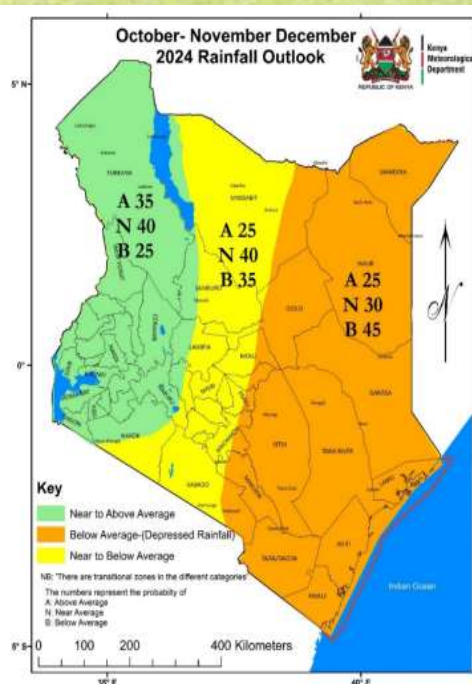




REPORT OF THE 9TH KENYA NATIONAL CLIMATE OUTLOOK FORUM FOR OCT – NOV – DEC (OND) 2024 SHORT RAINS SEASON, HELD AT THE MIDLAND HOTEL-NAKURU 26th -28th AUGUST 2024

Theme: “Proactive Early Warning Systems for Climate Risk Reduction,”



1. INTRODUCTION

1.1 Background

The Kenya Meteorological Department (KMD) in collaboration with the IGAD Climate Prediction and Application Centre (ICPAC), the World Food Programme (WFP), the United Nations Development Programme (UNDP) and the Kenya Red Cross Society (KRCS) successfully hosted the Ninth National Climate Outlook Forum (NCOF9) from August 26 to August 28, 2024, at the Midlands Hotel in Nakuru. The forum's theme was “Pro-Active Early Warning for Mitigation of Climate Risks.”

The National Climate Outlook Forum serves as a crucial platform for the co-production and dissemination of climate services. Its primary objective is to empower stakeholders to understand and manage climate risks through the identification and implementation of actionable climate responses. By facilitating a collaborative environment, the NCOF brings together various forecasting groups and users, enabling the assessment of seasonal predictions and the development of a consensus-based outlook across sectors. This forum also allows for feedback to forecasters, enhancing their understanding of user needs and informing the creation of tailored decision-making tools.

NCOF9 gathered a diverse group of stakeholders, including practitioners and policymakers from key sectors such as agriculture and food security, water resource management, energy, transport, public health, disaster risk management, macro-economics, and education. The forum aimed to guide the production of climate information that responds to user needs and supports decision-making at all levels of society.

1.2 Objectives of the 9th National Outlook Form (NCOF9)

The specific objectives of NCOF9 were:

- To present feedback on the performance and impacts of the March-May 2024 and June-August 2024 seasons.
- To present the Kenya weather outlook for the OND 2024 season.
- To discuss implications of the OND 2024 forecast and co-develop sectoral mitigation measures and response strategies for climate-sensitive sectors.
- To provide a national interaction platform for decision makers, climate scientists, research experts, users of climate information, and development partners.
- To release sectoral advisories and action plans to manage risks associated with the OND 2024 season forecast.

1.3 Expected Outcomes of the National Climate Outlook Forum

The anticipated outcomes of the NCOF9 included:

- Development of tailored climate information and products, including standardized seasonal outlooks.
- Feedback on the utility of products and the established level of understanding among participants.
- Creation of sectoral advisories and action plans for OND 2024 for climate-sensitive sectors.
- Improved co-production of climate services.
- Development of climate risk (hotspot) maps for counties for the OND 2024 season.

1.4 Participants

A wide range of stakeholders and decision makers in weather and climate-sensitive socio-economic sectors were present at the workshop, including: Agriculture & Livestock / Food Security, Water, Energy, Transport, Disaster Risk Management, Health, Macro-economics, Development Partners, Education and Non-Governmental Organizations.

This diverse representation underscored the collaborative nature of the forum and its commitment to addressing the multifaceted challenges posed by climate risks in Kenya.

1.5 Official opening

The 9th National Climate Outlook Forum (NCOF) was officially opened by the Director of Meteorological Services Dr. David Gikungu. The Director emphasized the critical role of the Kenya Meteorological Department (KMD) in providing timely weather and climate information to ensure the safety of lives, protection of property, and conservation of the natural environment in the context of a changing climate. He reflected on the last NCOF session, where the KMD had forecasted heavy rainfall for the March to May long rains season, which unfortunately resulted in devastating impacts, including casualties and significant damage to infrastructure. The forecast for the following months of June-July-August 2024 indicated continued rainfall and lower temperatures, highlighting the persistent threat of severe weather events despite accurate forecasting.



Dr. David Gikungu, Director KMD

Dr. Gikungu outlined the theme of the Forum, "Proactive Early Warning Systems for Climate Risk Reduction," and noted the importance of early warning systems in disaster risk management. He mentioned KMD's advancements in forecasting and the need for effective

communication and engagement with vulnerable communities. He added that collaboration with various stakeholders is essential for enhancing the uptake of meteorological information. He concluded his remarks by expressing gratitude to the sponsors of the workshop and underscored the importance of the participants' work in shaping the weather outlook for the **upcoming OND 2024 rainfall season.**

1.5 Sector Co-Production of Scenarios and Action Plans

During breakout sessions, sectors co-designed response strategies based on the projected OND 2024 forecast. The sessions included discussions guided by a structured questionnaire, resulting in comprehensive presentations summarizing impacts and mitigation measures.

The OND 2024 climate outlook necessitates tailored responses across various sectors to address the anticipated challenges. The recommendations provided aim to enhance resilience, ensure food security, and safeguard public health. Collaborative efforts among stakeholders **will be crucial for effective implementation and management of the projected impacts.**

1.6 Official Release of OND 2024 Seasonal Forecast

The official press release of the OND2024 was done by the Director KMD Dr. Gikungu on 28th august 2024 and he occasion as graced by the guest of honour Mr Vincent Ogere representing the Principal Secretary Ministry of Environment, Climate Change and Forestry. The Guest honour noted the crucial role played by the Kenya Meteorological Department (KMD) in socio-economic development through its mandate of providing timely and accurate



Guest of Honour Mr Vincent Ogere representing the PS, Ministry of Environment, Climate Change and Forestry

weather forecasts and advisories. It is worth noting that the Department endeavors to collaborate and partner with the relevant stakeholders to communicate weather and climate information to the public in a timely and accurate manner. These weather and climate services are important for planning and decision-making to support sustainable development.

2. NATIONAL CLIMATE OUTLOOK FOR THE OCT-NOV-DEC 2024 SEASON

2.1 Rainfall Outlook for the OND 2024 "Short Rains" Season

The climate outlook indicates that the western region of Kenya is likely to receive near to slightly above-average rainfall during the OND 2024 season. In contrast, central parts of the country, along with isolated areas in the northeast and southeastern lowlands, are predicted to experience near to below-average rainfall. The Coastal region and most of the southeastern lowlands, as well as northeastern Kenya, are expected to receive below-average rainfall.

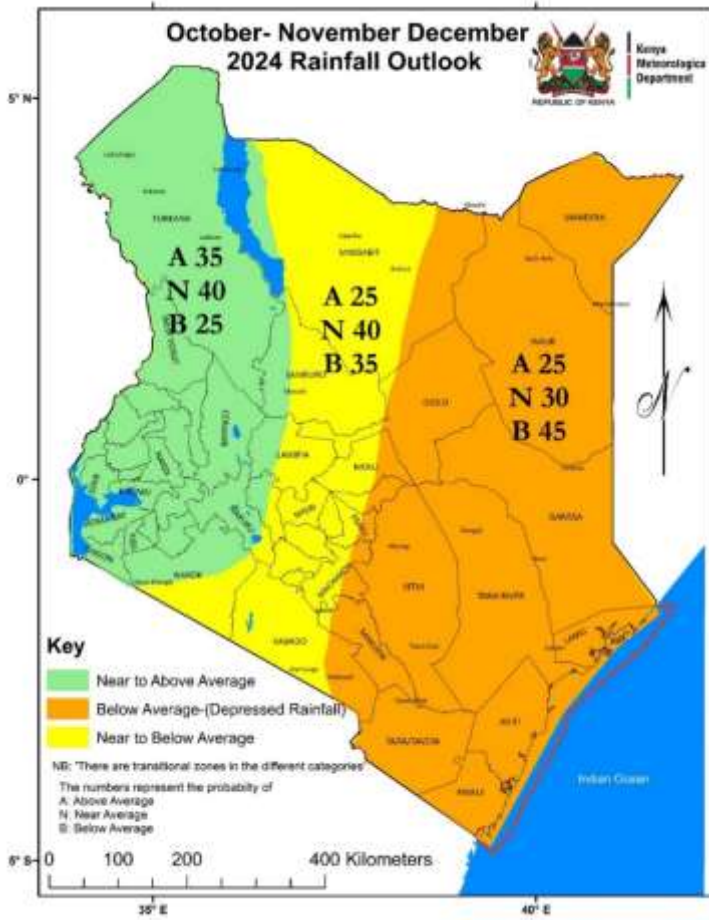
These conditions are primarily influenced by developing weak La Niña patterns expected from September to November, which may persist into early 2025, alongside a neutral Indian Ocean Dipole. Rainfall distribution is anticipated to be poor across most areas, characterized by prolonged dry spells and isolated storms.

Temperature Expectations

Temperatures are forecasted to be warmer than average for most parts of the country, except in certain areas of the western sector, where temperatures are expected to remain near normal. Higher probabilities for warmer than average temperatures are projected for the central and eastern sectors.

The OND season is crucial for agricultural activities, particularly in the Central and Eastern regions of Kenya. The expected Rainfall Patterns are (see figure 1):

- Western Sector: Near to slightly above-average rainfall is anticipated.
- Central and Eastern Regions: Predicted to receive near to below-average rainfall.
- Northeast and Southeastern Lowlands: Expected to experience below-average rainfall.
- Coastal Region: forecasted to receive below-average rainfall



Light Green Areas: Projected to receive near-average rainfall with a tendency towards above-average amounts.

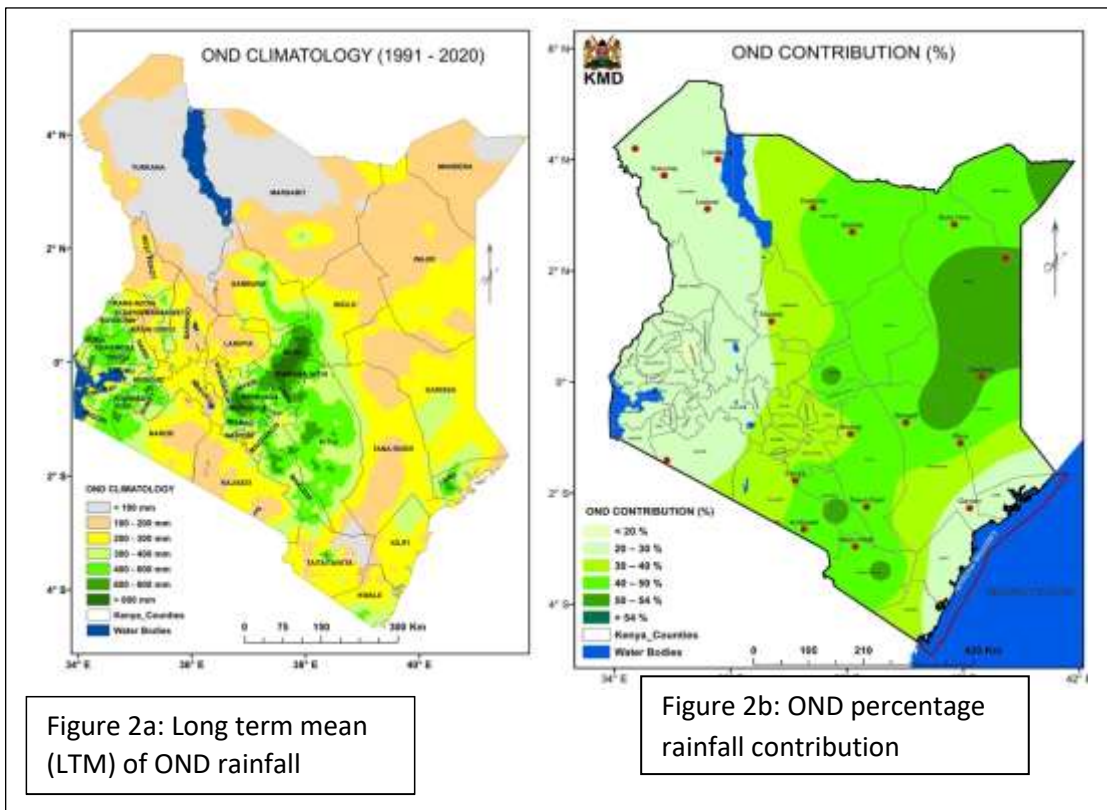
Yellow Areas: Expected to receive near-average rainfall with a tendency towards below-average amounts.

Orange Areas: Forecasted to experience below-average (depressed) rainfall.

Figure 1: OND 2024 Rainfall Outlook

The OND 2024 climate outlook suggests significant variability in rainfall across different regions of Kenya, with potential challenges for agricultural productivity, particularly in areas expected to experience below-average rainfall. Stakeholders are encouraged to consider this outlook in their planning and response strategies to mitigate the impacts of climate variability on livelihoods and food security. Further discussions will be essential to develop targeted actions for affected sectors.

Figure 2a indicate the average expected (long-term mean) rainfall in parts of Kenya for the period 1991-2020, while figure 2b indicate the percentage normal contribution of OND to the total annual rainfall.



2.2 Expected Distribution of the OND 2024 Rainfall, Onset and Cessation Dates

2.2.1 Distribution

The predicted onsets, cessations, and distribution of rainfall were derived from dynamical models and statistical analyses of past years, which showed similar characteristics to the current year.

The analogue (similar) year chosen was 2020. The rainfall outcomes for this analogue year are for reference only and should not be interpreted as part of the forecast. Rather, they provide a sense of the rainfall outcomes that can occur given broadly similar global climate conditions.

The OND 2024 rainfall is expected to be poorly distributed, both in time and space over several parts of the country. The western region is expected to have a fair to good distribution while the central part of Kenya is expected to have a poor to fair distribution. The rest of the country is expected to have a poor distribution. This season will be marked by prolonged dry spells and occasional isolated storms, even in regions where the general forecast indicates depressed rainfall (below average).

2.2.2 Onset and Cessation

The expected onset and cessation dates for the Counties are as indicated in *Table 1*.

Table 1: Expected Onset and Cessation for the OND 2024 Rains

Counties	ONSET	CESSATION	DISTRIBUTION
Western Counties (Busia, Vihiga, Kakamega, Bungoma); Nyanza Counties (Kisumu, Siaya, Homa Bay, Nyamira, Migori, Kisii); Counties in Central and North Rift Valley; (Kericho, West Pokot, Nandi, Bomet, Uasin Gishu, Trans Nzoia, Nakuru, Laikipia, Elgeyo Marakwet, Baringo)	Rainfall Continues from September, 2024.	3 rd to 4 th week of December, 2024.	Fair to Good
Counties in Central Kenya (Kirinyaga, Nyeri, Murang'a, Nyandarua, Kiambu, Meru, Embu, Tharaka Nithi); Nairobi	3 rd to 4 th week of October, 2024.	1st-2nd week of December with occasional rains towards the end of December	Poor to Fair
Counties in North Western (Turkana, Samburu)	Rainfall Continues from September, 2024.	4 th week of November to 1 st week of December, 2024.	Poor

Coastal zone (Kwale, Mombasa, Kilifi, Lamu, Coastal part of Tana River)	4 th week of October to 1 st week of November, 2024.	1 st to 2 nd week of December, 2024 over North Coast; 3rd-4th week of December over South Coast	Poor
South Rift Valley: (Narok)	4 th week of October to 1 st week of November, 2024.	3rd - 4th week of December	Poor
Northeastern Counties (Mandera, Wajir, Garissa, Marsabit, Isiolo)	4 th week of October to 1 st week of November, 2024.	4 th week of November to 1 st week of December, 2024.	Poor
Southeastern lowlands (Taita Taveta, Kajiado)	1 st to 2 nd week of November, 2024.	1st-2nd week of December with occasional rains towards end of December	Poor
Southeastern lowlands (Makueni, Kitui, Tana River, Machakos)	4 th week of October to 1 st week of November, 2024.	1st-2nd week of December with occasional rains towards the end of December.	Poor

3. REVIEW OF WEATHER DURING MARCH-APRIL-MAY (MAM) AND JUNE-JULY-AUGUST (JJA) 2024 SEASONS

3.1 Preamble

This section reviews the weather patterns observed during the March-April-May (MAM) 2024 long-rains season and the subsequent June-July-August (JJA) 2024 season. The assessment highlights the rainfall distribution, onset timing, and notable weather events.

3.2 March-April-May (MAM) 2024 Overview: Verification of Seasonal Forecasts

An analysis of rainfall from March 1 to May 31, 2024, revealed that most regions in Kenya experienced above-average rainfall. However, a few areas, including parts of the Highlands west of the Rift Valley (Kisii, Kericho, Kitale), the Lake Basin (Kisumu), the Coastal region (Lamu), and northeastern Kenya (Wajir), reported near-average rainfall. Notably, certain coastal stations (Malindi, Msabaha, Mtwapa, and Mombasa) recorded below-average rainfall.

The spatial and temporal distribution of rainfall was generally favourable, particularly in April. In contrast, March witnessed a poor distribution characterized by prolonged dry spells and isolated heavy storms in the fourth week. May saw improved rainfall distribution, especially in the Highlands west and east of the Rift Valley, the Lake Basin, and parts of the Rift Valley. However, the coastal region continued to experience poor distribution with extended dry periods interspersed with heavy rainfall on isolated days (figure 3).

Onset of the Long-Rains Season

The onset of the MAM 2024 season occurred during the fourth week of March across many regions, although some areas in the southeastern lowlands (Kitui and Voi) experienced an earlier-than-normal onset in the first and second weeks of March, respectively. Other regions, including parts of the Central Rift Valley (Nakuru and Laikipia), Highland's east of the Rift Valley (Meru, Nyeri, Nyahururu), Lake Basin stations (Kisumu), and various locations in northeastern and northwestern Kenya, saw the onset in the first week of April.

Notable Weather Events

The season was marked by severe storms across several regions, with rainfall exceeding 100 mm recorded in 24 hours at multiple stations. For example, Nguu Masumba station in Makueni County received 152.8 mm on April 10, and Thika Meteorological Station recorded 150.3 mm on April 15. Over 30 stations across the country reported similar high rainfall levels.

The highest seasonal total was observed at Ndaka-ini station in Murang'a County, with 1355.5 mm, followed closely by Gatare Forest station with 1261.5 mm. Additional stations, including Dagoretti, Chuka Forest, Kimakia, Kangema, Kagwe Tea Factory, Wilson Airport, Kabete, Moi Air Base, and Ngong, also recorded over 1000 mm of rainfall. Notably, several stations, such as Nyahururu, Moi Air Base, Dagoretti Corner, Wilson Airport, JKIA, Kabete, Thika, and Machakos, experienced their wettest MAM season on record.

Conclusion

The MAM 2024 season showcased significant rainfall across most of Kenya, with several areas recording historical rainfall levels. The findings emphasize the importance of ongoing monitoring and analysis to better understand weather patterns and enhance preparedness for future climate events. Further discussions continued to focus on the impacts experienced from these weather patterns for various sectors, including agriculture, water resource management, and disaster risk reduction.

March-May (Long-Rains) 2024

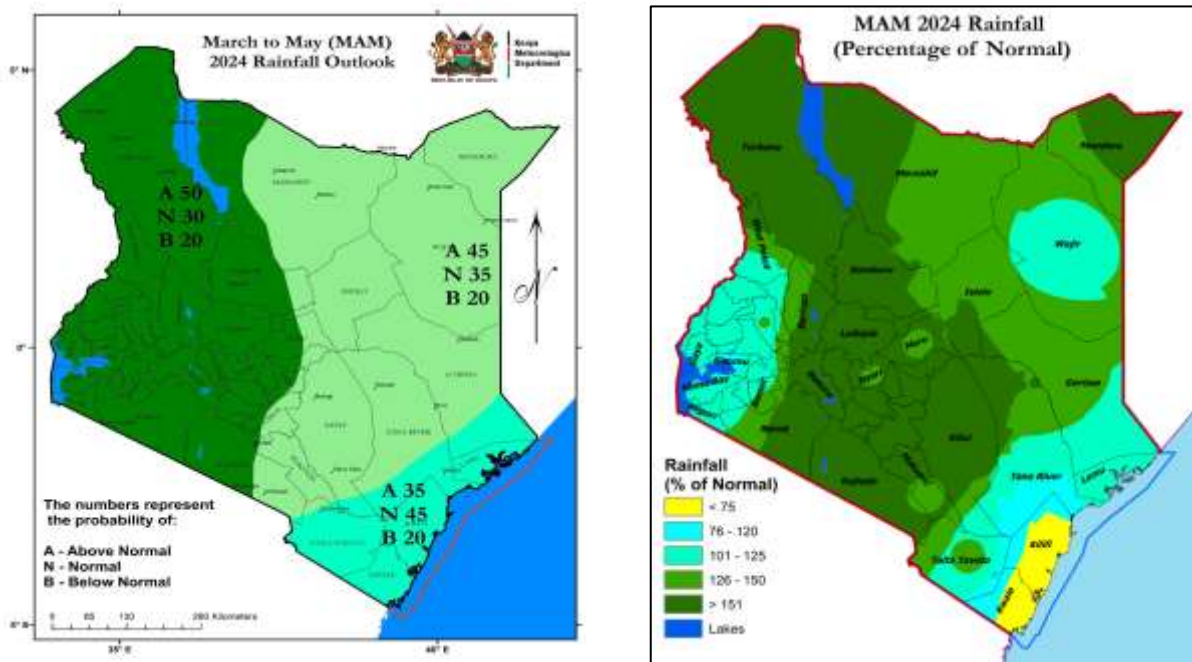


Figure 3: MAM 2024 forecast compared with actual performance.

3.3 June to August (JJA) 2024 Season Review

This section reviews the rainfall patterns during the June-July-August (JJA) 2024 season, focusing on regional rainfall distribution and significant weather events across Kenya.

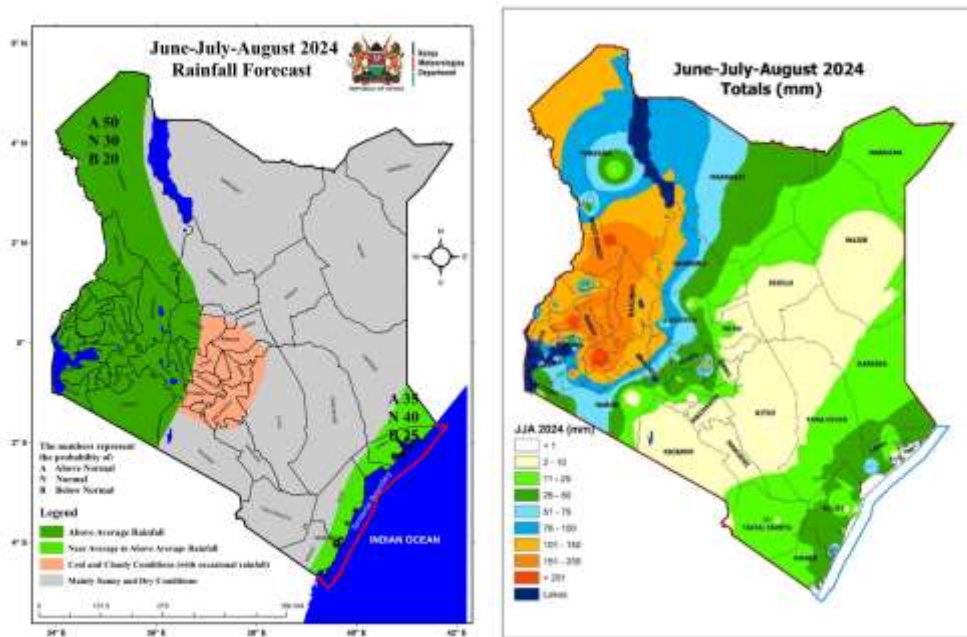


Figure 4: JJA 2024 forecast compared with actual performance

During the JJA 2024 period, various regions in western Kenya, the Coastal area, and parts of the Highlands east of the Rift Valley, including Nairobi County, experienced significant rainfall. Most areas in western Kenya and the Highlands east of the Rift Valley recorded near-average to above-average rainfall, while the Coastal region saw near to below-average rainfall. In contrast, the northeastern and southeastern regions remained largely dry, with only light to moderate rainfall reported. Notably, Makindu experienced above-average rainfall, while Machakos and Moyale reported near-average conditions; other areas recorded below-average rainfall (figures 4 and 5).

The Central Highlands, including Nairobi, experienced intermittent cool and cloudy conditions, along with some rainfall over the Highlands west of the Rift Valley and the southeastern lowlands.

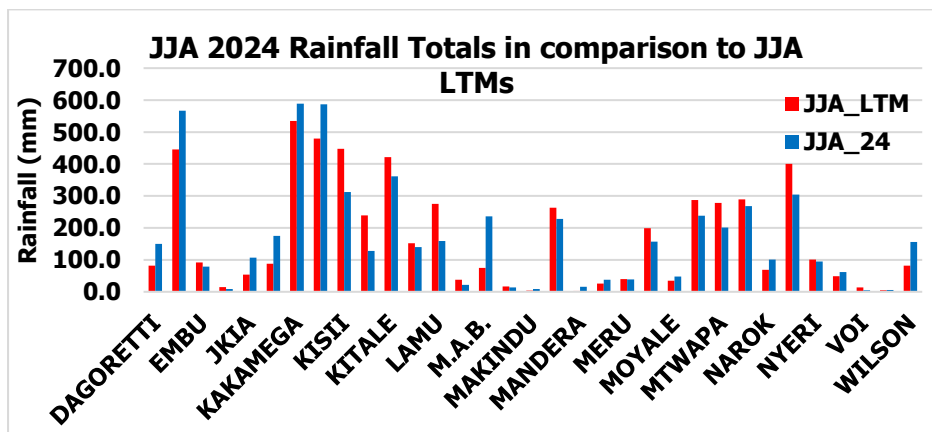


Figure 5: JJA 2024 rainfall compared to the Long term mean.

Conclusion

The JJA 2024 season displayed varied rainfall patterns across Kenya, with significant precipitation in the western and highland regions and a stark contrast in the northeastern and southeastern areas. Continued monitoring and assessment of these rainfall patterns are essential for understanding climate impacts on agriculture, water resources, and disaster preparedness. Further discussions will address strategies for managing these climatic variations and their implications for various sectors.



A section of Participants during one of the sessions of the Forum

3.4 Overview of Impacts Experienced in MAM and JJA 2024 Seasons

The forum shared feedback on the performance and impacts of the March-April-May (MAM) 2024 season, as well as the subsequent June-July-August (JJA) 2024 seasonal forecast. The findings encompass various sectors including agriculture, disaster management, health, transport, water resources, energy, and the environment.

3.4.1. MAM-JJA 2024 seasons impacts on Agriculture and Food Security Sector

Positive impacts included;

Enhanced agricultural performance: Optimal rainfall enhanced livelihoods leading to robust agricultural activities, bolstering communities incomes Livelihoods and economic stability.

Positive Price Effects: There was enhanced incomes from accrued volumes of production. Decreased food commodity prices, alleviated financial burdens for consumers, improved accessibility to essential goods.

Nutritional Gains: Increased agricultural diverse, productivity contributed to improved nutrition, positively impacted on Community well-being.

Enhanced Water Availability: for agricultural use such as reduced distances to livestock watering points, conservation of water and soil opportunities, infrastructure (irrigation systems)

Resource Conflict Mitigation: Reduced agricultural resource conflicts fostering sustainable livelihoods

However, there were some Negative Impacts, including:

Most areas experienced flooding and water logging, erosion, and nutrient leaching negatively impacting on soil health, erosion and degradation. In western and Eastern regions, busting of the rivers along the coast regions leading to livelihood loss in crops & livestock.

Pest and Disease: The prolonged humidity lead to influx of pests and diseases , affecting both the crops and livestock.

Pre- and Post-Harvesting: The excess Moisture triggered challenges in produce spoilage, rotting and contamination leading to production loss.

Weed Growth: Excess moisture lead to increased weed proliferation, necessitating weed management strategies, increased production costs

Farmers' Displacement: There was displacement due to flooding, resettlement of communities was costly to government as witnessed in the western, Eastern and coast regions

3.4.2 MAM-JJA 2024 seasons impacts on Disaster Management

Widespread flooding reported in 35 counties leading to 315 deaths (242 adults and 73 children), injuries (188) and 8,641 households (293,205 people) displaced.

Landslides in Kiambu, Nakuru, Bungoma, West Pokot and Muranga Counties.

Building collapse in Nyamira, Kiambu and Nairobi Counties.

Infrastructural damage: roads and bridges rendered impassable, flooding in schools and health facilities including water supply systems.

Human and livestock disease outbreaks including waterborne diseases.

Massive destruction of crops.

A total of 9,637 livestock were washed away by floods in thirteen (13) counties

Cyclone Impacts: Strong winds from Tropical Cyclone IALY exacerbated the situation, causing damage to infrastructure.

Landslides: A landslide in Baringo County on August 6 and 7 resulted in five deaths, property destruction, and displacement of households.

Strong Winds: Intense winds in Watamu (Kilifi County) caused significant property damage and disrupted community activities.

Flooding in Tana Delta: Continued flooding in the Tana Delta posed challenges for local livelihoods.

Fishing Disruptions: Strong waves led to rough seas, causing fishing disruptions and tragic accidents involving capsized boats

3.4.3 MAM-JJA 2024 seasons impacts on Health Sector

Cholera outbreaks were reported in Tana River, Lamu, and Siaya Counties. Public health authorities implemented disease surveillance, hygiene promotion, and medical treatment measures to mitigate the outbreak and protect affected populations.

3.4.4 MAM-JJA 2024 seasons impacts on Transport and Public Safety

Heavy rainfall disrupted road and rail transport, damaging infrastructure. The destruction of roads and bridges, and the precautionary closure of roads affected day-to-day activities between counties . E.g. in Tana River county, flood waters submerged roads, affecting the transport of produce to city markets, flood waters submerged a 4km stretch of the Nairobi-Garissa highway, the main access road to Kenya’s northern counties, flood waters’ destruction of the road between Lus market and Kamba Karaya disrupted business activities between West Pokot and Turkana counties. Cyclone-induced winds further disrupted marine services in the Indian Ocean. Mudslides blocked Kibigos road (ElgeyoMarakwet) on August 23, while a landslide affected the Kabarnet-Tenges Road on July 29.

Fog affected visibility in the Highlands and Northeast, but did not significantly impact transportation or public safety.

3.4.5 MAM-JJA 2024 seasons impacts on Water Resources Management and Energy Sectors

Positive impacts included

Increased in surface water resources, leading to improved availability of water supply for domestic, livestock and irrigation use.

Enhanced water storage in reservoir (dams, wetlands and pans).

Improved aquifer recharge.

Improved water quality – unrelated to sedimentation and siltation through washout

Reduction of water related conflicts between communities, livestock and wildlife.

However *negative impacts* were experienced:

Increased cases of flooding in almost all parts of the country. (Nairobi River, Athi River, Mathare River, Tana River , Nyando River etc).

Destruction to monitoring equipment including washing away

Destruction of borehole casing - Ingress of Contaminated water into boreholes

Interruption to water supply – achievement of turbidity levels, contamination and damage to supply systems

Damages to water treatment plants - Mbale Water Treatment Plant, Eburnangwe Water Treatment Plant, Emali Town Water Supply

Destruction to Intake Structures - Kapolet Intake and raw water line, Kihuri intake and raw gravity mains, Kaharo Treatment Works

Damaged Wastewater treatment plant, sewer lines due to Blockage, Bursting (e.g Kanduyi Waste Water treatment plant

Increased siltation and Pollution in various water reservoirs , pans and dams.

Mudslides and landslides (e.g. Kimende Escarpment).

3.4.6 MAM-JJA 2024 seasons impacts on Environment and Forestry Sector

The rainfall fostered tree growth and vegetation rejuvenation across the country, with the Ministry of Environment, Climate Change and Forestry utilized favourable conditions to promote tree planting initiatives. The March-May rainfall season had some negative impacts including landslides, soil erosion, and land degradation in certain areas. Increased wind snap and wind throws damaged trees and vegetation due to prevailed weather changes, thus reduced tree value. Damage of tree seeds and seedlings, reduced production. Siltation and sedimentation of mangroves ecosystems due to the floods upstream.

.Conclusion

The feedback from the MAM-JJA 2024 season indicated a mixed impact across sectors, with beneficial rainfall supporting agriculture and water resources, but also causing significant damage and loss due to flooding and landslides. Continuous monitoring and adaptive management strategies are essential to mitigate future risks and enhance resilience in the face of climate variability.

In addition to the review, special presentations were made by participating institutions in order to emphasis on the theme of the workshop including:

State of Climate 2023-Kenya

Enhancement of early warning Systems through improvement of Observation Network

NFCS Development, Achievement and Next steps

Kenya Anticipatory action road map 2024-2029

Media coverage of March-April-May (MAM) 2024 Long rains season

Kenya's leadership in Disaster preparedness: Insights and lessons from MAM 2024 Rainfall Season

4. KEY ADVISORIES AND RECOMMENDATIONS

The OND 2024 climate outlook presentation provided a foundational understanding for sectors to conduct risk assessments based on various scenarios. Stakeholders deliberated on potential impacts and identified appropriate anticipatory actions. Each sector presented its findings, leading to a collaborative discussion and consensus. Below are the details of the presentations and key recommendations from each sector.

4.1 Advisory for Agriculture, Food Security, and Livestock Development Sectors

The OND 2024 short rains forecast predicts enhanced rainfall in the Western region and depressed rainfall in the Eastern region.

Expected Impacts

Western Region: Improved crop and livestock productivity due to favorable rainfall.

Eastern Region: Decline in agricultural performance, impacting incomes and livelihoods for farming communities.

Advisories

Promote Climate-Smart Agriculture: Encourage practices like water harvesting and efficient water usage across all regions.

Acreage Expansion: Advise farmers in the Western region to expand crop and fodder production while promoting effective water utilization in the Eastern region.

Digital Subsidy Access: Accelerate registration for e-voucher fertilizer subsidies (KIAMIS) to enhance access to quality inputs (6163#).

Risk-Awareness Decisions: Farmers should avoid heavy investments in areas prone to limited rainfall to manage risk effectively.

Surveillance of Diseases and Pests: Monitor both livestock and crops for outbreaks.

Good Agricultural Practices: Train farmers in effective drainage, water harvesting, pasture conservation, controlled grazing, and marketing strategies to reduce livelihood losses.

4.2 Advisory for Disaster Management Sector

The disaster management sector focuses on anticipatory risk reduction and response strategies.

Expected Impacts

Western Region: Enhanced productivity, food security, and household income.

Eastern Region: Increased food insecurity, malnutrition, resource-based conflicts, and water-related disease outbreaks.

Advisories

Supplementary Feeding: Provide food distribution to vulnerable households and schools.

Animal Destocking: Implement cash transfer programs in arid areas.

Conflict Resolution Mechanisms: Activate systems to address resource conflicts.

Water Provision: Ensure supply and treatment of water in areas facing shortages.

4.3 Advisory for the Health Sector

The OND 2024 conditions will lead to varied health impacts across regions.

Expected Impacts

Regions with Adequate Rainfall: Improved food security, resulting in reduced malnutrition, but potential increases in malaria and waterborne diseases.

Regions with Depressed Rainfall: Higher temperatures may lead to increased vector breeding and diseases like Ndengu fever and cholera.

Advisories

Epidemic Preparedness: Plan for areas prone to epidemic malaria.

Public Education: Sensitize communities on prevention measures and cholera vaccination campaigns.

Distribution of Long-Lasting Nets: Ensure continued distribution in affected regions.

Multidisciplinary Rapid Response Teams: Establish at national and county levels.

Nutrition Support: Provide food supplementation for vulnerable populations, especially undernourished children.

4.4 Advisory for Transport and Public Safety Sector

The OND 2024 forecast is expected to positively impact the transport sector, while the Western region may face challenges.

Expected Impacts

Central and Eastern Regions: Favorable conditions for ongoing construction.

Western Region: Risks of flash floods and increased accidents due to slippery roads.

Advisories

Road Safety Measures: Improve road marking and signage, and promote adherence to speed limits.

Alternative Transport Solutions: Ensure the availability of alternative routes and modes of transport.

Infrastructure Repairs: Reconstruct damaged drainage and transportation structures.

4.5 Advisory for the Water Sector

The OND 2024 forecast presents both positive and negative impacts for the water sector.

Expected Impacts

Positive: Increased inflows into reservoirs and improved availability of water for domestic and agricultural use in the Western region.

Negative: Reduced inflows in other regions leading to drying up of water sources and increased conflicts.

Advisories

Water Trucking: Provide water in ASAL areas.

Monitoring: Continuous monitoring of water levels for effective planning.

Water Conservation: Implement measures for harvesting and storing water.

Conflict Management: Address conflicts in hotspots through community engagement.

4.6 Advisory for the Energy Sector

The OND 2024 forecast indicates normal conditions for energy generation.

Expected Impacts

Hydro Dam Performance: Normal inflows expected across hydro dams.

Challenges for Clean Cooking Technologies: Reduced availability of animal feed due to depressed rainfall.

Advisories

Water Management: Monitor water levels and manage resources effectively.

Energy Diversification: Encourage the use of alternative energy sources at the household level.

4.7 Advisory for the Environment and Natural Resources Sector

The OND 2024 conditions provide opportunities for environmental management.

Expected Impacts

Afforestation Opportunities: Beneficial conditions in the Western region.

Risks of Pest and Disease Incidences: Increased challenges in areas with depressed rainfall.

Advisories

Regulatory Enforcement: Promote awareness and enforcement of environmental regulations.

Pest Management: Address invasive species and monitor forest health.

Summary Key Expected sectoral impacts _Table 2

No.	OND 2024 KEY SECTOR IMPACTS	MITIGATION	RESPONSIBLE INSTITUTIONS
LIVESTOCK SECTOR			
1.	<p><i>In the Areas with Near to below normal and below normal</i></p> <p><i>Drought due to reduced precipitation and high temperatures</i></p> <p><i>Reduced forage and livestock water availability. This results in:</i></p> <p><i>Decreased Livestock production and productivity.</i></p> <p><i>Human wildlife conflict.</i></p> <p><i>Migration to gazette forests/game park.</i></p> <p><i>Resource conflicts.</i></p> <p><i>Loss of body condition.</i></p> <p><i>Pest & Disease outbreak.</i></p>	<p><i>Pre-OND</i></p> <p><i>Conservation of the current forage crop</i></p> <p><i>Appropriate grazing during the current season to maintain plant vigor- this will ensure survival during the depressed rain season and recovery after drought.</i></p> <p><i>Enhance offtake to facilitate conservative stocking rate during the OND</i></p> <p><i>Offtake before the droughts starts to receive better prices</i></p> <p><i>Preparation for support to livestock producers if need arises (Livestock feed and water distribution)</i></p> <p><i>During OND:</i></p> <p><i>Regularly assess resources conditions (Water, Plant vigor, soil cover and condition, livestock body condition</i></p> <p><i>Coordination and communication with stakeholders on adaptive strategies</i></p>	<p><i>State Department for ASAL/</i></p> <p><i>State Department for Livestock Development</i></p> <p><i>State Department for Water</i></p> <p><i>Counties</i></p>

<i>No.</i>	<i>OND 2024</i> <i>KEY SECTOR IMPACTS</i>	<i>MITIGATION</i>	<i>RESPONSIBLE INSTITUTIONS</i>
	<p><i>Low conception rates,</i> <i>early weaning</i></p> <p><i>Depressed prices of livestock products due off taking</i></p> <p><i>Absconding of bees</i></p>	<p><i>Control livestock congregation near permanent water sources</i></p> <p><i>Improve distribution of livestock by facilitating mobility (rehabilitation of water sources along migration routes and provision of portable water in areas away from water sources</i></p> <p><i>Facilitating offtake by ranchers and other farmers with surplus feed resources</i></p> <p><i>Disease control measures pre migration</i></p> <p><i>Facilitate efficient distribution of livestock insurance payment for livestock feed and drugs purchase</i></p> <p><i>Facilitate communities' negotiations for hosting drought affected livestock</i></p> <p><i>International negotiation to facilitate transhumance livestock</i></p> <p><i>Support f</i></p>	
2.	<p><i>In the western and north western region receiving near to above normal</i></p> <p><i>Positive Impact</i></p>	<p><i>Facilitate market access for the surplus livestock and livestock products</i></p> <p><i>Improve distribution of livestock to ensure proper utilization of pasture resource and protection of plant vigor</i></p>	<p><i>State Department for Livestock Development</i></p>

<i>No.</i>	<i>OND 2024</i> <i>KEY SECTOR IMPACTS</i>	<i>MITIGATION</i>	<i>RESPONSIBLE INSTITUTIONS</i>
	<p><i>Improved recovery of the vegetation and water resources</i></p> <p><i>Improved livestock production and productivity</i></p> <p><i>Better household access to livestock and livestock products</i></p> <p><i>Surplus livestock and livestock products</i></p> <p><i>Reduced migration of livestock</i></p>		<i>Counties</i>
3.	<p><i>In the western and north western region receiving near to above normal</i></p> <p><i>Negative Impact</i></p> <p><i>Isolated cases of flooding that may result in livestock displacement, deaths and inaccessibility of pasture.</i></p>	<p><i>Pre-OND</i></p> <p><i>Running Advisories for communities to prepare for relocation to secure grounds if need arises</i></p> <p><i>Vaccination against disease preferent during wet seasons</i></p> <p><i>Soil conservation measures</i></p> <p><i>During OND</i></p> <p><i>Monitoring of flooding</i></p>	<p><i>State Department for Livestock Development</i></p> <p><i>County Governments</i></p> <p><i>Media houses</i></p>

<i>No.</i>	<i>OND 2024</i> <i>KEY SECTOR IMPACTS</i>	<i>MITIGATION</i>	<i>RESPONSIBLE INSTITUTIONS</i>
	<i>Soil erosion in areas without adequate soil conservation infrastructure</i> <i>Pest and disease outbreaks</i>	<i>Assessment of flooding occurrence</i> <i>Surveillance of disease outbreaks</i> <i>Preparedness for feeding and animal health support of displaced livestock</i>	
AGRICULTURE AND FOOD SECURITY SECTOR			
4.	<i>Enhanced performance of the agriculture sector in Western Kenya</i>	<i>Utilization of appropriate inputs, recommended climate smart agriculture technologies practices such as soil and water conservation, pasture and fodder conservation and sustainable land management</i>	<i>MoALD, MWSI, MRT, NDMA, AES, ASAL and Regional Development, County Govt, COOP, KALRO, Financial Institutions</i>
5.	<i>Declined performance in the Eastern Region</i>	<i>Efficient use of water, adaptable breeds/seeds, proper agricultural practices</i>	<i>MoALD, MWSI, MRT, NDMA, AES, ASAL and Regional Development, County Govt, COOP, KALRO, Financial Institutions</i>
6.	<i>Affordable prices and access to agricultural food and commodities</i>	<i>Uptake of the agricultural and relevant sectors appropriate advisory and implementation, market aggregation, linkages, value addition of agricultural commodities, conservation of fodder and pasture</i>	<i>MoALD, MWSI, MRT, County Govt</i>
7.	<i>Livelihoods enhancement from adequate rainfall in Western Kenya</i>	<i>Increased productivity, acreage expansion</i>	<i>MoALD, MWSI, MRT, County Govt</i>

<i>No.</i>	<i>OND 2024</i>	<i>MITIGATION</i>	<i>RESPONSIBLE INSTITUTIONS</i>
	<i>KEY SECTOR IMPACTS</i>		
8.	<i>Limited access, affordability to agricultural products, food and fodder</i>	<i>Advisory on effective water utilization, subsidies for drought tolerant seeds.</i>	<i>MoALD, MWSI, MRT, NDMA, AES, ASAL and Regional Development, County Govt, COOP, KALRO, Financial Institutions</i>
9.	<i>Enhanced pre and post handling and reduction of agricultural produce</i>	<i>Promotion of essential infrastructure for both pre and post harvest processes, including efficient drying, cooling and storage facilities to reduce loses and contamination</i>	<i>MoALD, MWSI, MRT, County Govt</i>
10.	<i>Enhanced pest and disease surveillance, prevention and control</i>	<i>Prevention and control of diseases and pests for both crops and livestock (vaccination and vector control)</i>	<i>MoALD, NDMA, County Govt, COOP, KALRO , PCPB</i>
11.	<i>Increased agricultural resource conflict in Eastern and Northern Regions</i>	<i>Enhance water harvesting drainage de-silting techniques soil and water conservation</i>	<i>MoALD, MWSI, MRT, NDMA</i>
WATER SECTOR			
12.	<i>Disruption of water supply</i>	<i>Water tracking, Mapping of supply disruption prone areas, Emphasis on water harvesting and rationing where necessary</i>	<i>SDWS, Counties and Public, NIA, Water Service Providers</i>
13.	<i>Increased water based conflicts</i>	<i>Conflict management strategies e.g community barazas, Water tracking and mapping of potential water sources</i>	<i>WRA, Local NGO's and CBO, County administration</i>
14.	<i>Reduced water levels in the reservoirs lakes and rivers</i>	<i>Public awareness on water conservation</i> <i>Water abstraction-surveys and enforcement of water allocation plans</i>	<i>SDWA, Media, WRA, NDMA, County Administration</i>
ENERGY SECTOR			

No.	OND 2024 <i>KEY SECTOR IMPACTS</i>	MITIGATION	RESPONSIBLE INSTITUTIONS
15.	<i>Hydro dam levels in Eastern part of the country may be slightly impacted by the near to below average rainfall</i>	<i>Close monitoring of water levels and proper water management systems</i>	<i>Ministry of Energy, KENGEN, TREASURY and Development partners</i>
16.	<i>Hydro dams in Western and North west regions will have possibility of over flows, due to rains from JJA 2024 and current OND 2024 weather forecast</i>	<i>Close monitoring and water management systems for dams Early warning alerts to the downstream local in case of water overflow Allocation of emergency funds</i>	<i>Ministry of Energy, KENGEN, TREASURY and Development partners</i>
17.	<i>Clean cooking technologies; Reduced water and animal feed will impact production of bio gas inputs lowering the performance of clean energy</i>	<i>Prioritize construction of more biogas units in regions with normal to above normal rains</i>	<i>Ministry of Energy and REREC</i>
18.	<i>Wood fuel supply may be below normal hence the pressure on natural forests and tree cover</i>	<i>Diversification of energy sources in the household level</i>	<i>NGAO's County Govt, KFS, Ministry of Energy</i>
ENVIRONMENT AND FOREST SECTOR			
19.	<i>Opportunities for afforestation and re-afforestation in Western Kenya</i>	<i>Awareness creation and community mobilization on tree growing, Increase seedling stocks, species site matching</i>	<i>MECCF, KFS, County Govt, NGAO, KMD, SAGAS</i>
20	<i>Increased forest biodiversity and carbon stock enhancement</i>	<i>Protection mechanisms</i>	<i>KFS, MECCF, County Govt, NEMA, NGAO's</i>
21	<i>Spread of invasive species in forests</i>	<i>Invasive species management</i>	<i>KFS, KEFRI, County Govt, Communities, Private sector</i>

<i>No.</i>	<i>OND 2024 KEY SECTOR IMPACTS</i>	<i>MITIGATION</i>	<i>RESPONSIBLE INSTITUTIONS</i>
22	<i>Increased incidences of pests and diseases</i>	<i>Forest Health Monitoring and reporting</i>	<i>KFS, KEFRI, County Govt, Communities, Forest Owners</i>
23	<i>Increased forest fires</i>	<i>Maintain fire breaks, map hot spots, community awareness and early warnings, trainings on fire fighting</i>	<i>MECCF, KFS, KEFRI, County Govt, NGAO</i>
24	<i>Reduced water/rainfall for tree growing</i>	<i>Water harvesting and conservation technologies, invest in sustainable tree growing technologies e.g drought resistant trees</i>	<i>KFS, MOA, KEFRI, Universities</i>
25.	<i>Reduced business opportunities in forest sector and tree nursery owners</i>	<i>Diversify sources of livelihood, nature based solutions, insurance schemes</i>	<i>KFS, Banks, MOA CFA's</i>
<i>DISASTER RISK REDUCTION AND MANAGEMENT SECTOR</i>			
26.	<i>In areas with above normal rains positive impacts include: Improved pasture Decline in conflict Improved household incomes, nutrition and market supply</i>	<i>Subsidies on farm inputs, awareness creation on post harvest handling strategies and practices Acquisition of water storage facilities and distribution of water treatment chemicals,</i>	
27.	<i>In areas with above normal rains negative impacts include: Floods and flash floods Disaster displacement</i>	<i>Continuous disaster risk assessment and hazard mapping Identification of evacuation routes Advisory on backflows Training drill exercises on flood safety and evacuation</i>	

<i>No.</i>	<i>OND 2024</i>	<i>MITIGATION</i>	<i>RESPONSIBLE INSTITUTIONS</i>
	<i>KEY SECTOR IMPACTS</i>		
28.	<i>In areas with depressed rains negative impacts include:</i> <i>Increased conflicts</i> <i>High prices of essential commodities</i> <i>Loss of lives and livelihood</i> <i>Water scarcity</i> <i>Food insecurity at household level</i> <i>Increased cases of malnutrition</i>	<i>Review and update flood response plans</i> <i>Provision of supplementary feeding in schools</i> <i>Encourage animal destocking</i> <i>Activate conflict resolution mechanism</i> <i>Activate enhanced cash transfer programs</i> <i>Food distribution to vulnerable households</i>	
MACRO ECONOMIC SECTOR			
29.	<i>Reduced food production in central and eastern regions leading to food deficit at national levels:</i>	<i>There's benefit from surplus production during MAM season</i> <i>Plan for food imports to boost food security where necessary</i>	<i>The National Treasury</i> <i>Ministry of Agriculture</i>

<i>No.</i>	<i>OND 2024</i> <i>KEY SECTOR IMPACTS</i>	<i>MITIGATION</i>	<i>RESPONSIBLE INSTITUTIONS</i>
	<i>Increased food prices</i> <i>Increased cases of malnutrition</i>	<i>Increased monitoring and surveillance of weather conditions to determine if dry conditions will persist</i>	<i>National Drought Management Authority</i>
30.	<i>Reduced pasture towards end of the OND season leading to livestock fatalities</i>	<i>Plan for funds for uptake of livestock before livestock health deteriorates</i>	<i>Kenya Meat Commission</i>
31.	<i>Potential for increased internal and cross border conflicts over scarce pasture and water resources</i> <i>Displacement</i> <i>Increased insecurity</i>	<i>There may be need for enhanced monitoring of potential conflict related areas to ensure community safety and maintenance of law and order</i>	<i>Ministry of Interior</i> <i>NDMU</i>
32.	<i>Reduced incomes due to low agricultural produce leading to financial distress and number of increased households falling below poverty levels</i>	<i>Diversification of livelihoods</i> <i>Support of crop insurance</i> <i>Cash transfer programs</i> <i>Mainstreaming of programs targeting vulnerable groups</i>	<i>National Treasury, Ministry of Cooperatives and MSMEs, Ministry of Agriculture, Development partners, Nonstate actors including religious organizations</i>
33	<i>Reduced business activity in the agricultural value chain</i>	<i>Need for incentives and subsidies for MSME's in agriculture and related sectors</i>	<i>National Treasury, Ministry of Cooperatives and MSMEs, Ministry of Agriculture</i>
34.	<i>Impact on budgetary allocations- Most interventions will have cost implications on the Exchequer</i>	<i>Leverage on multi-lateral development partners and non players including NGO to till the deficit and mitigate costs implications</i>	<i>National Treasury, Development partners, Non-state partners, NGOs</i>

No.	OND 2024 <i>KEY SECTOR IMPACTS</i>	MITIGATION	RESPONSIBLE INSTITUTIONS
	<i>leading to increased expenditure pressure .</i>		
TRANSPORT AND PUBLIC SAFETY SECTOR			
35.	<i>Overall suitable conditions for on-going infrastructure projects</i>	<i>Continuation of on-going construction projects and scheduling for infrastructure maintenance</i>	<i>Road agencies, County Govt, MORT</i>
36.	<i>Increased air pollution from dusty gravel roads</i>	<i>Frequent watering of gravel roads to abate dust Upgrading of gravel roads to bitumen standards</i>	<i>Road Agencies, NEMA</i>
37.	<i>Flash floods</i>	<i>Unblock and de-silt existing drainage structures Design and construct new drainage structures</i>	<i>MORT, County Govt.</i>
38.	<i>Increased accidents due to flooding and poor visibility</i>	<i>Maintenance of infrastructure Create awareness to avoid flood prone infrastructure Road marking and signage Adherence to speed limits</i>	<i>KENHA, KURA, KeRRA, NTSA</i>
39.	<i>Slippery road</i>	<i>Regular weather updates, Road safety awareness, vehicle maintenance</i>	<i>KMD/Media, Transport Sector-NTSA, Road agencies</i>
40.	<i>Disruption of road and air transport</i>	<i>Seek alternative safe airports Upgrading of existing airports/airstrips to handle larger aircrafts</i>	<i>Road agencies, KRC, KAA/KCAA, Transport ministry</i>

No.	OND 2024 KEY SECTOR IMPACTS	MITIGATION	RESPONSIBLE INSTITUTIONS
HEALTH SECTOR			
41.	<i>Bumper harvest in western region</i>	<i>Control and manage post harvest losses Control of Alfa toxin poisoning</i>	<i>Ministry of Agriculture and Ministry of Health</i>
42.	<i>Climate sensitive diseases (Malaria, Dengue fever, Typhoid)</i>	<i>Epidemic preparedness and response Risk communication and community engagement Disease surveillance and response Community sensitization and education on utilization of LLTN's Sensitization of HCWs on malaria management Prepositioning of medical and emergency supplies</i>	<i>MOH (NMCP and Health Promotion)</i>
43.	<i>Malnutrition</i>	<i>Provision of food supplement to vulnerable Treatment of nutrition related illnesses Unconditional food transfers</i>	<i>MOH (Division of Nutrition and Dietetics)</i>
44.	<i>Water scarcity</i>	<i>Trucking of water and drilling of boreholes</i>	<i>MOW</i>
45.	<i>Disruption of health services</i>	<i>Provision of medical camps</i>	<i>MOH, Developing partners</i>

<i>No.</i>	<i>OND 2024</i> <i>KEY SECTOR IMPACTS</i>	<i>MITIGATION</i>	<i>RESPONSIBLE INSTITUTIONS</i>
		<i>Activation of public health emergency operation centers in all 47 counties</i> <i>Medical supplies activation</i>	

4.8 Panel Discussion Take-Away

OND 2024 panel discussion was moderated by Journalist Judith Akolo, .from Kenya Broadcasting Cooperation.

Livestock

What specific early warning indicators should be prioritized to better prepare for extreme weather events that affect crop yields and livestock health?

The OND forecast will have an effect in the coming two seasons. Depressed rainfall will cause water scarcity which will then inform the kind of crops to be grown. There's also need for tracking to determine the conditions of pasture availability in areas affected. The movement of livestock will also be a key activity during this season

Energy

In what ways can early warning systems contribute to the stability and reliability of energy supply during climate related emergencies?

The OND forecast indicate there will be less water for power generation. This opens opportunities for other sources of power generation e.g solar and wind. There's need to improve the current infrastructure to support investment in other sources of energy. Areas with sufficient rainfall will serve the hydro power plants while areas with less rainfall may need to supplement power source.

Disaster Risk Management

What strategies can be employed to ensure that early warning systems are accessible and actionable by the most vulnerable communities?

There's risks of high rainfall amount in the Western regions of the country which in turn creates risks of flooding. The disaster sector will map the vulnerable communities to prepare possible interventions. The sector will also keep monitoring the data being collected. Dissemination will be

done through radios, barazas and tv to ensure the community is prepared for the season and the effects of the same. With proper dissemination there will be co-developed contingency plans and fund raising to help mitigate effects of the season. The key focus is on early warning and mitigate the effects of predicted scenario.

The release of the OND short rains will help with coordination of activities e.g accuracy of forecasts, discussions with community, and downscaling and dissemination of the forecast.

Agriculture

How can proactive early warning systems be integrated into current agricultural practices to enhance resilience against climate-induced disruptions?

With the released OND forecast there is need to monitor the prices of commodities and ensure there is mitigated pricing especially due to depressed livestock prices based on the dry season kicking in. The Ministry will also prioritize cropping areas since the rainfall will be depressed.

Other factors to look at include conditions of the pasture available, (this can be mitigated by moving livestock to more arable areas), cross border movement and possible outbreak of diseases.

To undertake this the Ministry will:

Bringing all value addition sectors on board

Bridging the indigenous knowledge with the scientific one

Engage with community based organizations

Enhance partnership with KMD especially in arid areas



Panellists from left: Judith Akolo (KBC-Moderator), Dr. Gikungu Mr. John Maina, Eng Kennedy Shikumu. Dr. Micheal Ayabei and Mr. Micheal Kendagor

ANNEX 1

TALKING NOTES FOR GUEST OF HONOR MR. VINCENT OGERE REPRESENTING; THE PRINCIPAL SECRETARY MINISTRY OF ENVIRONMENT, CLIMATE CHANGE AND FORESTRY AT THE CLOSE OF THE 9TH NATIONAL CLIMATE OUTLOOK FORUM FOR KENYA FOR THE MAM-2024 LONG RAIN SEASONAL FORECAST

Ladies and Gentlemen, Good morning.

It is my pleasure to address you at the close of the Ninth National Climate Outlook Forum for the March to May 2024 short rains season whose theme is “Proactive Early Warning Systems for Climate Risk Reduction.” The Ministry of Environment, Climate Change, and Forestry is mandated to promote and facilitate good governance in the protection, restoration, conservation, development, and management of environment and forestry resources for equitable and sustainable development.

The Ministry appreciates the crucial role played by the Kenya Meteorological Department (KMD) in socio-economic development through its mandate of providing timely and accurate weather forecasts and advisories. It is worth noting that the Department endeavors to collaborate and partner with the relevant stakeholders to communicate weather and climate information to the public in a timely and accurate manner. These weather and climate services are important for planning and decision-making to support sustainable development.

I applaud the step that KMD has taken to strengthen the interaction between the producers and users of weather and climate information by collaborating with key stakeholders to undertake the National Climate Outlook Forum (NCOF) for each of the major rainfall seasons. User Interface Platforms (UIPs), provide a forum to improve the access, use and application of seasonal forecasts, enhancing dialogues and interactions between producers and users of climate information, improving co-production processes, assigning stakeholders roles and responsibilities for climate services, and strengthening multi-institutional coordination.

It is important to scale up climate services for millions of users in the country, but equally reach the most vulnerable. To achieve this goal, collaboration with end users of climate information is critical. I therefore applaud all the institutions represented here and who have continued to utilize the weather and climate information shared by KMD. I also applaud KMD for continuously seeking collaboration and partnerships which assist in disseminating the weather and climate information in a way that is easily understood by all end users and can be incorporated in key decision making.

In a world where exacerbated climate variability and uncertainty is projected as significant consequences of climate change, equipping policy-planners and the most vulnerable communities with early climate/weather information and advisories to anticipate climate-related shocks and changes is an urgent priority.

This is also a multi-front challenge which will require concerted efforts across Government Agencies, International organizations, Disaster risk organizations and other disciplines in order to successfully equip communities at risk, with climate information and advisory services that enable them to make improved decisions under a variable and changing climate. With the expectation of escalating climate crises in terms of frequency and intensity, urgent action is required to mitigate these challenges.

Ladies & Gentlemen,

The most difficult step in climate services is always to bridge the gap between climate forecasters and sector-specific expertise in order to move from climate information to a useable climate service. NCOF continues to play an instrumental role to coordinate institutions and enable them to work together to co-design, co-produce, communicate, deliver and use climate services for decision-making in climate-sensitive socioeconomic sectors. It is also intended to lead to meaningful interaction among the producers and users of climate information at the national level. It is envisaged that all stakeholders will embrace the use of climate and weather information since they will be part of the production of sector-specific forecasts that will meet their needs through the National Framework for Climate Services.

In order to manage climate risks, decision-makers must understand the risks well and be able to anticipate them. A well-functioning climate service has the potential to inform a range of both short- and long-term decisions, contributing to the resilience of governments, organizations, and individuals to current climate change and variability while also preparing for an uncertain future that is very

likely to be more challenging according to the latest IPCC report. This is the basic aim of the National Climate Outlook Forums.

Ladies and Gentlemen,

I am glad to take part in the release of the OND2024 Seasonal Forecast Statement which will support decision-making in various economic sectors of the Country in the coming months.

In conclusion, I take this opportunity to thank the event sponsors, and also appreciate all the participants and organizers for their support and contribution to the success of the forum.

I encourage us all to utilize the information presented by the Meteorological Department to ensure safety of life, protection of property and conservation of the natural environment in an effort to secure future generations lives and livelihoods.

Thank you very much and may God bless you all.

I declare this forum closed.

ANNEX 2A: LIST OF PARTICIPANTS (IN PERSON WORKSHOP)

Name	Organization
1. Dennis Mokaya	Ministry for Energy
2. Diana Masika	Ministry for Energy
3. Julius Komunga	State Dept. for Agriculture
4. Jane Njeri Reuben	State Dept. for Agriculture
5. Catherine Wankio	State Dept. Livestock
6. John Maina	State Dept. Livestock
7. Amos Onchiri	NDMU
8. Solomon Maina	NDOC
9. Kennedy Okeyo	NDMA
10. George Mwachiro	NCM
11. Paul Malusi	Ministry of Health
12. Naomi Mutie	Ministry of Health
13. Patricia Kitheka	KFS
14. Joanita Tumaini	CCD
15. Joe Waigwe	State Dept for Transport
16. Catherine Ndinda	State Dept for Transport
17. Judith Akolo	KBC
18. Carey A. Owiti	Ministry of Water
19. Nancy Odero	Ministry of Water
20. Ronnie Mugoiri	Min of Education
21. Dr. David Gikungu	KMD

22. Bernard Chanzu	KMD
23. David Adegu	KMD
24. Mary Kilavi	KMD
25. Peter Masika	KMD
26. Bahati Musilu	KMD
27. Christine Mahonga	KMD
28. Caroline Amukono	KMD
29. Ezekiel Njoroge	KMD
30. Muange Pamela	KMD
31. James Kaigua	KMD
32. Chris Kiptum	KMD
33. Hannah Kimani	KMD
34. Chito Njeria	KMD
35. David Koros	KMD
36. Christopher Meisilal	KMD
37. Benard Juma	KMD
38. Christine Maswi	KMD
39. Absae Sedah	KMD
40. Anthony Setim	KMD
41. Samuel Kamau	KMD
42. Julius Kilemba	KMD
43. Kimaita Bundi	KMD
44. Otieno Migiro	KMD
45. Zachary Misiani	ICHA
46. Dan Asaka	KRCS

47. Rachel Syokau	KRCS
48. Micheal Aiyabei	KRCS
49. Munir Ahmed	KRCS
50. Geoffrey Ogutu	KMD
51. Caroline Moraa	NCM
52. Paul Murage	SNV-CRAFT/KMD
53. Hiram Njuguna	SNV-CRAFT/KMD
54. Roger Ndichu	SNV/CRAFT -KMD
55. Daniel Mbithi	Church World/KMD
56. Nancy Mwakha	Church World
57. Oscar Nzoka	SNV/CRAFT
58. Ivy Wanawira	SNV/CRAFT
59. Frankline Komolkori	SNV/CRAFT- KMD
60. Felista Gathigi	CBK
61. Maureen Were	CBK

Guests/Panellists

62. Mr. Vincent Ogere.	Director Administration at the State Department for Environment and Climate Change Permanent Secretary representative
63. Mr. John Maina	Senior Deputy Director in the Ministry of Agriculture and Livestock Development.
64. Eng Kennedy Shikumu	State Department of Energy Directorate of Electrical Power Development

65. Dr. Micheal Ayabei.	Head Disaster Risk Management Development at Kenya Red Cross Society
66. Mr. Micheal Kendagor	Regional Emergence Response and Disaster Risk Reduction Coordinator for church world service Africa
67. Dr. David Gikungu	Director KMD

ANNEX 2B: ONLINE PARTICIPANTS- FORECAST RELEASE 28th AUGUST, 2024

(Meeting ID: 86406868397 Topic: The Ninth National Climate Outlook Forum (NCOF 9))

No.	Name (Original Name)	User Email	Total Duration (Minutes)	Guest
1.	Naphtali Odhoch	naodhoch@gmail.com	95	Yes
2.	Carolyne Ouko	oukoca@gmail.com	238	Yes
3.	Evangeline Adolwa	evaadolwa@gmail.com	93	Yes
4.	Wilson Oduor	wilson.oduor@ndma.go.ke	211	Yes
5.	Hawa Gedi	hawa.gedi@igad.int	71	Yes
6.	Nzengu Musembi	nzengumj@gmail.com	105	Yes
7.	Catherine Emusugut	catherineoise2015@gmail.com	109	Yes
8.	Mary Kurgat	mcrotich2000@yahoo.com	126	Yes
9.	ICPAC	training@icpac.net	221	No
10.	Kenya Meteorological Dept (Philip Wambugu)	mwangi.philip@switchmedia.ke	320	Yes

No.	Name (Original Name)	User Email	Total Duration (Minutes)	Guest
11.	Stanley Tonyewo	communication@baringo.go.ke	71	Yes
12.	mathew wambua	mathewwambua@gmail.com	46	Yes
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14.	Kituku Sylvester	sylvesterkituku141@gmail.com	163	Yes
15.	Mwaurah Kamau	mwaurahk@gmail.com	272	Yes
16.	Mercy Kimani	mercykimani@gmail.com	275	Yes
17.	Ivy's AI Notetaker (Otter.ai)	ivyeillim@gmail.com	92	Yes
18.	Japhet Ronoh	japhet.ronoh@gmail.com	397	Yes
19.	Stanely Kinnyua	skinyua85@gmail.com	29	Yes
20.	Richard Masinde	richardevrah@gmail.com	275	Yes
21.	Gilbert Ouma	gouma@uonbi.ac.ke	115	Yes
22.	BONIFACE ODHIAMBO	boniface.odhiambo@rescue.org	9	Yes
23.	Mike Mwaniki	mikemwaniki2016@gmail.com	258	Yes
24.	Augustine Kiptum	ak720@sussex.ac.uk	98	Yes
25.	Levis Ogoro	logoro@eagc.org	37	Yes
26.	Lilian Njue	lilianmureithi1@gmail.com	21	Yes
27.	Gregory Akall	gregory.akall@un.org	223	Yes
28.	Boaz Ekaale	boaz.ekaale@rescue.org	74	Yes
29.	SIMON KONES	symonkonz@gmail.com	76	Yes
30.	Dennis Maorwe	dennis@dpe.co.ke	42	Yes
31.	ABDI Dokata	abdij237@gmail.com	6	Yes
32.	Caroline Katana	carolinesamini@gmail.com	59	Yes

No.	Name (Original Name)	User Email	Total Duration (Minutes)	Guest
33.	Jeremiah Kithama	kithamajm@gmail.com	227	Yes
34.	Henry sese	henrysese88@gmail.com	160	Yes
35.	Losh Okatch	lobob25@yahoo.com	47	Yes
36.	Swabra Omar	omar.swabra@redcross.or.ke	29	Yes
37.	Beverly Aura	aurabeverly@gmail.com	1	Yes
38.	Jacob Lotesiro	jacob.lotesiro@ndma.go.ke	62	Yes
39.	Margaret Mwangi	wambu992003@yahoo.co.uk	342	Yes
40.	Onesmus Ruirie	ruirie.o@gmail.com	201	Yes
41.	Margaret Tanui	marggytanui@yahoo.com	130	Yes
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44.	Susan Markoko	susanyiapan@gmail.com	135	Yes
45.	Christopher Breen	christopher.breen@undp.org	54	Yes
46.	Noah Eledi	eledinoah@gmail.com	130	Yes
47.	KMD CK (Chris Ngetich)	chriskiptum@gmail.com	258	Yes
48.	Hannah Kimani	hwkimani1@gmail.com	257	Yes
49.	Alex Maroko	otungoalex92@yahoo.com	129	Yes
50.	Franklin Opijah	fopija@uonbi.ac.ke	134	Yes
51.	John Muiruri	jtmuiruri@gmail.com	186	Yes
52.	Annette Nelson	nelsonannette25@gmail.com	239	Yes
53.	PAUL WACHIURI	mofarmagritech@gmail.com	51	Yes
54.	Stephen Njoroge	njorogesjm@gmail.com	167	Yes

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57.	Peter Wambugu	pewaann93@gmail.com	45	Yes
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59.	Lilian Kisee	kiseelilian@gmail.com	309	Yes
60.	Esther Ndirangu	ndiranguessie001@gmail.com	26	Yes
61.	Francis Muinda	fmuinda@gmail.com	68	Yes
62.	JANE WAMBUI NDUNGU	janendungu361@gmail.com	56	Yes
63.	Philip Muraguri	muraguri@yahoo.co.uk	109	Yes
64.	Maya Yana	beckynas011@gmail.com	148	Yes
65.	Peter Masika	psmasika@gmail.com	183	Yes
66.	Brian Asande	brian.asande@feedthechildren.org	82	Yes
67.	Shoka Juma Shoka	shokajuma@gmail.com	206	Yes
68.	BENSON OGADA	benluba13@gmail.com	221	Yes
69.	Cynthia Wacuka	wacukacynthia11@gmail.com	385	Yes
70.	Paul Oloo	paul_oloo@yahoo.com	213	Yes
71.	Mary Kilavi	marykilavi@yahoo.com	216	Yes
72.	David Thuránira	dmwongerathuranira@gmail.com	35	Yes
73.	Irene Kamunya	irenewkamunya@yahoo.com	12	Yes
74.	Edward Amoni	liboyi@yahoo.com	143	Yes
75.	Dennis Maina	dennismainarr@gmail.com	14	Yes
76.	Abdullah Adan	abdullahadann@gmail.com	10	Yes

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77.	scholastic Maloba	smaloba70@gmail.com	287	Yes
78.	Hassan MOHAMED	hasnoah01@gmail.com	37	Yes
79.	Johana Mitei	jokimi@yahoo.comj	131	Yes
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84.	Bernard Yumbya	yumbyaben@gmail.com	48	Yes
85.	Ednah Osuo	ednaosuo@gmail.com	110	Yes
86.	John Nguyo	johnnguyo67@gmail.com	94	Yes
87.	Stella Nyamweya	snyamweya1@yahoo.com	7	Yes
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90.	Seyyid Kilonzi	seyyidkilonzi@gmail.com	26	Yes
91.	Peter Maneno	petermaneno2011@gmail.com	136	Yes
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93.	Paul Nakola ole	nakolapaul@gmail.com	5	Yes
94.	Alivin Odhiambo	aodhiambo39@gmail.com	8	Yes
95.	George Mayenga	george.tsitati@ed.ac.uk	39	Yes
96.	Leah Saitoti	epeleah5@gmail.com	134	Yes
97.	Nancy Njuguna	nwacekel@gmail.com	2	Yes
98.	Anne Kamau	kamauanne67@gmail.com	4	Yes

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99.	Benjamin Kyalo	info@kfft.co.ke	54	Yes
100.	Maria Kiboi	mariakiboi@gmail.com	98	Yes
101.	Danson Ireri	danson.ireri@gmail.com	6	Yes
102.	Kiva Julius	kivajulius@gmail.com	113	Yes
103.	Stanley Tonyewo	tonyewo@gmail.com	28	Yes
104.	Simon Cheptot	scheptot@gmail.com	15	Yes
105.	Mores Loolpapit	mloolpapit@gmail.com	131	Yes
106.	ALEXANDER TUVA	aktuva94@gmail.com	159	Yes
107.	Domnick Arodi	arodioginga@yahoo.com	58	Yes
108.	Antony Wandera	antony.wandera@wysacademy.org	7	Yes
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110.	Faith Mulu	mulufait7@gmail.com	16	Yes
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112.	Dida Garbole	obsedida@gmail.com	160	Yes
113.	MILDRED SANGURA	mildrith7791@gmail.com	195	Yes
114.	Mary Nyasimi	m.nyasimi@unesco.org	123	Yes
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116.	Samuel Mutai	smutai5@gmail.com	2	Yes
117.	Ibrahim Yahye	ibrahimalosh18@gmail.com	1	Yes
118.	Nicholas Maingi	nicksmaingi@gmail.com	1	Yes
119.	Alfred Opere	aopere@uonbi.ac.ke	92	Yes
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121.	Nancy Masit	nancymasit80@gmail.com	98	Yes
122.	Vincent Sakwa	sakwa.vincent@gmail.com	99	Yes
123.	Mike Kittivo	mikekittivo@gmail.com	36	Yes
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126.	JANE KAMWAGA	jkamwaga@yahoo.com	52	Yes
127.	Esther Ngugi	essyngugi0@gmail.com	3	Yes
128.	Joseph Kanyua	josephkanyua@gmail.com	5	Yes
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130.	moses oluko	olukomos@gmail.com	47	Yes
131.	Petterson Kitoo	kytotz@gmail.com	64	Yes
132.	Alfred Kirai	alfredkaranik@gmail.com	1	Yes
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134.	Purity Mutiso	puritymutiso.72@gmail.com	116	Yes

ANNEX 3: PROGRAMME: CO-PRODUCTION WORKSHOP (26th to 28th August 2024)

THEME: Pro-active early warning systems for climate risks reduction

VENUE: MIDLAND HOTEL, NAKURU		
DAY 1: Monday 26 th August, 2024		
SESSION I: OFFICIAL OPENING		
TIME	ACTIVITY	FACILITATOR
0900-0920Hrs	Registration	
09:20-10:30	Prayers and self-Introduction by participants Workshop Objectives Opening remarks (5 minutes each) Dr. Ahmed Idriss-SG Kenya Redcross Society (KSCS) Representative WFP Representative UNDP Representative ICPAC Dr. David Gikungu, Director Kenya Meteorological Department (KMD) Photo Session	Moderator: Peter Masika Rapporteur: Bahati Musilu
1030-1100 Hrs	<i>TEA BREAK</i>	
SESSION II: FEEDBACK ON PERFORMANCE AND IMPACTS OF MAM 2024		
1100-1130 Hrs	Verification of March-April-May (MAM) and June-July-August 2024 Seasonal Forecasts for Kenya:	Moderator:

		Benard Chanzu
1130-1230 Hrs	<p>Presentations: Overview of the impacts experienced in MAM 2024 seasons (<i>10minutes per sector-by-sector leads</i>)</p> <p>Agriculture Food Security/Livestock Sector</p> <p>Water and energy sector)</p> <p>Disaster risk management sector</p> <p>Health sector</p> <p>Environment and Forestry</p>	Rapporteur: Christine Maswi
	Plenary Discussions	
1300-1400Hrs	<i>LUNCH BREAK</i>	
SESSION III: EARLY WARNING FOR MITIGATION OF CLIMATE RISKS		
14.00-15:00	<p>State of Climate 2023-Kenya (Chris Kiptum)</p> <p>Enhancement of early warning Systems through improvement of Observation Network (Absae Ndege)</p> <p>NFCS Development, Achievement and Next steps(KMD)</p> <p>Kenya Anticipatory action road map 2024-2029 (Zachary Misiani, KRCS)</p> <p>Media coverage of March-April-May (MAM) 2024 Long rains season (Judith Akolo)</p> <p>Kenya’s leadership in Disaster preparedness: Insights and lessons from MAM 2024 Rainfall Season (A.A Onchiri, NDMU)</p>	<p>Moderator: Mary Kilavi</p> <p>Rapporteur: Hannah Kimani</p>

1500-1700 Hrs	SESSION IV: OND 2024 CLIMATE OUTLOOK	Moderator:
	Current State of Climate Systems	Ezekiel Njoroge
	Projected Climate Scenarios	Rapporteur:
	Overview of OND 2024 National Climate Outlook	Caroline Amukono
	• Plenary Discussions	
	Group work-logistics- David Adegur	

DAY 2: Tuesday 27th August, 2024

SESSION V: SECTOR CO-PRODUCTION OF SCENARIOS- RISK ASSESSMENT AND ACTION PLANS FOR OND 2024 SEASON

0830-1030Hrs	Sectors' Breakout session :Co-production of scenarios, expected impacts of OND2024 outlook and mitigation measures/management strategies	
	<i>Agriculture, Food Security and Livestock sector</i> Chair: Jane Njeri - MoALF , Rapporteur: Otieno Migoro	<i>Energy sector</i> Chair: Dennis Mokaya-MoE, Rapporteur: Benard Juma
	<i>Disaster Risk Management Sector-</i> Chair: David Nanyende Rapporteur: David Koros	<i>Water Sector</i> Chair: Carey Owiti-MOW Rapporteur: Absae Sedah
	<i>Health sector</i>	<i>Environment and Forestry</i>

	Chair: Rose Mokaya Rapporteur: Pamela Muange	<i>Water</i> Chair: Patricia Kitheka- KFS Rapporteur: Geoffrey Ogutu	
1030-1100Hrs	<i>TEA BREAK</i>		
11:00- 13:00	Sectors' Breakout session (cont): Co-production of scenarios, expected impacts of OND2024 outlook and mitigation measures/management strategies		
	<i>Agriculture, Food Security and Livestock sector</i> Chair: Jane Njeri - MoALF , Rapporteur: Otieno Migoro	<i>Energy sector</i> Chair: Dennis Mokaya- MoE, Rapporteur: Benard Juma	Moderator: David Adegu Rapporteur: Christine Mahonga
	<i>Disaster Risk Management Sector-</i> Chair: David Nanyende- -NDOC Rapporteur: David Koros	Water Sector Chair: Carey Owiti-MOW Rapporteur: Absae Sedah	
	<i>Health sector</i> Chair: Rose Mokaya Rapporteur: Pamela Muange	Environment and Forestry <i>Water</i> Chair: Patricia Kitheka- KFS Rapporteur: Geoffrey Ogutu	
1300-1400 Hrs	<i>LUNCH BREAK</i>		

14:00-15:30	<p>Sector Breakout presentations: Risk assessment and Action plans for OND 2024</p> <p>Agriculture, Food Security and Livestock sector</p> <p>Energy sector</p> <p>Water</p> <p>Disaster Risk Management Sector</p> <p>Health sector</p> <p>Environment and Forestry</p>	
15:30-16:30 Hrs	Development Of OND 2024-Forecast Statement-And Sector Summary Advisories	
1630-1700 Hrs	<i>TEA BREAK AND END OF DAY 2</i>	

DATE: Wednesday: 28 AUGUST 2024		
SESSION VI: OFFICIAL RELEASE OF OND 2024 SEASONAL FORECAST		
(Hybrid Session)		
9:00-10.00	<p>October-November-December (OND) 2024 Seasonal Forecast Statement and Press Release:</p> <p>Dr. David Gikungu, Director KMD</p> <p>Director and Permanent Representative of Kenya with World Meteorological Organization (WMO)</p>	<p>Moderator:</p> <p>Peter Masika</p> <p>Rapporteur:</p> <p>Bahati Musilu</p>

	<p>Sector summary of expected impacts and related advisories-</p> <p><i>Presentations By Sector Leads (5mins each)</i></p> <p><i>Food Security (Agriculture and Livestock)</i></p> <p><i>Disaster Management</i></p> <p><i>Water</i></p> <p><i>Health</i></p> <p><i>Energy</i></p> <p><i>Environment and Forestry</i></p>	<p>NOTE:</p> <p>All technical sector heads to provide presentations on expected impacts and related advisories to ICT before the day begins.</p> <p>Virtual participants to direct their questions to specific sector</p>
10:00 – 10:30	<p>Oct-Nov-Dec (OND) 2023 Seasonal Forecast-Statement and Press Release: Dr. David Gikungu, Director KMD and Permanent Representative of Kenya with WMO</p> <p><i>Question and Answer (brief session)</i></p>	
10:30 -11:00	<p>HIGH LEVEL Panel discussions</p> <p>PANELISTS - CEO's representing Sectors</p> <p>Agriculture and Food security</p> <p>Disaster (Redcross)</p> <p>Energy</p> <p>Community based organizations</p> <p>KMD</p> <p>Question and Answer Session (Brief)</p>	<p>Moderator: Judith Akolo</p> <p>Rapporteur: Jimmy Kaigua</p>
1030-1100 Hrs	Tea Break	

1100-1130 Hrs	Guest of Honor : PS State Department of Environment and Climate Change to make closing remarks	
1130-123 Hrs	<i>Press briefings, Interviews and Networking</i>	
12:30 -13:30	<i>LUNCH BREAK and Departure</i>	

Annex 4 Sectoral Matrix for Response, Mitigation and Response

Given the projected OND 2024 seasonal forecast:

Highlight most significant expected impact scenarios on the sector, based on past season, current status and OND2024 forecast in the country and specific hotspot locations within the country.

No.	Key areas	Impacts	Mitigation and Response	Responsible entity
	<i>Positive impacts</i>			
	<i>Negative impacts</i>			
	<i>People,</i>			
	<i>Economy and services</i>			
	<i>Ecosystems</i>			
	<i>Infrastructure</i>			

