



Figure 2: Shows normal (average) rainfall in mm in Meru County during the March- April - May rainy season. This map shows the average rainfall experienced during the same three-month period over 30 years between 1981 and 2010.

## EXPECTED ONSET AND CESSATION DATES

|             | Onset Dates                                              | Cessation Dates                                  |
|-------------|----------------------------------------------------------|--------------------------------------------------|
| Meru County | 1 <sup>st</sup> to 2 <sup>nd</sup> week of March<br>2020 | 3 <sup>rd</sup> to 4 <sup>th</sup> week May 2020 |

## EXPECTED SEASONAL RAINFALL DISTRIBUTION

The spatial and temporal distribution of the March and May 2020 seasonal rainfall is expected to be generally good both in terms of time and space during the onset month of march and the peak of April.

## FORECAST FOR CLIMATIC ZONES

### 1. Upper & Middle Zones: Tea, Mt. Kenya Forest, Coffee and Banana zone

This area includes Abagote West, Igoji West, Nkuene, Abothuguchi West, Thangatha, Upper Kangeta, Akachiu, Maua, Antubochiu & Kiegori, Nyaki East, Ntima East, Ntima West, Municipality, Nkomo, Abagota East, Akithii, Abothuguchi Central, Thangatha, Kiguchwa, Njia, Kangeta, Athiru rujine, Akirang'ondur, Ntunene, Antuamburi, Naathu, Antubetwe Kiongo, Amwathi Wards. These areas are likely to receive (500-600) mm and (600-700) mm of rainfall. Central part of Imenti South sub-county, Imenti central and Imenti North are likely to receive more than 800mm of rainfall.

### 2. Lower zones: Sorghum –Millet –Grazing Zones

These areas include Kibirichia (Ntugi & Ntumburi), Kiirua, Naari, Ruiru, Rwarera, Nyaki West, Rwanda, Kianjai, Akithii, Athwana, Abogeta East, Igoji East, Mitunguu, Mikinduri, Mwangathia, Kiagu, Muthara, Thangatha, Karama, Njia, Kangeta, Akirang'ondur, Amwathi, Igembe East, Ntunene, Antuamburi, Naathu, Athirurujine, Kanuni, Athirugaiti and Antubetwe kiongo wards. These areas are likely to receive (300-400) mm and below 300 mm of rainfall mostly in areas bordering Isiolo and Laikipia county.

**3. Areas of Buuri Sub county (Wheat, Irish Potatoes, Fodder)** Parts of Kibirichia, Timau, Kisima and Parts of Kiirua-Naari Wards). These areas are likely to receive (400-500) mm and (500-600) mm of rainfall respectively.

## DETAILED ADVISORIES FOR THE 2020 MARCH-APRIL-MAY SEASON

### Agriculture, Livestock Development and Food Security Sectors

#### Key Impacts

1. Rainy season expected to be normal to above normal –from 1<sup>st</sup> to 2<sup>nd</sup> week of March to 3-4<sup>th</sup> week of May 2020
2. Land slides may occur in prone areas such as Giumpu in Imenti South
3. Soil erosion is likely to occur on sloppy farms
4. There is likely to be good production of legumes and fodder

#### Key opportunities

1. Plant short term crops (mostly legumes and short season cereals) to make use of the rains (this will be a short season)
2. Farmers should make plans to store/conserv the harvests for later use.
3. Carry out water harvesting e.g. road run-off, roof catchment etc.

### Details of the impacts and strategies in agricultural/ livestock sector

| <b>Risky/hazardous scenario</b>             | <b>Potential impact</b>             | <b>Areas at risk</b>                                            | <b>Strategy/ Action to take</b>                                                                                                                                                                                                                           | <b>Who to act</b>                                            |
|---------------------------------------------|-------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| Short rain season                           | Rains end before crops maturity     | All areas                                                       | <ul style="list-style-type: none"> <li>• Early planting</li> <li>• Plant early maturing crop varieties</li> </ul>                                                                                                                                         | Farmers                                                      |
| Soil erosion on farms                       | Loss of soil and nutrients          | All <b>steep</b> farm areas                                     | <ul style="list-style-type: none"> <li>• Repair/lay out terraces and plant napier grass on terraces.</li> <li>• Practice conservation agriculture</li> <li>• Avoid farming on steep areas</li> <li>• Avoid ploughing or planting up/down slope</li> </ul> | Farmers<br>DALF                                              |
| Leaching of nutrients                       | Loss of nutrients                   | Low lying and flat areas                                        | <ul style="list-style-type: none"> <li>• Split application of fertilizer</li> <li>• Increase use of manure</li> </ul>                                                                                                                                     | Farmers<br>DALF                                              |
| Landslides and mud slides                   | Loss of life and property           | Giumpu in Imenti South, Nyambene hills, stone and sand quarries | <ul style="list-style-type: none"> <li>• Move to safer/upper areas</li> <li>• Avoid or close down risky quarries</li> </ul>                                                                                                                               | Community<br>Government                                      |
| Flooding and siltation of farms             | Loss of crops                       | Low lying areas                                                 | <ul style="list-style-type: none"> <li>• Planting of trees on hill tops and farms</li> <li>• Protection of river banks</li> </ul>                                                                                                                         | Community,<br>KFS, NGOs,<br>NEMA<br>Government               |
| Continued locust infestation                | Loss of crops and pastures          | All areas                                                       | <ul style="list-style-type: none"> <li>• Continued monitoring and surveillance</li> <li>• Take control measures</li> </ul>                                                                                                                                | National<br>county<br>government,<br>FAO, other<br>S/holders |
| <b>Livestock</b>                            |                                     |                                                                 |                                                                                                                                                                                                                                                           |                                                              |
| Likelihood of flooding & siltation of ponds | Ponds wash out and loss of fish     | Ponds on river banks and low-lying areas                        | <ul style="list-style-type: none"> <li>• Construct dykes to protect ponds</li> <li>• Dig drainage channels</li> </ul>                                                                                                                                     | Farmers<br>DALF                                              |
| Heavy rainfall                              | Disease outbreaks such as RVF, FMD, | All areas                                                       | <ul style="list-style-type: none"> <li>• Carry out mass vaccination of animals, other preventive measures</li> </ul>                                                                                                                                      | Farmers,<br>DALF                                             |

### Heath Sector issues and advisories

Key impacts

1. Outbreak of waterborne e.g. cholera, typhoid
2. Outbreak Vector borne diseases e.g. Malaria

### Details of impacts and strategies

| <b>Risky/Hazardous</b>         | <b>Potential impact</b>                        | <b>Areas at Risk</b>                                                | <b>Strategy/Action to take</b>                                                                                                                                                                                                                                                       | <b>Who to act</b>                                                                                                           |
|--------------------------------|------------------------------------------------|---------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Flash Flooding, stagnant water | Disease outbreak – Cholera, malaria, dysentery | Densely populated slum areas, low lying areas, poorly drained areas | Early warning, Awareness creation<br>Public education on hygiene, opening of storm drains and sewers lines, activation of disease response teams, stockpiling of essential drugs and commodities including household water treatment chemicals, continuous water quality monitoring. | Dept of Public Health, Water, Environment and Natural Resources, Min. of Interior and Coordination, Media, CHVs, NGOs, NEMA |

|                                                  |                                                                |                                                                                           |                                                                                                                                                                                 |                                                                                                                            |
|--------------------------------------------------|----------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Aflatoxin Risk                                   | Aflatoxin poisoning in maize and other cereals from OND season | All areas                                                                                 | Awareness creation and trainings on post-harvest management and grain storage technologies<br>Application of Aflasafe during crop growth                                        | Community, DALF, Public Health Dept, Min. of Interior and coordination, NGOs                                               |
| Sewerage discharge into water courses and bodies | Water contamination                                            | Market & trading centres such as Maua, Gakoromone, Kagaene, Kiengu, Kianjai, Timau, Laare | Early warning, Awareness creation through public education on hygiene, opening storm drains and sewers lines, Household water treatment<br>Continuous water quality monitoring. | Dept of Public Health Water, Environment and Natural Resources, Min. of Interior and Coordination, Media, CHVs, NGOs, NEMA |

## Roads and infrastructure sector

### Key Impacts

- i) Blockage of road side drains and culverts
- ii) Development of gulleys
- iii) Destruction of power lines & blockage of roads by fallen trees during storms

| <b>Risky/ hazardous scenario</b>  | <b>Potential impact</b>                                                                                                                                                                                                                                                                                                           | <b>Areas at risk</b>                                                                                                                                                   | <b>Strategy/ Action to take</b>                                                                                                                                                                                                                               | <b>Who to act</b>                                                                                                                                                                                                                                                                                                 |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flash floods along the roads      | <ul style="list-style-type: none"> <li>• Impassable earth roads.</li> <li>• High incidences of accidents.</li> <li>• Slippery roads.</li> </ul>                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>• All roads in the county.</li> </ul>                                                                                           | <ul style="list-style-type: none"> <li>• Improve drainage</li> <li>• Building gabions</li> <li>• Surface runoff harvesting</li> </ul>                                                                                                                         | <ul style="list-style-type: none"> <li>• Community</li> <li>• KeRRA, KURA</li> <li>• County government</li> <li>• County Disaster Mgt committee</li> <li>• NTSA</li> <li>• Kenya Red Cross</li> <li>• Special Programme</li> </ul>                                                                                |
| Mudslides and Rock falls          | <ul style="list-style-type: none"> <li>• Blocking of culverts.</li> <li>• High cost of transportation</li> <li>• Diversion of roads</li> <li>• Isolation of roads</li> <li>• Soil erosion</li> <li>• Pot holes</li> <li>• Destruction of water pipes</li> <li>• Destruction of power lines</li> <li>• Farm destruction</li> </ul> | E.g. Mikinduri-Mukono area<br>Ruiru, Muriri<br>Maua,<br>Muthara,<br>Ngundune,<br>Kunati, Uuru<br>Thangatha,<br>Nkando,<br>Tutua,<br>Njoteene,<br>Nthangathi,<br>Ametho | <ul style="list-style-type: none"> <li>• Plant trees and cover crops</li> <li>• Redirect traffic to safer roads</li> <li>• Motorists and pedestrians to take utmost care during rains</li> <li>• Continuous surveillance and early warning/ alerts</li> </ul> | <ul style="list-style-type: none"> <li>• Community members</li> <li>• -KERRA</li> <li>• Kenya Urban roads authority</li> <li>• County government</li> <li>• National Disaster management</li> <li>• National safety &amp; transport authority</li> <li>• Kenya Red Cross</li> <li>• Special Programmes</li> </ul> |
| Lightning strikes                 | Destruction of property and deaths                                                                                                                                                                                                                                                                                                | All areas                                                                                                                                                              | <ul style="list-style-type: none"> <li>• Install lightning arrestors</li> <li>• Early warning and Sensitization</li> </ul>                                                                                                                                    | NDMA, Ministry of Housings and Public Works                                                                                                                                                                                                                                                                       |
| Blocked drainage systems in towns | -Flash flooding                                                                                                                                                                                                                                                                                                                   | All the towns                                                                                                                                                          | To open up drainage systems early enough                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>• Community members</li> <li>• KeRRA</li> <li>• Kenya Urban roads authority</li> <li>• County government</li> <li>• County Disaster management committee</li> </ul>                                                                                                        |

## Impacts and strategies in Water, environment and natural resources sector

### Key Impacts

1. Siltation of dams and water pans
2. Pollution of water systems

### Key Opportunities

1. Rain water harvesting through dams, roofs, water pans, etc.
2. Increase of underground water through percolation.
3. Reduction of human – wildlife conflict due to increased pasture for wildlife in the forests and parks.
4. Afforestation and re-afforestation

| <b>Risky/ hazardous scenario</b> | <b>Potential impact</b>                                                                                                                                                                        | <b>Areas at risk</b>                                                                                                                                                                                      | <b>Strategy/ Action to take</b>                                                                                                                                                                                                                   | <b>Who to act</b>                                                                            |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Flash floods                     | <ul style="list-style-type: none"> <li>• Siltation of rivers, dams and water pans</li> <li>• Pollution of water systems</li> <li>• Destruction of nurseries along the river valleys</li> </ul> | <ul style="list-style-type: none"> <li>• Low lying areas e.g. Maua, Laare</li> <li>• Rivers in the highland areas such as Imenti North, South, Central and some parts of Tigania West and East</li> </ul> | <ul style="list-style-type: none"> <li>• Improve the drainage systems</li> <li>• Planting of trees and other vegetation on river banks</li> </ul>                                                                                                 | <ul style="list-style-type: none"> <li>• Community, KFS, WRA, Gov, NEMA,</li> </ul>          |
| Soil Erosion                     | <ul style="list-style-type: none"> <li>• Siltation of rivers.</li> <li>• Loss of soil fertility.</li> <li>• Water pollution.</li> <li>• Loss of biodiversity</li> </ul>                        | <ul style="list-style-type: none"> <li>• Highland areas of Imenti North, Imenti South and Imenti Central, parts of Tigania west and areas surrounding Nyambene hills.</li> </ul>                          | <ul style="list-style-type: none"> <li>• Planting of cover crops</li> <li>• Mulching</li> <li>• Put up and enhance existing soil conservation structures e.g.</li> <li>• Strip planting, terracing</li> <li>• Ploughing along contours</li> </ul> | <ul style="list-style-type: none"> <li>• Community</li> <li>• Dept of Agric, KFS.</li> </ul> |

### Action Points

1. The advisories will be shared with County Communications department so as to be put in the county website
2. SMS (short message) will be sent to farmers and the general public
3. Lobby for legislation to have road runoffs to be harvested at the farm level to reduce destruction of road by road runoffs