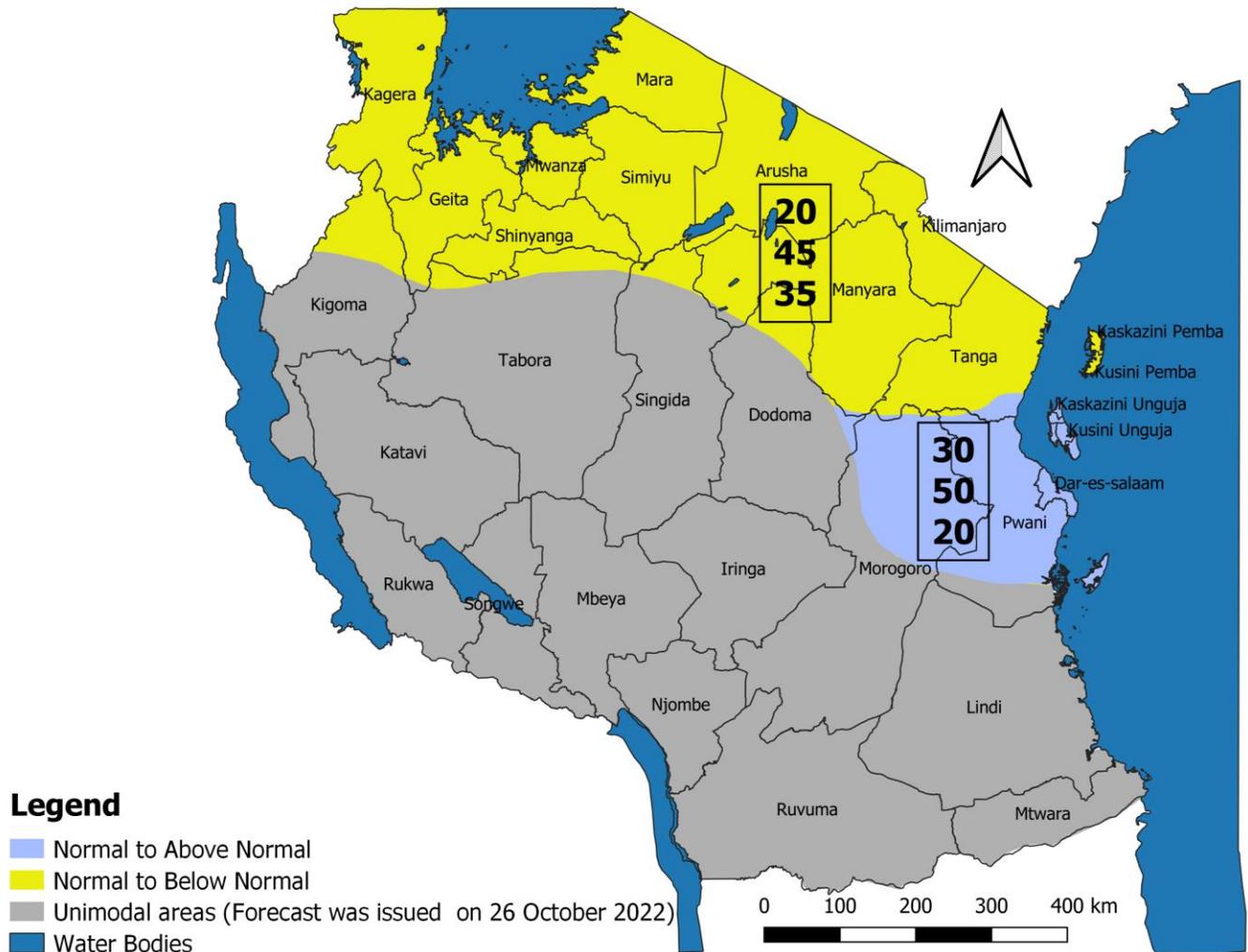


## CLIMATE OUTLOOK FOR *MASIKA* RAINFALL SEASON MARCH – MAY, 2023



**Figure 1: Rainfall Outlook for March to May, 2023**

## Highlights for *Masika* Rainfall Season March – May, 2023

This statement describes the evolution of the climate systems and outlook for the March to May, 2023 rainfall season (*Masika*), advisories and early warnings to various weather sensitive sectors such as Agriculture and Food Security, Livestock and Fisheries, Tourism and Wildlife, Transport, Local Authorities, Energy, Water and Mineral, Health sector and Disaster Management. Key messages in the statement are: -

- i. Normal to below normal rains are expected over most parts of bimodal areas except few areas of Dar es salaam, Pwani (including Mafia), northern Morogoro regions together with Unguja island where normal to above normal rains are expected.
- ii. Periods of enhanced rainfall are expected during the month of May 2023 over the northern coastal areas.
- iii. The *Masika* rains are expected to start during the month of March over most areas and are expected to end in the fourth week of May 2023 over the most parts, although off-seasonal rains are expected to continue during the month of June 2023 over few parts of the northern coast.

### Expected Impacts:

- i. Normal to below normal rains may lead to insufficient soil moisture and water availability for agricultural activities.
- ii. Over the areas expected to receive normal to above normal rains, excessive soil moisture is likely to occur and may affect the growth of crops that do not need a lot of water.
- iii. Since most parts of bimodal areas are expected to receive normal to below normal rains, water levels in rivers and reservoirs are expected to have insignificant improvement.

# 1. PROGRESS FOR NOVEMBER, 2022 TO APRIL, 2023 (MSIMU) RAINS AND OUTLOOK FOR MASIKA RAINS (MARCH – MAY), 2023

## 1.1 The November, 2022 to April, 2023 (Msimu) season progress

Seasonal rains, which started in November, 2022 over unimodal areas (Dodoma, Singida, Kigoma, Tabora, Katavi, Rukwa, Mbeya, Songwe, Njombe, Iringa, Ruvuma, Lindi, Mtwara and southern part of Morogoro regions) were generally normal during November, 2022 to January 2023. These rains were characterized by prolonged dry spells mainly in November, 2022 especially over the southern coast and southern part of Morogoro region. For the remaining period of the season (February, March and April), rainfall is expected to continue as forecasted in October, 2022.

## 1.2 Outlook for Masika rains (March – May), 2023

The *Masika* rainfall season is specific to areas of the northeastern highlands (Arusha, Manyara and Kilimanjaro regions), northern coast (northern part of Morogoro region, Pwani (including Mafia Isles), Dar es Salaam and Tanga regions, Unguja and Pemba isles), Lake Victoria basin (Kagera, Geita, Mwanza, Shinyanga, Simiyu and Mara regions) and the northern part of Kigoma region.

Based on the expected climate systems (as indicated in section 2 of this outlook), generally, normal to below normal rains are expected over most parts of Kagera, Geita, Mwanza, Shinyanga, Simiyu, Mara, Arusha, Manyara, Kilimanjaro and Tanga regions together with Pemba Island during *Masika*, 2023 rainfall season. However, normal to above normal rains are anticipated over Dar es Salaam, Pwani (including Mafia Island), northern part of Morogoro region and Unguja Island with periods of enhanced rainfall during May, 2023. Details of the rainfall season are as follows:

i. ***Lake Victoria Basin (Kagera, Geita, Mwanza, Shinyanga, Simiyu and Mara regions) and northern part of Kigoma region (Kakonko and Kibondo districts):***

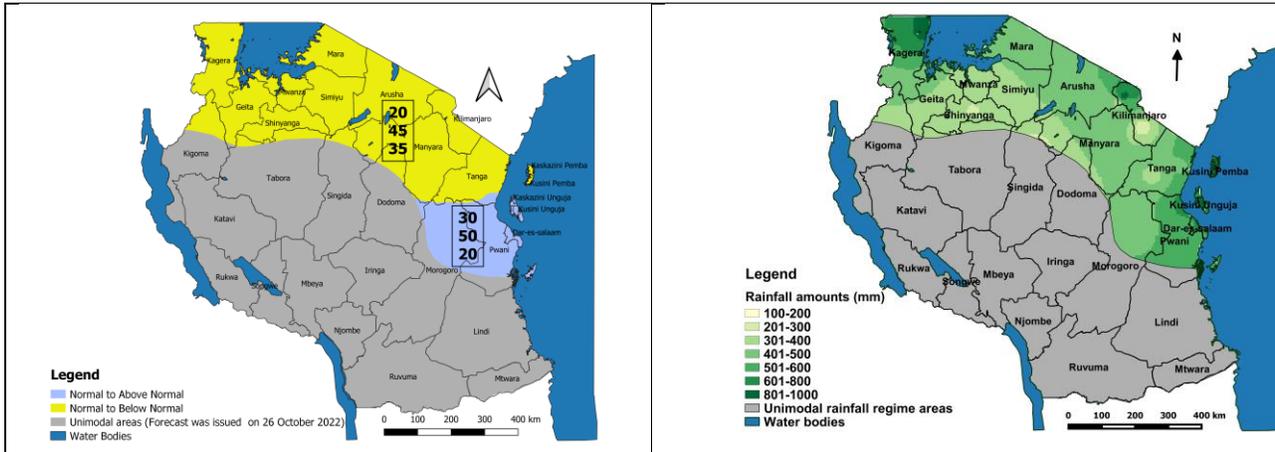
The Masika rains are expected to be normal to below normal over most parts of the Lake Victoria basin and northern part of Kigoma. The rains are expected to start during the first and second week of March, 2023. Cessation is expected during the fourth week of May, 2023.

ii. ***Northern Coast areas and its Hinterlands: (northern part of Morogoro region, Pwani (including Mafia Isles), Dar es Salaam and Tanga regions, Unguja and Pemba isles):***

Rains are expected to be normal to above normal over Dar es Salaam, Pwani (including Mafia Island), northern part of Morogoro region and Unguja Island while normal to below normal rains are likely over Tanga region and Pemba Island. The rains are expected to start during the second and third week of March, 2023 and cease in June, 2023.

iii. **Northeastern Highlands: (Arusha, Manyara and Kilimanjaro regions):**

Normal to below normal rains are expected in these regions and anticipated to start during the second and third week of March, 2023. Rains are expected to cease during the third and fourth week of May, 2023.



**Figure 2: Left: Rainfall Outlook for Masika rains (March - May),2023 and right: 30-year from March to May climatological rainfall averages (1991-2020).**

**Note 1:** It should be noted that events of heavy and short duration rainfall might occur even over areas with normal to below normal rainfall conditions.

**Note 2:** The current status of seasonal forecasting allows for prediction of spatial and temporal averages over larger areas and may not fully account for all physical and dynamical factors that influence short-term climate variability. Users of this outlook are, therefore urged to make good use of daily, ten-day and monthly updates issued by the Tanzania Meteorological Authority (TMA).

## 2. CLIMATE SYSTEMS OUTLOOK

Near average to slightly warm sea surface temperatures (SST's) are expected over the Central Equatorial Pacific Ocean. Likewise, mainly near average SSTs are likely across most of the tropical Indian Ocean. On the other hand, a slight warm SSTs are predicted over the eastern coast of the Atlantic Ocean (off Angola coast). These conditions are likely to weaken rainfall making mechanisms over the Lake Victoria basin, northern Kigoma, northeastern highlands and northern coast.

Moreover, a slight warm SSTs are expected over the Southwest Indian Ocean (Southeast of Madagascar) especially towards the end of the season. This situation is expected to enhance moisture from the ocean towards the eastern part of the country especially during the month of May 2023.

### 3. LIKELY IMPACTS AND ADVISORY

Sectoral impacts and advisories provided hereunder were jointly developed by TMA and experts from respective sectors during the stakeholders meeting held on 20<sup>th</sup> February 2023. Stakeholders from various social and economic sectors are advised to utilize tailor made products provided by TMA during planning and implementations of their activities.

#### a) **Agriculture and Food Security**

Normal agricultural activities are anticipated over most areas during the *Masika* 2023 season. However, areas expected to feature few and uneven distribution of rains will likely to experience insufficient soil moisture and water availability for agricultural activities, thus affecting crop production especially over the northeastern highlands and Lake Victoria region. However, periods of excessive soil moisture may occur and affect the growth of some crops that do not need a lot of water, such as maize and leguminous crops, especially in the northern coast region that are expected to receive normal to above normal rainfall.

Farmers are advised to prepare their fields, plant, weed and use relevant farm inputs timely, and are further advised to use the best methods and technologies to prevent water stagnation in the field, erosion and loss of soil fertility; and choose the right seeds and crops for this *Masika* season. In addition, it is recommended to strengthen the agricultural infrastructure, including rainwater harvesting, and to control plant pests to reduce potential impacts.

#### b) **Livestock and Fishery**

Water and pasture availability for livestock and food for fish are expected to be normal. However, in the situation of below normal rains during the season, water and pasture availability for livestock and fishery activities are likely to be affected and thus leading to possible increase in wildlife migration which may in turn increase human wildlife conflicts and associated diseases transmission from wildlife to livestock.

Therefore, livestock keepers are advised to practice good animal husbandry such as rotational grazing in order to conserve pasture and harvest rainwater for future use. The community is advised to put in place good plan for the use and conservation of water and animal feeds. In addition, pastoralists and fishers are advised to use weather forecast updates and adhere to the advice provided by extension officers in order to minimize possible adverse impacts.

On the other hand, in areas expected to receive normal to above normal rains, livestock and fishery are likely to benefit from availability of pasture and food for fish, respectively. Pastoralists and fishers in these areas are advised to seek weather forecasts as well as advisory from extension officers in order to capitalize on expected favorable conditions during the season.

### **c) Tourism and Wildlife**

Pasture and water availability for wildlife is expected to be normal. However, the anticipated below normal rains in some areas are likely to cause water and pasture scarcity, which may lead into wildlife migration to communities surrounding game reserves and parks in search for water and pasture. This condition is likely to trigger diseases transmission from wildlife to domestic animals.

The relevant authorities are advised to improve the various infrastructures in the wildlife reserves and create awareness among the community to take appropriate actions. Therefore, the community is advised to provide information to the relevant authorities if wildlife enters the residence areas.

### **d) Transport and Transportation**

In areas anticipated to feature normal to below normal rains, transport and transportation activities are expected to be normal. There are chances of potential occurrence of extreme weather events that is expected to affect transport infrastructure. The extreme events may lead to damage of road and railways infrastructure and so resulting into increased number of accidents for land transport, delay and cancelation of flights, breakdown of communication in air and maritime navigation, and increase of operational costs for aviation. However, transportation sector especially land transport is expected to benefit from the weather condition in the areas anticipated to receive normal to below normal rains. Stakeholders in this sector are advised to take note of short periods of heavy rain that are likely to cause damage to the transport infrastructure.

### **e) Energy, Water and Mineral**

Areas where normal to above normal rains are expected, sufficient water availability is likely to improve water levels over the dams and rivers. In small-scale mining activities, safety precaution should be observed as excessive water in the soil may trigger landslides and cave-ins. However, areas where normal to below normal rains are likely, water levels over the lakes, dams and rivers are expected to have insignificant improvement from the current levels, thus efficient use of water for irrigation, domestic use and power generation are highly advised.

Stakeholders are urged to consider the sustainable use and conservation of water resources in mineral processing activities, electricity production, industrial and domestic use. Likewise, the relevant authorities are advised to have effective plans for diversification of energy sources.

### **f) Local Authorities**

Areas which are expected to receive normal to below normal rains, local authorities are advised to establish effective water harvesting system, harvest and conserve rain water. On the other hand, in areas which are expected to receive normal to above normal rains, rains are expected to cause water stagnation and flooding, thus causing damage to infrastructure.

Local authorities are advised to improve and maintain drainage systems in order to reduce effect of water logging and flooding and to raise awareness to the public on appropriate measures to be taken.

#### **g) Health**

The expected normal to below normal rains during the season may lead to limited access to clean and safe water which may cause water related diseases outbreak. The health authorities are advised to take appropriate measures to reduce the possible effects, including encouraging citizens to treat water before using it, to drink clean and safe water. The community is also advised to take action by ensuring the cleanliness of the surrounding environment, destroying mosquito breeding grounds and maintaining cleanliness in general. In areas where normal to above normal rains are expected, stagnant surface water and uncontrolled sewage discharge may cause water contamination and trigger disease outbreak such as vector and water borne diseases. Relevant authorities are advised to ensure enough stock of medicines in health facilities taking consideration of possible destruction of transportation infrastructure.

#### **h) Private Sector**

Large scale farmers may be affected due to insufficient and un even distribution of rainfall especially in areas expected to receive below normal rains. This condition is expected to lead to high energy consumption in irrigation and storage of perishable crops and products. The anticipated below normal rainfall may trigger trees sprouting into more branches that will affect poles and timber quality. The private sector is advised to partner with various experts including meteorologists to mitigate potential impacts. Steps to reduce the number of tree branches should be implemented regularly. Banking and Insurance Institutions are advised to prepare and provide specific services to stakeholders to build resilience in business.

#### **i) Disaster Management**

The expected below normal rains in some areas is likely to cause soil moisture deficit, pasture and water scarcity. However, damage to infrastructure, loss of properties and negative impacts to human beings may occur due to possible events of short periods of heavy rains. Therefore, the relevant authorities and Disaster Management Committees at the regional, district, ward and village levels are advised to follow and make use of weather alert information and take appropriate measures.

#### **j) Media**

Media is advised to obtain the forecast, make regular follow-up and disseminate weather and climate information and warnings including updates as provided by the Authority. The use of sector specific inputs to inform the public on the expected weather-related impacts is highly recommended. The media houses are encouraged to seek and obtain inputs from relevant sectors when preparing and communicating crosscutting issues related to weather and climate. On the other hand, media is advised to prepare and effectively communicate

professional articles in simple language to better inform the community on utilization of the forecast through various media including national and community level radios and televisions.

*TMA advises all users of this climate outlook including farmers, livestock keepers, wildlife conservation authorities, hydrological and health sectors to continue seeking and utilizing experts' advice on their relevant sectors.*

*TMA will continue to monitor developments of the weather systems and issue updates whenever appropriate. Users are encouraged to consult TMA for specialized outlooks and forecast on relevant sectors so as to suit their specific needs.*

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**By Tanzania Meteorological Authority:**