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## Participatory Scenario Planning (PSP) Training and Implementation for Machakos County, Kenya, for OND 2023 Rainfall season

25<sup>th</sup> -28<sup>th</sup> September 2023

Venue: Miami Garden Resort, Matuu town, Machakos



*Participants of the Machakos PSP*



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## 1.0 INTRODUCTION

The Intra-ACP Climate Services and Related Applications programme (ClimSA) aims at fostering sustainable development in the IGAD region by addressing the existing gaps in climate services value chain and mainstreaming climate services into policy processes at regional, national, and sub-national levels. As part of project efforts to address the current limited linkages between ICPAC/KMD and beneficiary communities at local levels, a climate demonstration pilot was proposed by the project to support structured interaction between users, researchers and climate service providers in Kenya. Machakos County was selected based on a set of jointly agreed criteria.

It is against this backdrop that IGAD Climate Prediction and Application Centre (ICPAC) and Kenya Meteorological Department (KMD) in collaboration with local district stakeholders in Machakos County held a Participatory Scenario Planning (PSP) for OND 2023 rainfall season. The theme for the workshop was “**Climate Services for Scenario Planning and Resilience Building**” in line with the 65<sup>th</sup> Greater Horn of Africa Climate Outlook forum.

The PSP training and demonstration was supported by the Intra-ACP Climate Services and Related Applications programme (ClimSA). The objective of the workshop was to develop and implement adaptation strategies and measures that will strengthen the resilience of vulnerable sectors, particularly in agriculture, food security, water and energy sectors to climate variability and change. This was achieved by strengthening the capacity of stakeholders in enabling access to, collective interpretation and understanding of seasonal climate forecasts and associated uncertainty into locally relevant information that is useful for sectoral and livelihood decision making.

The methodology used was a one-day training of trainers with stakeholders from Machakos County, KMD, national focal points for water and agriculture, district water, livestock, fisheries, and agriculture officers, local media, and farmers. The one-day training was followed by a three-day workshop implementation which involved the release of the district downscaled seasonal forecast, coproduction of sectoral advisories, and finally media engagements on communication and dissemination strategies.



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## 2.0 WORKSHOP OUTPUTS

### i. **Machakos County October to December (OND) 2023 seasonal rainfall forecast press release by County Executive Committee (CEC) for Agriculture, Food Security and Cooperative Development, done on 27<sup>th</sup> September 2023**

- Kenya Meteorological Department (KMD) with support from ICPAC under Climate Services and Related Applications (ClimSA) project has organized Participatory Scenario Planning (PSP) for OND rainfall Season 2023 for Machakos County, from 25<sup>th</sup> – 27<sup>th</sup> September, 2023 for an interactive platform where advisories based on the County specific downscaled forecast were generated.
- This PSP has brought together stakeholders which include Technical Officials from ICPAC, KMD and County line ministries and farmers.
- Overall, during OND 2023 season, there is a high likelihood of above average (enhanced) rainfall over Machakos county.
- Start of rainy season (onset) in all the county will be between the 2nd to 3rd week of October,2023 (8th to 22nd October,2023)
- End of rainy season (cessation) in the entire county is likely to continue into January,2024
- The OND 2023 Long rains is expected to be well distributed both in time and space
- The forecast conditions for October to December 2023 season for Machakos County is expected to have potential positive and negative sectoral impacts. In order to maximise opportunities presented by positive impacts and mitigate against the negative ones, forecast based sectoral advisories and interventions were jointly co-developed and co-designed by sectoral experts and farmers. Users are advised to utilize the advisories in their farm level decision making.
- For details on the expected rainfall forecast, impacts and advisories for OND 2023 rainfall season in Machakos County, please refer to detailed advisories in the next section.



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- This forecast should be used in conjunction with the five –day, weekly forecasts including updates, advisories and alerts by Kenya Meteorological Department.
- It is my great honor to officially release the October-November-December (OND) 2023 seasonal rainfall forecast for Machakos County whose details are in the attached forecast document.

Dr. Bishop Nzomo

**CEC Agriculture**

**Machakos County**



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## ii. Detailed climate outlook and sectoral advisories

### a) General Forecast

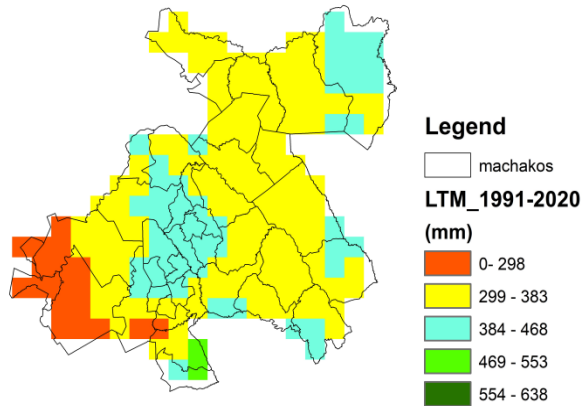


Figure 1: Long term average for OND season (1991-2020)

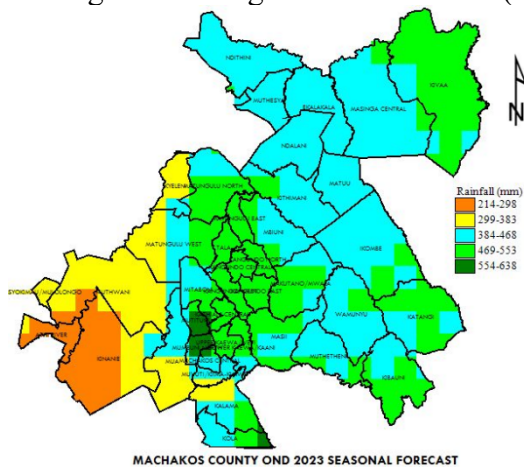


Figure 2: Forecast for OND 2023 season



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## b) Sectoral impacts and advisories

### 1. Crop sector

Positive impacts	Advisories
<ul style="list-style-type: none"> <li>• Likelihood of increased crop production</li> <li>• Favourable soil moisture conditions for crops growth &amp; development</li>   <li>• Improved households' income</li> <li>• Improved food &amp; nutritional security</li> </ul>	<ul style="list-style-type: none"> <li>• Wide dissemination of advisory to all farmers</li> <li>• Use of high yielding crop varieties especially               <ul style="list-style-type: none"> <li>• maize e.g DK 8031 &amp; 8033, Duma 43, Pioneer 3253, Pannar 3m-05, Pannar 4m-19, DH04 and other varieties of similar characteristics.</li> <li>• Beans e.g Kat B1, Kat x 56, Kat x 69, Nyota, Nyayo and other varieties of similar characteristics</li> <li>• Cowpeas e.g. M66, Kunde mboga, K80, Ken Kunde, KVVU-27, KVVU-419, Kalitho, Kibuva</li> <li>• Green grams e.g Ks20, N26, Karembo, Biashara</li> <li>• Pigeon peas e.g Local, Mbaazi 2, Mituki, kat 60/8</li> <li>• Root and tubers crops e.g. sweet potatoes, cassava arrow roots e.tc</li> <li>• Fruit trees establishment e.g. citrus, Mangoes, Avocado, Pawpaw.</li> <li>• Other fruits e.g. bananas, passion fruits</li> <li>• Agroforestry multipurpose trees</li> </ul> </li> <li>• Farmers should diversify to other enterprises for development of resilience in the long term in anticipation of lanina conditions.</li> </ul>
Negative impacts	Advisories



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<ul style="list-style-type: none"> <li>• Increased incidences of diseases especially fungal diseases</li> <li>• Washing away of pesticides</li> <li>• Likelihood of post-harvest losses</li> <li>• Likelihood of produce contamination with mycotoxins like aflatoxins</li> <li>• Increased incidences of pests infestations</li> <li>• Increased chances of waterlogging incidences especially in black cotton soils in low lying areas especially Mavoko, yatta, Masinga and Matungulu sub counties</li> <li>• Leaching of nutrients</li> <li>• Soil erosion</li> <li>• Increased incidences of weeds</li> <li>• Possible increase in cost of production</li> <li>• Increased chances of flooding and submerging of crops in flood prone areas or low lying areas</li> <li>• Possibility of a dry spell within the cropping season</li> <li>• Possible disruption of transport and markets</li> </ul>	<ul style="list-style-type: none"> <li>• Enhanced use of preventive fungicides</li> <li>• Enhanced use of stickers</li> <li>• Improved post-harvest management e.g., timely harvesting, adequate drying, proper storage</li> <li>• Enhanced capacity building on post-harvest management</li> <li>• Integrated Pest Management (IPM)</li> <li>• Enhance monitoring and scouting for pests</li> <li>• To do ridges and raised beds for effective drainage</li> <li>• Split application of top-dressing fertilizers</li> <li>• Construction and repair of soil and water conservation structures at farm level</li> <li>• Invest mainly in pure stand to effectively use selective herbicide</li> <li>• Anticipation of the costs by the farmer</li> <li>• Low level of investments in flood prone areas &amp; delayed planting</li> <li>• Mulching, using the weekly forecast updates</li> <li>• Water harvesting for supplementary irrigation during dry spell period</li> <li>• Have adequate food stocks</li> </ul>
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**CONTINGENCY FOR UNLIKELY SCENARIO**

<ul style="list-style-type: none"> <li>• Diversification of livelihoods – especially on crops &amp; varieties, enhanced management practices for tree crops.</li> <li>• Enhanced savings i.e. Do not deplete your savings in anticipation of bumper harvest</li> <li>• Do not deplete household food stocks in anticipation of bumper harvest until crops are near maturity</li> <li>• Use available food stocks sparingly in anticipation of bumper harvest</li> <li>• Crop insurance</li> </ul>
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**2. Livestock and Fisheries**

<p><b>Positive impacts</b></p>	<p><b>Advisories</b></p>
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<ul style="list-style-type: none"> <li>• Increase in pasture production and adequate pasture for the animals</li> <li>• Livestock will fetch good prices as they will have good health due increased pasture and farmers will not be willing to sell their animals</li> <li>• Increase in milk production</li> <li>• Twinning in Livestock and high reproduction and conception rates</li> <li>• Low input and high livestock production</li> <li>• High manure production</li> <li>• Increased number of livestock farmers</li> <li>• Development activities will be done</li> <li>• Increase poultry and poultry manure production</li> <li>• Increased pollination, nector and honey production</li> <li>• Increased rabbit and rabbit feed production</li> <li>• community cohesiveness due to food and diversified nutritional security</li> <li>• Increased stocking of fingerlings leading to high fish production</li> <li>• Reduced prices of fish feeds due to high supply of raw materials</li> </ul>	<ul style="list-style-type: none"> <li>• Harvest and conserve the pastures</li> <li>• Farmers can sell their animals as they can fetch good prices due to forces of supply and demand</li> <li>• Excess milk should be well preserved and value addition</li> <li>• Farmers to diversify in livestock production</li> <li>• Proper storage of manure for future use</li> <li>• proper siting of cattle sheds to enhance drainage, pouring of ash at the entrance and roofing</li> <li>• Capacity building of rabbit consumption as alternative protein source</li> <li>• Paying attention to PSP advisories</li> </ul>
<p><b>Negative impacts</b></p>	<p><b>Advisories</b></p>
<ul style="list-style-type: none"> <li>• Young pasture with a lot of magnesium which hinders calcium utilization</li> <li>• Livestock diseases as a result of low immunity due to coldness such as respiratory diseases, foot rot and tick borne like ECF and mastitis</li> <li>• High cost of production due to livestock diseases</li> <li>• Drowning of livestock due to excess water</li> </ul>	<ul style="list-style-type: none"> <li>• Feed animals with previously well stored hay</li> <li>• Proper spraying of the animals using acaricides</li> <li>• Good drainage and roofing</li> <li>• Proper housing of the animals</li> <li>• Livestock structures on raised grounds to avoid flooded areas</li> <li>• Diversification</li> <li>• Good storage of the pasture</li> <li>• Diversification</li> <li>• Maintenance of bee hives</li> </ul>





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<ul style="list-style-type: none"> <li>• High production cost due to treatment of diseases</li> <li>• High cost in buying extra feeds if affected by aflatoxins</li> <li>• Thunderstorm can lead to poultry deaths (Broilers)</li> <li>• Bee hibernation</li> <li>• Fish pond and small water bodies overflow</li> <li>• Pond water contamination due to agricultural farms overflows</li> </ul> <p>Fish death due to heavy down pours</p>	<ul style="list-style-type: none"> <li>• Farmers to be vigilant and leave a free board of 30cm(1ft)</li> <li>• Ponds to have cut off drainage and organic farming (IPM)</li> <li>• Use of netting material to reduce the heavy down pour</li> </ul>
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### 3. Water

Positive impacts	Advisories
<ul style="list-style-type: none"> <li>• Good recharge to surface water hence improved water availability and access</li> <li>• Good recharge to ground water sources</li> </ul>	<ul style="list-style-type: none"> <li>• Rain water harvesting and storage</li> <li>• Recycling, re-use, reduce water usage</li> <li>• Ground cover to enhance ground water recharge/ Catchment management</li> <li>• Maintenance of gutters, storm drains and wastewater drains, clean storage tanks</li> </ul>
Negative impacts	Advisories
<ul style="list-style-type: none"> <li>• Flooding due to heavy downpour in low lying areas especially in Ithekethini, Kateki, Maiuni, Ndalasyaini</li> <li>• Breakdowns of pipelines/ bursting of sewer lines especially along the water canals</li> <li>• Bursting of rivers banks and reservoirs due to flash floods along river Athi/flash floods &amp; Thika River. Hotspot areas include Muusini, Kisiiki, Kwa Ndolo</li> <li>• Contamination of water sources resulting in water borne diseases, hamper access to water</li> <li>• Siltation of water canals and reservoirs</li> </ul>	<ul style="list-style-type: none"> <li>• Construct storm drains</li> <li>• De-silting of storm drains</li> <li>• Un-block caravats</li> <li>• Treat drinking water</li> <li>• Covering of open wells &amp; septic tanks</li> <li>• Tree planting along the canal reserves</li> <li>• Maintenance of the cut-offs</li> <li>• Discourage farming near water bodies</li> <li>• Discourage overgrazing along riparian areas</li> <li>• Fencing their reservoirs</li> <li>• Close monitoring of rivers</li> <li>• Sharing of information – WhatsApp, calls, Sms, local media</li> </ul>



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<ul style="list-style-type: none"> <li>• Destruction of water storage, irrigation, bridges and road infrastructure</li> <li>• Land slides</li> </ul> <p>Soil erosion due to flash floods</p>	<ul style="list-style-type: none"> <li>• Volunteer to collect data e.g rainfall data-onset, No. of rainy days, cessation</li> <li>• Closely follow weekly forecasts for updates in addition to seasonal and monthly forecasts</li> <li>• Closely follow updates from WRA (Water Resources Authority) on water levels and stream flow forecasts</li> <li>• Ensure proper functioning of spillways</li> <li>• Avoid crossing on flooded areas, moving waters</li> <li>• Relocate to safe areas</li> <li>• Encourage soil conservations measures</li> <li>• Un-block storm drains</li> </ul>
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### 3.0 WORKSHOP OUTCOME:

1. Enriched understanding on the importance of PSP process in supporting community climate change adaptation and contingency planning processes
2. Increased capacity for preparation and facilitation of the PSP process at the sub-national level by national actors
3. Training of trainers
4. Improved understand in the role and importance of meteorological services in CCA, and dissemination of climate information to end users
5. Informed, anticipatory, precautionary and flexible decisions to manage climate uncertainty, risks and opportunities made
6. Integration and implementation of effective climate risk management in all livelihood, sectoral and development planning processes in the district
7. Documentation of community understanding of climate information services

### 4.0 PARTICIPANTS

Participants included the following:

8. Producers of climate information: ICPAC and KMD



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9. End users of climate information: Farmers, pastoralists, farmer associations, county decision makers and planners, sustainable development practitioners, and sub-national leaders
10. Intermediary users of climate information: county Departments of Agriculture, Livestock and Fisheries; and Water and Irrigation; among others
11. Boundary organizations: FAO, NGOs, CBOs, Youth Groups, Radio stations, Women's Organizations among others.