovative products and services to support industry sector</i></p> <p>Capacity development</p> <p>Meteorological training and consultancy</p>	<ul style="list-style-type: none"> ▪ <i>Provide enabling environment and incentives for business</i> ▪ <i>contribute to policy formulation in the sector</i> <p><i>Access to products and services</i></p>	<ul style="list-style-type: none"> ▪ <i>Provide enabling environment and incentives for business</i> ▪ <i>contribute to policy formulation</i> ▪ <i>capacity development</i> <p><i>Funding for innovations and research</i></p>

<p><i>Universities</i></p>	<p><i>Access to research produced by NMHSs</i></p>	<ul style="list-style-type: none"> ▪ <i>Provide internship to their students;</i> ▪ <i>Share the generated data and information</i> <p><i>Partnership and collaboration in research and policy formulation</i></p> <p><i>Networking on thematic issues</i></p>	<ul style="list-style-type: none"> ▪ <i>Training of Staff who are competent enough to deliver on the KMS mandate.</i> <p><i>Exchange of research information</i></p>
<p><i>Civil society organizations</i></p>		<ul style="list-style-type: none"> • <i>Participation in KMD projects and programmes development</i> • <i>Provision of quality services in meteorology</i> 	<ul style="list-style-type: none"> ▪ <i>Active participation and collaboration.</i> ▪ <i>Positive engagement</i>
<p><i>Media</i></p>	<ul style="list-style-type: none"> ▪ <i>Partnership in dissemination of meteorological information</i> ▪ <i>Capacity building</i> <p><i>Technical advisories and support</i></p>		<ul style="list-style-type: none"> ▪ <i>Partnership in implementation of national programmes and projects</i> ▪ <i>Timely and Quality provision of meteorological information to the public</i>
<p><i>County governments</i></p>	<p><i>Timely, Accurate and reliable information and services</i></p>		<ul style="list-style-type: none"> ▪ <i>Enhancing awareness and information documentation and communication</i>

			<p><i>including feedback</i></p> <ul style="list-style-type: none"> ▪ <i>Fair and responsible coverage</i>
<i>National Assembly</i>	<ul style="list-style-type: none"> ▪ <i>Timely response to parliamentary questions</i> <p><i>Efficient utilization of allocated resources</i></p>	•	<ul style="list-style-type: none"> ▪ <i>Timely formulation of bills on meteorological services</i> ▪ <i>Ensure adequate funding</i>
<i>International organizations and development partners</i>	<ul style="list-style-type: none"> ▪ <i>Efficient use of Resources</i> ▪ <i>Achievement of planned outcomes of projects implemented</i> <p><i>Involvement in stakeholder consultations in planning for the sector</i></p>	•	<ul style="list-style-type: none"> ▪ <i>Support specific programmes whose implementation is Coordinated by the KMS.</i> ▪ <i>International standards for service delivery;</i>
<i>Professional bodies</i>	<ul style="list-style-type: none"> ▪ <i>Compliance by technical staff through registration and renewal</i> 	•	<ul style="list-style-type: none"> ▪ <i>Improved standards of technical expertise and professional management in the sector</i> ▪ <i>Partner in the implementation of Development projects and programmes.</i> ▪ <i>Improved innovation, research and development; and</i>

			<i>policy analysis.</i>
<i>Contractors, suppliers and Merchants</i>	<ul style="list-style-type: none"> • <i>Timely processing of payments for goods and services</i> ▪ <i>Accountable, competitive and transparent procurement processes</i> 	•	<ul style="list-style-type: none"> • <i>Efficient, effective and timely delivery of goods and services</i> • <i>Competitive pricing</i> ▪
<i>Staff</i>	<ul style="list-style-type: none"> ▪ <i>Commitment to employee welfare</i> ▪ <i>Rewards for excellent performance</i> ▪ <i>Favorable terms & conditions of service and good work environment</i> ▪ <i>Skills development and Job progression</i> ▪ <i>Efficient and effective Human Resource services;</i> ▪ <i>Participatory and fair appraisal</i> ▪ <i>Capacity development through the</i> 	•	<ul style="list-style-type: none"> ▪ <i>Improved productivity</i> ▪ <i>Provide necessary skills and manpower</i> ▪ <i>Exhibit good image of the KMS</i> ▪ <i>Efficient and timely services to the citizens and stakeholders</i> ▪ <i>Adherence to policies, rules, & regulations of the public service;</i> ▪ <i>Efficient utilization of resources allocated</i>

	<i>required training</i>		
<i>Public/citizenry</i>	<ul style="list-style-type: none"> ▪ <i>Active participation</i> ▪ <i>Enhanced awareness on weather and climate</i> ▪ <i>Efficient and reliable services</i> ▪ <i>Transparency and accountability in the service delivery</i> 	<ul style="list-style-type: none"> ▪ 	<ul style="list-style-type: none"> ▪ <i>Regular feedback on our products and services</i> ▪ <i>Responsive citizenry</i> ▪

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3.5 Baseline Analysis of Institutional, Human and Infrastructure Capacity

The Effective implementation of this Strategic Plan depends on the adequacy/capacity of technical and support staff. The tables below highlight the human resource complement at the KMD by cadre and academic qualifications. The gap between the approved establishment and in-post shows a deficit in terms of optimum numbers required to ensure quality service delivery.

Cadre	Approved establishment	In-post	Variance
<i>Meteorologist</i>	164	145	19
<i>Meteorological Communication Officers</i>	143	75	68
<i>Meteorological Officers</i>	72	19	53
<i>Meteorological Telecommunication Officers</i>	52	20	32
<i>Meteorological Assistants</i>	461	230	231
<i>Engineers</i>	26	16	10
<i>Support Services</i>	288	146	142
Grand total	1206	665	541

	Academic Qualification	Number of staff
1.	<i>PhD Meteorology and related sciences</i>	3
2.	<i>MSc. Degree Meteorology and related sciences</i>	51
3.	<i>M.A Degree</i>	3
4.	<i>MBA Degree</i>	6
5.	<i>Post Graduate Diploma</i>	5
6.	<i>Higher National Diploma</i>	120
7.	<i>National Diploma</i>	400
8.	<i>Below National Diploma</i>	77

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Data Collection and Observation Network

KMD currently operates and maintains a network of:

- 39 synoptic stations,
- 17 agro-meteorological stations,
- 72 Automatic Weather Stations (AWS),
- 19 Automatic Hydro-meteorological Stations,
- 2 Automatic Bio-meteorological weather stations,
- 1 Global Atmosphere Watch (GAW) station for monitoring atmospheric chemical composition and background air pollution,
- 1 Upper Air meteorological station,
- 1 ozone monitoring station,
- 2 ground-based ozone monitoring stations,
- 2 urban air pollution monitoring stations,
- 3 seismic stations,
- 4 tidal gauges for Tsunami Early Warning
- 2 fixed buoys over Lake Victoria and
- 17 drifting buoys over the Northwest Indian Ocean,
- 3 Airport Weather Observing Systems (AWOS) at international airports,
- 4 Lightning detector systems and
- over 1000 rainfall stations.
- Three (3) river flow gauges (Nzoia river);
- One (1) mobile air quality laboratory

- the Integrated Meteorological Information System (IMIS) for data capture, injection and processing (a Central Information Processing System (CIPS), under the WMO-WIGOS/WIS framework)

- new meteorological High Frequency (HF) Transmitters and control room at Kibiko, Ngong;

- Meteosat Second Generation (MSG) Meteorological Satellite ground receiving station and forecaster workstations at Jomo Kenyatta International Airport (JKIA);

- Pre-flight Pilot Briefing System at JKIA, Eldoret and Moi International Airports;

- the WMO Regional Instrument Centre (RIC) for calibration, measurement and inter-comparison of meteorological instruments for Regional Association 1 (RA1, Africa)

3.6 Emerging Issues

Global Framework for Climate Services (GFCS)

The Heads of State and Government, Ministers and Heads of Delegations present at the World Climate Conference-3 (WCC-3), held from 31 August to 4 September 2009 at the international conference centre in Geneva (IGCC), Switzerland, through the Conference Declaration, endorsed the establishment of a Global Framework for Climate Services (GFCS). This was also adopted under the Integrated Strategy for Meteorology advocated by the African Ministerial Conference on Meteorology (AMCOMET).

The GFCS is a Framework designed to mainstream climate science into decision-making at all levels and help ensure that every country and every climate-sensitive sector of society is well equipped to access and apply the relevant climate information. The overarching goal of the Framework is: To enable better management of the risks of climate variability and change at all levels, through development and incorporation of science based climate information and prediction services into planning, policy and practice.

Climate services deal with the generation and provision of a wide range of information on past, present and future climate and its impacts on natural and human systems. Given the complexity of and requirements for climate services, addressing the immense variety of user needs for climate services is beyond the capacity of any single organization, a small group of organizations or a country. It calls for an unprecedented collaboration among institutions across political, functional and disciplinary boundaries. The GFCS is, therefore, conceived as an integrating set of international arrangements which will be built upon the established global climate observation and research programmes as well as operational structures into an end-to-end product generation, service provision and application system. The Global Framework for Climate Services is user need driven, as a process and includes five major components:

- (i) The user interface platform (UIP) which brings together the producer of climate information and the users of this information in the following priority sectors: Agriculture and food security; Water resources; Public health; Disaster Risk Reduction (DRR) and energy.
- (ii) Climate Information System and Services (CISS) which looks at the meteorological infrastructure and the different services required by stakeholders;
- (iii) Observation and monitoring (O&M) of climate. This component addresses the issue of data availability required for monitoring of climate to detect variability or change and attendant impacts.
- (iv) Research, modelling and prediction of climate to understand the evolution of climate systems, their interaction between the earth-land-ocean-atmosphere systems and future projections through modelling.

(v) Capacity development. This component is an over-arching issue over and above the other components and looks at human resource skills and components and also the infrastructure including technological innovations and funds.

The KMD, therefore, needs to move towards domesticating the above programmes in order to realize sustainable development. It is recommended therefore, that in order to domesticate the above programmes faster, KMD shall establish a National Framework for Climate Services (NFCS) Centre.

b) Establishment of County Weather and Climate Information Centres

The Department needs expand its meteorological observing networks as well as improve the dissemination of information. This includes setup of regional and county offices to disseminate weather and climate information and advisories to the relevant agencies and communities, as these offices will be able to downscale the national forecasts for their areas of jurisdictions as part of the Disaster Risk Reduction strategy.

Climate change is a serious risk to poverty reduction and threatens to undo decades of development efforts. Indeed, statistics indicate that a flash flood or drought can reduce a country's Gross Domestic Product (GDP) by 10-15%, thus run down its economic gains and adversely impact the country's growth and development.

Climate change was declared by the Intergovernmental panel on climate change (IPCC) in its 4th assessment report (4AR) released in 2007 but even before then and according to the Johannesburg Declaration on Sustainable Development, the adverse effects of climate change are already evident, natural disasters are more frequent and devastating and developing countries more vulnerable. While climate change is a global phenomenon, its negative impacts are more severely felt by poor people and poor countries. They are more vulnerable because of their high dependence on natural resources, and their limited capacity to cope with climate variability and extremes. Moving the information centre closer will help in sensitizing the relevant communities

c) WIGOS/WIS

A WMO priority & a key contribution to GFCS is the WMO Integrated Global Observation System (WIGOS). This is 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 their weather, climate, water and related environmental services. ; Together with the WMO Information System (WIS), it is about doing more & better with what we have now to enable more efficient and effective service delivery; it is about changing the way we plan, operate and deliver observations to meet user needs. It is also a WMO contribution to the Global Earth Observing System of Systems GEOSS encompassing land, sea, atmosphere and space observations.

d) WMO Global campus

The concept of a WMO Global Campus was introduced in September 2013 at the Twelfth WMO Education and Training Symposium in Toulouse, France. It embraces the idea of increased collaboration between training institutions to help overcome the gap between training demand and supply. Since the initial discussions in September 2013, the concept was further refined in March by the WMO Executive Council Panel of Experts on Education and Training with a feasibility study, which was approved by the 66th session of the WMO Executive Council in June. Between 1–3 October 2014, 20 senior members of WMO Regional Training Centres and other education and training centres of NHMSs gathered in Geneva to discuss the WMO Global Campus concept and how to take the initiatives forward. The meeting reached consensus on many aspects, including a shared vision of the enhanced collaboration, cooperation and communication that the proposal could generate. Participants identified some 20 items for trial, which will provide the World Meteorological Congress in May 2015 with some practical examples of how the WMO Global Campus could assist Members.

e) Data rescue (DARE)

Data Rescue is a wide programme aimed at digitization of historical data locked up in deteriorating paper manuscripts in order to facilitate sharing and research. It encompasses the imaging, binding and archiving of hardcopies into mobile cabinets, and the Activation of a remote National Meteorological Centre

f) Climate Change Action Plan

Climate change is the most serious global challenge of our time. The National Climate Change Response Strategy (2010) recognized the importance of climate change impacts for Kenya's development. This led to the development of the National Climate Change Action Plan (NACCP) of 2012 as the next logical step. The eight sub-components of the action plan outline steps to enable the country to reduce vulnerability to climate change and to improve our country's ability to take advantage of the opportunities that climate change offers. The KMD is singularly responsible for science of climate change and is responsible for documented evidence, research, modeling and prediction of Climate Change with particular contribution to Sub-Component 7 of the NACCP (2013-2017).

g) implementation of ICAO requirements

quality management system, competence in aeronautical meteorological personnel, cost recovery

3.7 Conclusions from Environmental Scan

To inserted in the next draft

Updated Dec

4 ORGANIZATIONAL VISION, MISSION AND CORE VALUES

4.2 Vision

"A world class weather and climate service that contributes to sustainable economic development".

4.3 Mission

"To provide our customers and stakeholders with prompt, accurate and reliable weather and climate products and services for safety of life, protection of property and conservation of the environment".

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4.4 Organizational Mandate

The mandate of the KMD is to provide timely early warning weather and climate information for safety of life, protection of property and conservation of the natural environment.

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4.5 Core Values

The KMD will draw its values from the Constitution of Kenya Article 10, which details the national values and principles of governance, which include the following:

- a. *Participation of the people:* KMD is committed to consultation and joint comprehensive partnership in all its affairs including community participation in data collection and dissemination of weather and climate products.
- b. *Equity:* KMD shall promote at all times the virtues of equity and fair play.
- c. *Integrity:* KMD and its staff shall ascribe to high standards of professional ethics and integrity in the conduct of its affairs.
- d. *Service delivery:* KMD is committed to uphold user driven and customer focused service delivery
- e. *Continuous improvement:* KMD will endeavor to continually develop and improve quality services and processes.
- f. *Teamwork:* KMD will relentlessly pursue SMART results at all levels through high level coordination, networking and collaboration with both internal and external stakeholders.
- g. *Sustainable Development:* The KMD shall ensure observation and monitoring of the weather and climate respectively for preservation and conservation of the natural environment
- h. *Sharing and devolution:* KMD is committed to decentralisation of services and knowledge sharing.

5 STRATEGIC FRAMEWORK

5.2 Strategic Goals, Objectives and Strategies

5.2.1 Goals

- Goal 1:** To provide an integrated planning framework in order to enhance service delivery and customer satisfaction
- Goal 2:** To integrate emerging technologies into the improvement of provision of meteorological services and information in order to meet user needs
- Goal 3:** To Mitigate adverse impacts of severe weather and extreme climate events
- Goal 4:** To enhance the capacity of meteorological personnel for performance improvement
- Goal 5:** To enhance operational knowledge and techniques in order to improve the understanding of weather and climate applications.
- Goal 6:** To engage in partnerships and collaborations for mutual benefits

5.2.2 Objectives

- 1.1 To establish county level weather and climate services infrastructure
- 1.2 To improve Data Management and Archival for Increased availability of products and climate services
- 1.3 To enhance Dissemination of Weather and Climate Information for disaster preparedness, mitigation and response

- 2.1 To expand and automate data collection network and weather observing systems
- 2.2 To improve data exchange networks and telecommunication systems
- 3.1 To promote operational research and real time monitoring on weather parameters
- 3.2
- 4.1 To develop the human capital for performance improvement
- 4.2
- 5.1 To promote operational research
- 5.2
- 6.1 To strengthen community participation in climate information services
- 6.2 To establish partnerships with other weather and climate institutions in order to strengthen capacity for sustainable development

5.2.3 Strategies

- 1.1.1. Develop county-specific Strategic Plans
- 1.1.2 Upgrade the Public Weather Services System for generation of user specific products
- 1.1.3 Implement National WIGOS meta data and web portal for data sharing
- 1.1.4 Acquire relevant systems for County Offices to enable them downscale forecast to the county level.
- 1.2.1
- 1.2.2 Activate a remote National Meteorological Centre (NMC)
- 1.2.3 Enhance Data Rescue (DARE) for digitizing historical data held on deteriorating paper manuscripts

- 1.3.1 Adoption of new information communication technology platforms to improve the availability of weather and climate information
- 2.1.1 Optimize the observation network and monitoring of weather
- 2.1.2 Introduction of modern equipment to provide high-resolution information
- 2.1.3 Enhance Data Processing, Analysis and Forecasting Systems
- 2.2.1 Upgrade RTH- Nairobi to a Data Collection and/or Production Centre (DCPC) on the WIS framework
- 2.2.2
- 3.1.1 Establish a national Weather surveillance radar network
- 3.1.2 Increase coverage of mountain glaciers
- 3.1.3 Reduce adverse socio-economic impacts of hail stones
- 3.1.4 Minimize fresh produce economic losses attributed to frost bite
- 3.2.1 Initiate experimental cloud seeding
- 3.2.2 Enhance data collection and analysis on urban air quality in support of enforcement of air quality regulations
- 3.2.3 Minimize air and road transport interruptions attributed to fog
- 4.1.1 Enhance Education and training of staff
- 4.1.2 Improve partnerships with Universities and Regional Training Centres
- 5.1.1 Develop verification software to validate NWP model performance over Kenya and work with the authors of these models to improve their performance
- 5.1.2 Introduce new products and diversified services
- 6.1.1 Enhance Recruitment of volunteer weather observers
- 6.1.2 Develop action plan to foster closer collaboration between KMD and stakeholder institutions/organisations

Table 4: Strategies

Goal 1: To provide an integrated planning framework in order to enhance service delivery and customer satisfaction				
Objectives	Strategies	Outputs	Timeframe	Responsibilities
Objective 1.1: To Strengthen county level weather and climate services for improved service delivery	Implement county-specific Strategic Plans	County meteorological Strategic plans developed	2018-2022	County Directors of meteorological services
	Mainstream climate services into county economic planning and programmes through implementation of GFCS	GFCS implemented at county level in accordance with WMO/GFCS implementation plan	2018-2022	Deputy Director, county Meteorological services
	Enhance human capital	Staff numbers enhanced by 450	2018-2022	Director
	Implement National WIGOS plan	National WIGOS plan implemented	2018-2022	Deputy Director forecasting services
	Acquire relevant tools for County Offices to enable effective and efficient service delivery	County meteorological offices equipped with relevant tools	2018-2022	Director
Objective 1.2: To improve weather and climate Data Management for easy access by users	Generate gridded data sets by blending observed and remotely sensed data	gridded data sets	2018-2022	deputy director technical and support services
	implement best practices in data management	Two securely backed up data sets	2018-2020	Deputy director Technical support services
	Enhance Data Rescue (DARE) by digitizing historical data	Digitized data securely archived Hardcopies Bound, labelled and archived into mobile cabinets	2018-2022	Deputy director technical support services
Objective 1.3: To enhance Dissemination of products to improve the availability and delivery of weather and climate information	Adoption of appropriate information communication technology (ICT) platforms for wide dissemination of products	Public weather Services Systems upgraded	2018-2022	Deputy director Meteorological applications

Goal 1: To provide an integrated planning framework in order to enhance service delivery and customer satisfaction

Objectives	Strategies	Outputs	Timeframe	Responsibilities
Objective 1.4: To enhance the visibility of KMD as the single authoritative voice and source of weather and climate information through a regulatory framework	Draft a Meteorology Bill	Meteorology Act	2018	Director

Goal 2: To integrate emerging technologies into the improvement of provision of meteorological services and information in order to meet user needs

Objectives	Strategies	Outputs	Timeframe	Responsibilities
Objective 2.1: To expand and automate data collection and weather observing systems for increased accuracy in weather and climate products	Optimize the observation network for monitoring of weather and climate	data collection Network expanded	2018-2022	Deputy director county meteorological services
	adoption of modern equipment to provide high-resolution satellite information	Low level satellite data	2018-2022	Deputy director forecasting services
	Enhance Data Processing, Analysis and Forecasting Systems	High Performance Computing (HPC) platforms installed	2018-2019	Deputy director forecasting services
Objective 2.2: To improve telecommunication systems for rapid data and products exchange	Upgrade RTH- Nairobi to a Data Collection and/or Production Centre (DCPC) on the WIS framework	Approved DCPC status by WMO	2018-2019	Deputy Director Technical support services

Goal 3: To Mitigate adverse impacts of severe weather and extreme climate events

Objectives	Strategies	Outputs	Timeframe	Responsibilities
Objective 3.1: To undertake advertent weather modification research to minimize impacts of severe weather and extreme climate events	Establish a national Weather surveillance radar network	Radar derived weather data	2018-2022	Director
	Minimize fresh produce economic losses attributed to frost bite	Frost bite mitigated	2018-2022	Deputy director research and development
	Initiate experimental cloud seeding	Hail suppressed Snow pack augmented Rainfall Enhanced	2019-2022	Deputy director research and development
	Enhance data collection and analysis on urban air quality in support of enforcement of air quality regulations	Reports on status of Aerosols and gaseous pollutants	2018-2022	Deputy director research and development
	Minimize air and road transport interruptions attributed to fog	Fog Suppressed	2018-2022	Deputy director research and development

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Goal 4: To enhance the capacity of meteorological personnel for performance improvement				
Objectives	Strategies	Outputs	Timeframe	Responsibilities
Objective 4.1: To develop the human skills, knowledge and attitude for improved service delivery	Enhance Education and training of staff	Highly skilled and competent staff	2018-2022	Deputy director Education and training
	Improve partnerships with Universities and Regional Training Centres	institutional skills enhanced	2018-2022	Deputy Director Education and training

Goal 5: To enhance operational knowledge and techniques in order to improve the understanding of weather and climate applications.				
Objectives	Strategies	Outputs	Timeframe	Responsibilities
Objective 5.1: To enhance operational research for improvement of applications and product quality	Apply research results in generation of products for weather and climate sensitive sectors	Improved Product quality	2018-2022	Deputy director Research and development
	Introduce new products and diversified services	New products developed and adopted	2018-2022	Deputy director Research and development

Goal 6:To engage in partnerships and collaboration for mutual benefits

Objectives	Strategies	Outputs	Timeframe	Responsibilities
Objective 6.1: To strengthen community participation in climate information services for improved uptake of weather and climate information	Revive the silent and Recruit new volunteer weather observers	improved rainfall station network	2018-2022	county directors of meteorology (CDM)
Objective 6.2: To establish partnerships with relevant institutions in order to strengthen capacity for sustainable development	Foster closer collaboration between KMD and stakeholder institutions/organisations	Enhanced Stakeholder engagement	2018 -2022	Director[

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1.1.1. Logical Framework

Figure 1: Example of Logical Framework

Impact: increased application of weather and climate services in planning and decision support					
<p>Outcome 1: Improved customer satisfaction</p>	<p>Outcome 2: increased accuracy in forecasting and applications products</p>	<p>Outcome 3: improved climate change detection, attribution and prediction capabilities and capacity</p>	<p>Outcome 4: Continuous professional development</p>	<p>Outcome 5:</p>	<p>Outcome 6: Development partner programmes/projects and Support Mechanisms aimed at strengthening service delivery mainstreamed</p>
<p>Output 1.1: County meteorological Strategic plans implemented</p> <p>Output 1.2: GFCS implemented at county level in accordance with WMO/GFCS implementation plan</p> <p>Output 1.3: Staff numbers enhanced by 450</p>	<p>Output 2.1: Data collection Network expanded</p> <p>Output 2.2: Low level satellite data</p> <p>Output 2.3: High Performance Computing (HPC) platforms installed</p> <p>Output 2.4: Approved DCPC status by WMO</p>	<p>Output 3.1: Radar derived weather data</p> <p>Output 3.2: Frost bite mitigated</p> <p>Output 3.3: Hail suppressed; Snow pack augmented;</p> <p>Output 3.4: Rainfall Enhanced</p> <p>Output 3.4: Reports on status of Aerosols and gaseous pollutants</p>	<p>Output 4.1: Highly skilled and competent staff</p> <p>Output 4.2: Institutional skills enhanced</p>	<p>Output 5.1: Improved Product quality</p> <p>Output 5.2: New products developed and adopted</p>	<p>Output 6.1: Improved rainfall station network</p> <p>Output 6.2: Enhanced Stakeholder engagement</p>

<p>Output 1.4: National WIGOS plan implemented</p> <p>Output 1.5: County meteorological offices equipped with relevant tools</p> <p>Output 1.6: gridded data sets</p> <p>Output 1.7: Two securely backed up data sets</p> <p>Output 1.8: Digitized data securely archived; Hardcopies Bound, labelled and archived into mobile cabinets</p> <p>Output 1.9: Public weather Services Systems upgraded</p> <p>Output 1.10: Meteorology Act</p>		<p>Output 3.5: Fog Suppressed</p>			
<p>Activities: Develop specifications, tender, award, sign contracts, factory acceptance tests, factory training, deliver, install, commission,</p>					
<p>Inputs: Financial, human, material resources used</p>					



Assumptions

- Resource availability
- Willingness of local and international development actors to support NMHS agenda



External Factors

- Poor economic situation locally and regionally

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5.2.4 Risk Assessment

The KMD core values that include integrity, accountability, transparency, service delivery, continual improvement, equity, participation of the people and team work will be adhered to with a view to utilize resources efficiently. Further, the delivery of services will be guided by a Service Charter, Procurement Plan and financial prudence as provided in the Public Finance Management Procedures. The risk framework envisages the various categories of risks that may arise in the course of implementing this Plan and points out the key areas that may be impacted. The risk category, areas of impact and potential impact (High, Medium or Low) plus mitigating responses are discussed in Table below:

RISKS TO PROGRAMME/PROJECT AND POLICY INITIATIVES						
Programme/Project/ Policy Initiatives	Risks	Impact	Probability (H/M/L)	Mitigating Measure/Response	Year 1	Year 2
					2017/18	2018/19
Implementation of national WIGOS plan	Use of non standard observation methods and instruments	Compromised data quality	M	Avoidance		√
				Reduction	√	
				Sharing		
				Acceptance		
Meteorology Act	Lack of political support	Delay in enactment and ascent	M	Avoidance	√	√
				Reduction		
				Sharing		
				Acceptance		
Data Rescue (DARE)	Typo errors by data entry clerks during digitization	Compromised data base	L	Avoidance		
				Reduction	√	√
				Sharing		

RISKS TO PROGRAMME/PROJECT AND POLICY INITIATIVES						
Programme/Project/ Policy Initiatives	Risks	Impact	Probability (H/M/L)	Mitigating Measure/Response	Year 1	Year 2
					2017/18	2018/19
Staff Recruitment	Delayed authority from The National Treasury and Public Service Commission	Positions for new staff not advertised	M	Acceptance		
				Avoidance		
				Reduction		
				Sharing		
				Acceptance	√	√
Data collection and Production Centre (DCPC)	Non conformities to requirements for DCPC status	Failure to secure WMO approval	L	Avoidance		√
				Reduction	√	
				Sharing		
				Acceptance		
Expansion of observation network	Inability to secure suitable sites/land in designated areas	Poor distribution of observation network	H	Avoidance	√	√
				Reduction		
				Sharing		
				Acceptance		
Weather Radar network	Prolonged procurement process	Delays in establishing network	H	Avoidance		
				Reduction	√	√
				Sharing		
				Acceptance		

RISKS TO PROGRAMME/PROJECT AND POLICY INITIATIVES						
Programme/Project/ Policy Initiatives	Risks	Impact	Probability (H/M/L)	Mitigating Measure/Response	Year 1	Year 2
					2017/18	2018/19
Implement county-specific Strategic Plans	Lack of expertise and adequate resources	Strategic Plan not integrated in CIDPs	L	Avoidance		
				Reduction	√	√
				Sharing		
				Acceptance		
Mainstream climate services into county economic planning and programmes through implementation of GFCS	Inadequate user interface platforms	Low uptake of climate information and services	L	Avoidance		
				Reduction	√	√
				Sharing		
				Acceptance		
Partnerships and collaboration	No signed MOUAs	Lack of structured engagement	L	Avoidance	√	√
				Reduction		
				Sharing		
				Acceptance		

ORGANIZATIONAL RISKS						
Programme/Project/ Policy Initiatives	Risks	Impact	Probability	Mitigating Measure/Response	Year 1	Year 2
					2017/18	2018/19
Governance	Poor supervision of decentralised units	Poor service delivery at county level	L	Avoidance		√
				Reduction	√	
				Sharing		
				Acceptance		
Finance	Budget revisions and cuts	Non realization of annual work plans and deferred programmes/ projects	H	Avoidance		
				Reduction		
				Sharing		
				Acceptance	√	√

5.3 Communicating the Strategic Plan

The successful implementation of this Strategic Plan will largely depend on its adoption and ownership by all stakeholders. This will be achieved through the incorporation of a stakeholder validation exercise for both internal and external stakeholders. A highly publicised launch (through print and electronic media) will mark the commencement of the plan period. A link for an electronic copy will be availed on the KMD official website and Printed copies will be made readily available in all offices. Roll up banners with the Vision and Mission statements will be prominently displayed at strategic points at all KMD premises and at events (including workshops, seminars and open days) where KMD is represented.

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5.4 Financing the Strategic Plan

The KMD is a state agency where financing of the Strategic Plan is largely dependent on the Government of Kenya through budgetary vote and exchequer releases. Additional funding will be sourced through Development Partners collaboration and the Public Private Partnerships (PPPs) model.

Government Financing

The KMD will bid for allocation of more resources through Medium Term Expenditure Framework Budgets focusing on priority programmes in line with the Kenya Vision 2030 and its Medium Term Plan (MTP III) 2018 – 2022. In addition, it will explore opportunities for generating appropriation in aid (A-in-A) from the existing programmes and implement cost Reduction measures through “e-technology” and outsourcing of services to improve its financial status.

Development Partners

The KMD has a Resource mobilisation mechanism for marketing of project proposals on socio-economic development and investment opportunities for development partner funding. The key Development Partners are WMO, World Bank, KOICA, China, UNDP, DANIDA, GIZ, JICA, UNESCO, USAID and DfID among others.

Other Resources

The available resource opportunities for KMD to explore include partnerships with other government departments, private sector, PBOs and local communities. Other additional avenues of resource mobilization that KMD can utilize will be through collaborations with County Governments and Constituency Development Fund (CDF).

Improvements in Capacity and Efficiency

The KMD continues to enjoy improved relationship with development partners as has been the case in the past and it is expected that development partners will continue being a significant source of funding. To leverage on this relationship and harness resources from the vital sources, KMD will build capacity and put emphasis on the following;

- Improving the absorption capacity of development partner funds,
- Enhancing transparency and accountability in planning, implementation, monitoring and accounting of projects and programs and,
- Championing the improvement of the Government's image in order to attract more funding from Development Partners

Improving efficiency in the Use of Resources

The KMD will put in place the following measures to optimize use of available resources by improving efficiency and reducing wastage;

- Improved costing of programmes and activities, pursuing and emphasizing on it, in order to avoid wastage and inefficiency in the use of public funds,
- Preventive maintenance, by ensuring the maintenance of ministerial facilities, equipment and vehicles, in order to reduce the cost associated with idle capacity,
- Paperless communication, through the leveraging of ICTs in order to reduce use of telephones because they are expensive and increase use of e-mails and,
- Introduction of fleet management system

6 MONITORING AND EVALUATION

6.2 Monitoring

Table 5: KMD Performance Measurement Framework

Expected Results	Indicators	Baseline	Targets	Data Source	Data Collection Methods	Frequency	Responsibility
Impact: increased application of weather and climate services in planning and decision support	% Proportion of policy makers, public administration and socio-economic actors applying weather and climate information in planning and decision-making	TBD	50	Kenya Domestic and household survey Kenya economic survey	Document Review User survey tool	annually	KMD
Outcome 1: Improved customer satisfaction	% Level of citizen's satisfaction	TBD	80%	Users	User Survey tool on weather, climate and hydrological services and products satisfaction	Annually	KMD
Outcome 2: increased accuracy in forecasting and applications products	No. of reports	TBD	50%	KMD	Product and forecast Verification reports	quarterly	KMD
Outcome 3: improved climate change detection, attribution and prediction capabilities and capacity	No. of Early Warning Systems	3	6	KMD	Inspection visits EWS review reports	Every 2 years	KMD

Expected Results	Indicators	Baseline	Targets	Data Source	Data Collection Methods	Frequency	Responsibility
Outcome 4: Continuous professional development	No. of specialized staff	TBD	1250	Training reports	Document review	annually	KMD
Outcome 5:							
Outcome 6: Development partner programmes/projects and Support Mechanisms aimed at strengthening service delivery mainstreamed	No. of development partner projects sustained	TBD	5	Projects handing over reports	Document review	Annually	KMD
Output 1.1: County meteorological Strategic plans implemented	No. of reports	TBD	47	County Met offices	Document review	quarterly	KMD
Output 1.2: GFCS implemented at county level in accordance with WMO/GFCS implementation plan	No. of reports	TBD	47	Progress reports	Document review Inspections visits	Annually	KMD/WMO
Output 1.3: Staff numbers enhanced by 450	No. of staff recruited	665	450	Human Resource Record (KMD)	Employee survey	Annually	KMD
Output 1.4: National WIGOS plan implemented	% level of integration	TBD	100	Progress reports	Document review Inspection visits	Annually	KMD/WMO
Output 1.5: County meteorological offices equipped with relevant tools	No. of tools	TBD	47	County Met offices	Field inspection	Quarterly	KMD
Output 1.6: Gridded data sets	Vol. of gridded data sets	TBD		KMD	Data survey	Quarterly	KMD

Expected Results	Indicators	Baseline	Targets	Data Source	Data Collection Methods	Frequency	Responsibility
Output 1.7 Two securely backed up data sets	No. of secured data sites	1	2	KMD	Inspection visits	Annually	KMD
Output 1.8 Digitized data securely archived; Hardcopies Bound, labelled and archived into mobile cabinets	No. of bulk storage cabinets Vol. of data digitized	0 TBD	1	KMD KMD	Inspection visits	Annually	KMD
Output 1.9 Public weather systems upgraded	No. of systems upgraded	TBD	4	KMD	System upgrade reports	Annually	KMD
Output 1.10 Meteorology Act	No. of Acts	0	1	Kenya gazette	Document review	once	KMD
Output 2.1: data collection Network expanded	No. of new stations	150	300	KMD	Inspections visits Installation reports	Quarterly	KMD
Output 2.2: Low level satellite data	No. of ground equipment installed	0	4	KMD	Inspections visits Installation reports	Quarterly	KMD
Output 2.3: High Performance Computing (HPC) platforms installed	No. of systems/ labs	TBD	8	KMD	Inspections visits Installation reports	Annually	KMD
Output 2.4: Approved DCPC status by WMO	WMO approval	0	1	WMO	Document review	Once	KMD/WMO
Output 3.1: Radar derived weather data	No. of radars	2	5	KMD	Inspections visits Installation reports	Annually	KMD
Output 3.2: Frost bite mitigated	No. of reports	0	10	KMD	Site visits Document review	Bi annually	KMD
Output 3.3: Hail suppressed; Snow pack augmented; Rainfall Enhanced	No. of cloud seeding exercises	0	10	KMD	Document review	Annually	KMD

Expected Results	Indicators	Baseline	Targets	Data Source	Data Collection Methods	Frequency	Responsibility
Output 3.4: Reports on status of Aerosols and gaseous pollutants	No. of reports	TBD		KMD and NEMA	Document review		
Output 3.5: Fog Suppressed	No. of reports	0	10	KMD	Site visits Document review	Bi annually	KMD
Output 4.1: Highly skilled and competent staff	No. of specialized staff	TBD	1250	KMD/RTC	Documents review	Annually	KMD
Output 4.2: Institutional skills enhanced	Skills inventory	TBD	1	KMD/RTC	Employee survey tool	Annually	KMD
Output 5.1: Improved Product quality	% confidence level	TBD	80	KMD	User Survey tool	Per season outlook	KMD
Output 5.2: New products developed and adopted	No. of new products	TBD	10	KMD	Product review	Annually	KMD
Output 6.1: Improved rainfall station network	No. of Community climate intermediaries	TBD	2000	KMD	Inspection visits	Annually	KMD
Output 6.2: Enhanced stakeholder engagement	No. of MOUA	TBD	10	KMD and Dev. Partners	Document review	Annually	KMD

A base line survey at the beginning of the plan period will be undertaken to support the Performance Measurement Framework outlined in table 5 above.

6.3 Evaluation

Periodic assessment of programme/project achievement will be necessary particularly in relation to realisation of objectives and outcomes outlined in the plan. The strategic plan implementation will adopt a three stage evaluation structure to ensure that operational plans are geared towards targets set out in this plan. The evaluation plan is as follows:

Evaluation stage	Calendar
Inception	To be undertaken at beginning of the plan period
Mid term	To be undertaken within the third year of the plan period
End term	To be undertaken at the end of the Fifth year

Where evaluation reports highlight deviations management is expected to take corrective action and timely intervention.

6.4 Reporting

Progress reports will be prepared by individual staff members, divisions and branches within the Performance Management Cycle established by Government. The Performance Appraisal System requires quarterly and annual progress reports based on individual and department operational plans derived from this Strategic Plan. These reports may be consolidated into KMD Annual Reports highlighting key achievements, activities, challenges and way forward.

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Table 6: Sample Questions for Reporting on Results

To be inserted in the next draft

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7 ANNEXES

[Include additional information from the strategic planning process that will augment information provided in the body of the strategic plan.]

ANNEX 1: STRATEGIC PLANNING METHODOLOGY & SCHEDULE

To inserted in the next draft

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ANNEX 2: MEMBERS OF THE STRATEGIC PLANNING TEAM

Name	Title/Profession	Organisation	Contacts
<i>Peter Ambenje</i>	<i>Director</i>	<i>Kenya meteorological department</i>	<i>ambenje@meteo.go.ke</i>
<i>Stella Aura, MBS</i>	<i>Deputy Director/Principal</i>	<i>Kenya meteorological department</i>	<i>Stella@meteo.go.ke</i>
<i>Dr. Elijah Mukhala</i>	<i>Programme officer</i>	<i>WMO Sub-Regional Office (Eastern and Southern Africa)</i>	
<i>Reginald Mahonga</i>	<i>Planning office</i>	<i>Kenya meteorological department</i>	<i>amboga@meteo.go.ke</i>
<i>Ephantus Nyaga</i>	<i>Consultant</i>	<i>WMO/ACOMET</i>	<i>enngotho@yahoo.com</i>

ANNEX 3: LIST OF PERSONS/ORGANIZATIONS CONSULTED

Name/ Organisation	Physical address	contact	
<i>Kenya Meteorological Department</i>	<i>Dagoretti Corner, Ngong road, Nairobi</i>	<i>Director</i>	
<i>IGAD Climate Prediction and Applications Centre</i>	<i>Dagoretti Corner, Ngong road, Nairobi</i>	<i>Director</i>	
<i>Ministry of environment and Natural Resources</i>	<i>NHIF Building, Ragati road Nairobi</i>	<i>Principal Secretary</i>	
<i>Edward Muriuki</i>	<i>Institute of meteorological training and research,Nairobi</i>		<i>Snr Asst. Director /Deputy principal</i>
<i>Johnson Maina</i>	<i>Kenya Meteorological Department</i>		<i>Snr. Asst. Director/ Hydrometeorologist</i>
<i>Sospeter Muiruri</i>	<i>Kenya Meteorological Department</i>		<i>Snr. Asst. Director/Aviation meteorologist</i>

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ANNEX 4: ACTION PLAN

Table 7: Action Plan

Result Area 1 (Outcome 1): Improved customer satisfaction				
Key Indicators: Level of citizen's satisfaction with weather, climate services and processes				
Outputs	Activities	Time frame	Person responsible	Costs (KshsM)/inputs
Output 1.1: County Meteorological Strategic Plans Implemented	<i>Activity 1.1.1:</i> Launch of county meteorological plans	2018	Director	2.0
	<i>Activity 1.1.2:</i> Cascade and align county meteorological plans to County Integrated Development Plans (CIDP)	August 2018 - December 2018	County Director of Meteorology (CDM)	4.7
	<i>Activity 1.1.3:</i> Recruit 450 new technical staff	2018 - 2022	Director	270.0
	<i>Activity 1.1.4:</i> Monitoring, evaluation and reporting on county strategic plans	September 2018 - December 2022	Deputy Director county services	14.1
Output 1.2: GFCS implemented at c county levels in accordance with WMO/GFCS implementation plan	<i>Activity 1.2.1</i> Undertake mapping to identify communities/sectors most vulnerable to climate change and climate variability	July 2018 – June 2019	County Director of Meteorology	6.95
	<i>Activity 1.2.2</i> Establish user interface platforms (UIP) at county level to enhance application of meteorological services to priority sectors	2018-2022	County Director of Meteorology	470.0
	<i>Activity 1.2.3:</i> Conduct simulation exercises and extension services on how communities can best prepare and respond to weather and climate extremes and the associated livelihood threats	July 2019 – June 2021	County Director of Meteorology	470.0

Output 1.3 Two securely backed up data set	<i>Activity 1.3.1</i> Acquire fire proof bulk storage mobile cabinets	2018 - 2020	Deputy Director Technical services	17.0
	<i>Activity 1.3.2</i> Establish remote data backup System	2018 - 2022	Deputy Director Technical services	51.2
	<i>Activity 1.3.3</i> Bind and archive hard copy data	2018-2020	Deputy Director Technical services	1.4
Output 1.4: Public weather services upgraded	<i>Activity 1.4.1</i> Roll out bulk mobile SMS platform for dissemination of weather products / information	2018-2020	Deputy Director Applications	27.0
	<i>Activity 1.4.2</i> Expand RANET station network from 5 to 15	2018 - 2022	Deputy Director Applications	358.0
	<i>Activity 1.4.3</i> Acquire public weather display systems	2018-2022	Deputy Director Applications	150.0
	<i>Activity 1.4.4</i> Acquire relevant system for remote products access by users	2018-2022	Deputy Director Applications	85.0
Output 1.5: County meteorological offices equipped with relevant tools	<i>Activity 1.5.1</i> Acquire relevant systems for County Offices to enable them downscale forecast to the county level.	2018 - 2022	Deputy Director – county meteorological services	47.0
	<i>Activity 1.5.2:</i> Acquire equipment to facilitate teleconferencing on weather forecasts and climate prediction between the Headquarters and County Offices	2018-2022	Deputy director forecasting services	55.0
Output 1.6: Meteorology Act	<i>Activity 1.6.1</i> Develop policy document	2018-2019	Director	2.1
	<i>Activity 1.6.2</i> Develop legal framework document:	2018-2019	Director	2.2
	<i>Activity 1.6.3</i> Develop human resource manual	2018-2019	Director	2.3

	<i>Activity 1.6.4</i> Hold retreat for parliamentary committee on Environment	2018-2019	Director	5.7
	<i>Activity 1.7.5</i> Hold validation workshop for stakeholders.	2018-2019	Director	1.45

Result Area 2 (Outcome 2): increased accuracy in forecasting and applications products				
Key Indicators:				
Outputs	Activities	Time frame	Person responsible	Cost (KshsM)/ inputs
Output 2.1: data collection Network expanded	<i>Activity 2.1.1</i> Acquire wind profiler for JKIA	July 2018-june 2022	Deputy Director forecasting services	300.0
	<i>Activity 2.1.2:</i> Acquire mobile Weather Monitoring Systems	2019-2022	Deputy Director forecasting services	60.5
	<i>Activity 2.1.3</i> Acquire AWS and AWOS	2019-2022	Deputy Director Forecasting services	660.0
	<i>Activity 2.1.4</i> Acquire Hydrogen generators	2018-2022	Deputy Director Forecasting services	87.0
	<i>Activity 2.1.5</i> Develop an operation and maintenance plan for all automated observation systems	2018-2022	Deputy Director Forecasting services	75.0
Output 2.2: Low level satellite data	<i>Activity 2.2.1</i> Acquire and install High Resolution Picture Transmission (HRPT) systems	2019-2020	Deputy Director Forecasting services	15.0
Output 2.3: High Performance Computing (HPC) platforms installed	<i>Activity 2.3.1:</i> Acquire and install numerical weather prediction (NWP) models	2018-2020	Deputy Director Forecasting services	2.0
	<i>Activity 2.3.2:</i> Acquire and install Ensemble Prediction System (EPS) synergy for data assimilation,	2018-2020	Deputy Director Forecasting services	2.7

	pre-processing and analysis of data			
	<i>Activity 2.3.3:</i> Acquire and install PC clusters for empirical statistical modelling of seasonal weather outlooks;	2018-2020	Deputy Director Forecasting services	14.0
	<i>Activity 2.3.4:</i> Acquire and install an integrated hydro-meteorological information and decision support system	2018-2022	Deputy Director Met application	180.0
	<i>Activity 2.3.5</i> Establish a GIS laboratory	2018-2022	Deputy Director Met application	17.0
	<i>Activity 2.3.6:</i> Acquire and install Pilot Briefing Systems (PBS)	2018-2019	Deputy Director Forecasting services	10.3
	<i>Activity 2.3.7:</i> Acquire and install computing systems for air pollution analysis including GAW	2019-2020	Deputy Director Climate Services	6.7
Output 2.4: Approved DCPC status by WMO	<i>Activity 2.4.1</i> Undertake certification audits to facilitate WMO-CBS approval	Jan 2018- june 2018	Director	12.0
	<i>Activity 2.4.2:</i> Develop national WIS framework in accordance with WMO implementation plan	2018-2022	Director	56.8

Result Area 3 (Outcome 3): improved climate change research, prediction and modelling capacity				
Key Indicators:				
Outputs	Activities	Time frame	Person responsible	Cost (Kshs.M)/ inputs
Output 3.1: Radar derived weather data	<i>Activity 3.1.1</i> Acquire and install Doppler weather radars at JKIA, Msabaha, Lodwar, Wajir and Eldoret	2018-2022	Director -	1250.0
	<i>Activity 3.1.2:</i> Acquire and install weather radar data reception systems at county level	2018-2022	Director -	10.23
Output 3.2: Snow pack augmented	<i>Activity 3.2.1</i> Undertake Scientific expeditions on Mt. Kenya glaciers	2018-2020	Deputy Director Research and Development	37.0
	<i>Activity 3.2.2</i> Develop capacity for real time weather monitoring at selected locations around the mountain	2018 -2022	Deputy Director Research and Development	60.6
Output 3.3: Hail suppressed	<i>Activity 3.3.1</i> Undertake scientific studies on hail formation and occurrence over Kericho and Nandi tea growing areas	2018-2019	Deputy Director Research and Development	15.0
	<i>Activity 3.3.2:</i> Develop capacity for Hail suppression	2019-2022	Deputy Director Research and Development	500.0
Output 3.4: Frost bite mitigated	<i>Activity 3.4.1</i> Develop capacity and capabilities for frost forecasting	2018-2020	Deputy Director Research and Development	15.0
	<i>Activity 3.4.2:</i> Conduct mapping to identify <i>and</i> zone areas prone to extreme cold and frost bite	2018-2020	Deputy Director Research and Development	18.0
	<i>Activity 3.4.3</i> Develop capacity for frost bite mitigation	2020 -2022	Deputy Director Research and Development	43.8
Output 3.5: Rainfall Enhanced	<i>Activity 3.5.1</i> Conduct scientific studies and undertake experimental cloud seeding	2019-2022	Deputy Director Research and Development	500.0

	Develop capacity for cloud seeding to enhance rainfall at specified times over the mountain (enhance glaciers)	2019-2022	Deputy Director Research and Development	600.0
	<i>Activity 3.5.2:</i> Establish a weather modification laboratory	2019-2022	Deputy Director Research and Development	50.0
	<i>Activity 3.5.3</i> Acquire specialized aircraft for data collection and cloud seeding	2018-2022	Deputy Director Research and Development	800.0
	<i>Activity 3.5.3:</i> Establish cloud physics laboratory	2020-2021	Deputy Director Research and Development	25.0
Output 3.6: Aerosols and gaseous pollutants suppressed	<i>Activity 3.6.1</i> Acquire and deploy mobile air quality laboratory	2019	Deputy Director Research and Development	120.0
	<i>Activity 3.6.2: acquire and</i> Install air pollution modules for fixed stations	2019-2022	Deputy Director Research and Development	46.0
	<i>Activity 3.6.2:</i> Conduct air quality measurements at selected sites	2018-2022	Deputy Director Research and Development	18.0
Output 3.7: Fog Suppressed	<i>Activity 3.7.1</i> Conduct feasibility studies on fog suppression at JKIA runway and national highways	2019-2022	Deputy Director Research and Development	30.0
	<i>Activity 3.7.2:</i> Acquire and deploy experimental fog suppression equipment	2020-2022	Deputy Director Research and Development	100.0

Result Area 4 (Outcome 4): Continuous Professional Development

Key Indicators:

Outputs	Activities	Time frame	Person responsible	Cost (Kshs.M)/ inputs
Output 4.1: Highly skilled and competent staff	<i>Activity 4.1.1</i> Establish GIS and NWP training laboratories	2018-2020	Deputy Director Education and Training	50.0
	<i>Activity 4.1.2</i> Train & Enhance skills and competencies of 1250 met personnel in RA1 Region	2018-2022	Deputy Director Education and Training	100.0
	<i>Activity 4.1.3</i> <i>Continuous curricula review and development</i>	2018-2022	Deputy Director Education and Training	25.0

	<i>Activity 4.1.4</i> Modernization project for classrooms, library, hostel facilities and construction of conference complex (including rooms, kitchen and gymnasium)	2018-2022	Deputy Director Education and Training	500.0
Output 4.2: institutional skill enhanced	<i>Activity 4.2.1</i> design, develop and deliver online and blended courses;	2018 -2022	Deputy Director Education and Training	14.0
	<i>Activity 4.2.2</i> Training of trainers programmes and andragogy	2018 - 2022	Deputy Director Education and Training	12.3
	<i>Activity 4.2.3</i> Domesticate actions within the WMO global campus framework	2018-2022	Deputy Director Education and Training	2.0
	<i>Activity 4.2.3:</i> Undertake benchmarking tours with other RTCs	2018-2022	Deputy Director Education and Training	25.0

Result Area 5 (Outcome 5):				
Key Indicators:				
Outputs	Activities	Time frame	Person responsible	Cost (Kshs.M)/ inputs
Output 5.1: Improved product quality	<i>Activity 5.1.1</i> Develop NWP verification software	2018 -2022	Deputy Director Research and Development	7.0
	<i>Activity 5.1.2:</i> Enhance collaborative research with academia, universities, Kenya meteorological society and other stake holders	2018 - 2022	Deputy Director Research and Development	92.0
Output 5.2: New products developed and adopted	<i>Activity 5.2.1</i> Acquire and install interactive on-line data requisition system	2018 -2022	Deputy Director Technical services	5.4
	<i>Activity 5.2.2</i> Undertake climatological zoning using observed and satellite derived data	2018 - 2020	Deputy Director Research and Development	5.0
	<i>Activity 5.2.3:</i> Develop sector specific specialized products	2018 - 2020	Deputy Director Research and Development	5.0
	<i>Activity 5.2.4:</i> Develop and implement a user friendly customer survey tool (Quality Service Improvement Program-QSIP)	2018 -2022	Deputy Director Technical services	8.0

Result Area 6 (Outcome 6): Support Mechanisms and development partner programmes/projects aimed at strengthening service delivery established				
Key Indicators:				
Outputs	Activities	Time frame	Person responsible	Cost (Kshs.M)/ inputs
Output 6.1: Improved rainfall station network	<i>Activity 6.1.1</i> Recruit/train community climate observers and county climate information intermediaries	2018-2022	Director	58.0
Output 6.2: Enhanced Stakeholder engagement	<i>Activity 6.2.1</i> Develop stakeholder engagement action plan	2018 - 2019	Director	3.0
	<i>Activity 6.1.2:</i> Enhance public awareness and education through outreach programmes targeting policy/decision makers, stakeholders, users and the general public	2018-2022	Deputy Director Application	60.0
	<i>Activity 6.2.3</i> Establish twinning instruments and collaborations with other meteorological agencies for knowledge sharing, exchange programmes, capacity development and transfer of best practices	2018-2022	Director	56.0
	<i>Activity 6.2.4:</i> Develop Resource Mobilization Plan and bankable project proposals	2018-2022	Director	12.0

ANNEX 5: PERFORMANCE MEASUREMENT FRAMEWORK

To be inserted in the next draft

Updated Dec

ANNEX 6: REFERENCES

Kenya Vision 2030 Medium Term Plan

WMO Strategic Plan 2016-2019

AMCOMET Integrated African Strategy on Meteorology 2014-2017

AMCOMET Implementation and Resource Mobilization Plan

AU Agenda 2063

KMD Strategic Plan 2013-2017

EAC Meteorological Strategy 2013-2018

WMO Global Framework for Climate Services (GFCS)

Sendai framework on Disaster Risk Reduction 2015-2030

UN Sustainable Development Goals (SDGs) 2015-2030

COP21 Paris Agreement on climate change

National Climate Change Action Plan

Ministry of Environment and National Resources Strategic Plan 2013 - 2017

Updated Dec