

# CONCEPT NOTE FOR ASSESSMENTS OF DISASTER RISK REDUCTION (DRR) IN BARINGO COUNTY

<b>Project Name:</b> Assessments for DRR in Baringo County
<b>Project geographical location:</b> Rift Valley Catchment Area
<b>Implementing Organization(s):</b> Water Resources Authority (WRA)
<b>County of focus:</b> Baringo
<b>Project Area:</b> Molo, Perkerra and Kerio sub catchments
<p><b>Background Information:</b></p> <p>Heavy rains that have been experienced in many parts of the country have exceeded normal rains and have caused loss of lives and property as well as damage to property. Since the year 2002 Marigat area of Ng'ambo, Salabani and Kiserian in Baringo county have experienced floods and its effects at certain times. In 2012 from July through August, lake baringo banks burst closing down hotel businesses, displacing people and destroying property worth millions of shillings. This kind of flooding was never witnessed before in the history of lake Baringo. Availability of data to determine the real cause of the bursting of Lake banks is scanty. River Perkerra also contributes to the problem by bursting its banks thus displacing people, destroying roads, crops, schools and dispensaries.</p> <p>Despite the heavy rains, water scarcity and inadequate water resources infrastructure development is still a big challenge experienced in Kenya. Catchment degradation compounds these challenges by increasing the intensity of flooding and reducing water storage capacity through reservoir sedimentation. Kenya's "water towers," which generate most of the country's runoff, are degraded due to poor land use practices, deforestation and encroachment.</p> <p>The Annual Development plan for Baringo County (2017-2018) cites environmental degradation as the biggest challenge facing the county and one which is increasingly</p>

becoming an issue of concern to the local, national and international communities. From a socio-economic perspective, residents of Baringo County are facing a number of issues including overgrazing, overstocking, unregulated charcoal burning and cultivation of steep slopes which often results in massive soil erosion and sedimentation in rivers. Oil spillage from garages and gas stations and fumes emitted from burnt sawdust and waste timber from the various workshops also contribute to air pollution, further exacerbating the situation. Baringo county also lacks a proper waste management system; there are no formal garbage disposal sites and none of the urban centres in the county have a sewerage treatment plan. Further, the county is also grappling with the issue of water scarcity and water pollution, both of which pose serious health risks to the inhabitants not to mention the high costs incurred in trying to access clean water and health services.

The county is home to a number of industries notable among them being the mining which has been going on at Isanda, near Perkerra where opal is being mined. Tiaty hills is home to Florite deposits while carbon dioxide has been extracted from several boreholes in the southern part of the county. Quarrying is especially prominent in the county with Tenges being a favourite site for exploitation of building stones, sand and ballast. Tullow Oil has set up base in the county for oil exploration while the Geothermal Development Company is also drilling geothermal energy at Silale area in Tiaty sub-county.

Implementation of catchment conservation measures, water resources protection and development of water storage infrastructure including flood mitigation can assist in restoration of degraded water catchment areas, increase water availability and reliability and enhance access to water.

### **Rationale for proposed Baringo County**

Baringo County is located in the former Rift Valley and covers an area of 11,015.32km<sup>2</sup> 270 km northwest of Nairobi. Samburu and Laikipia counties border Baringo County to the east, Turkana to the north and north east, Nakuru to the south, Elgeyo Marakwet to the West, West Pokot to the north west and Uasin Gishu to the south west.

The County is home to rivers Perkerra, Waseges, Emsos, Kerio and Molo as well as Lakes Baringo, Turkana, Kamnarok and Bogoria, which is one of the few hot water lakes in the world. Lake Baringo supports a wide array of aquatic life with the most notable one being the over 350 bird species among them the Marabou Storks, Hemphrick's Hornbill, Paradise Flycatcher and many others. Lake Bogoria National Game Reserve boasts of acacia woodlands which is home to many wild animals such as kudus, antelopes, zebras, cheetahs, baboons, birds and jackals Baringo also boasts of indigenous forests which are found in Kabarnet, Kabartonjo, Tenges, Lembus, Saimo, Sacho and Eldama Ravine. Rainfall varies from 1000mm to 1500mm in the highlands to 600mm per annum in the lowlands.

Baringo is an ASAL county and therefore water shortages are prevalent, especially in Lakes Baringo and Bogoria, parts of Kerio Valley, Mogotio and the entire Tiaty which receive low rainfall and experience cyclic droughts. Irrigation has therefore been prioritized as it is a requirement for general development in the county. The county relies on Kirandich dam in Kabarnet, although there is need to expand it so as to serve a higher population; there is also Chemususu dam in Eldama Ravine which also requires further expansion if the water needs of the county residents are to be met satisfactorily.

**Water Resources Authority (WRA)** being the state agency under the Ministry of Water and Sanitation is targeted to be the implementing agency because of the following strengths:

1. WRA has the legal mandate to regulate, monitor, assess and allocate water resources
2. WRA has adopted Integrated Water Resources Management (IWRM) approach in its operations as a means to ensure stakeholder participation and to adopt a holistic view of management of the water resources incorporating the environmental, social and economic context of the water resources
3. WRA has already engaged and established Water Resources Users Associations (WRUAs) who undertake water conservation activities at the grass roots in partnership with other stakeholders including counties, private sector, civil society,

women, men, youth and vulnerable groups.

4. WRA has structures and technical capacity nationally, at the basin and sub basin levels that implement water resources management activities to ensure protection, conservation of water sources and access to water in good quality and quantity. This further ensures sustainable water supply, flood control including dam safety, enhanced storage and sustainable conservation of our water catchment areas

### **Proposed Project Activities**

In order to anticipate and plan for water related Disaster Risk Reduction measures, it is necessary to undertake general physiographic surveys and water resources assessments in Baringo County. WRA proposes to undertake these assessments in the following three sub-catchments as a pilot: Molo, Perkerra and Kerio. These will be significant to establish baseline data on county water resources so as to facilitate the setting of key performance indicators for the project, establish water resources status in terms of quantity, quality, abstraction and dam safety, as well as to identify the hotspots for conservation.

The following are the proposed assessments:

- i) Evaluate status of existing water resources in the catchment/sub catchment – (groundwater, surface water) specifically on their vulnerability to water related disasters
- ii) Assess vulnerability to water related disasters of the main economic activities and investments in Baringo
- iii) Prioritization of hotspots within the selected sub catchments for conservation
- iv) Analysis of conservation measures – approaches and technologies, as well as investment options

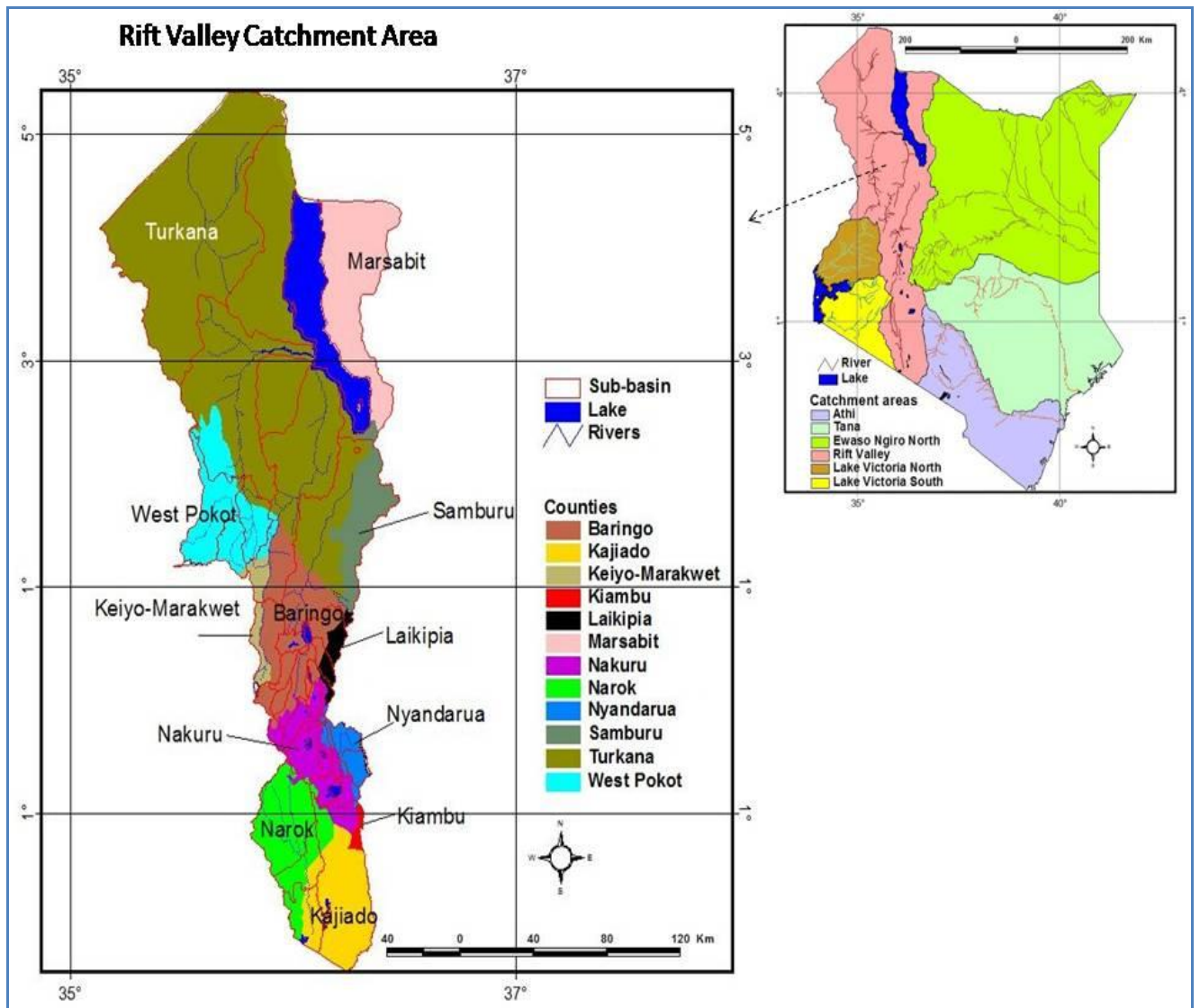


Figure 1: Map showing Rift Valley Catchment Area

## Additional Information on Sub Catchments in Baringo County

Note: Selected Sub catchments for Project area are highlighted

SNo.	Sub Catchment Code	Name	Tributaries	WRUAS
1	2EG	Molo River – Origin Mau water Tower & drains into L. Baringo	Rongai, Lobo, Lobo swamp	Molo, Rongai, Lobo Koitegan
2	2EK	Olarabel River– Origin is Marmanet Forest drains into L. Baringo		Olarabel
3	2EJ	Mukutan River – origin is Mukutan area and drains into L. Baringo		Not formed
4	2EE	Perkerra River origin is Mau water towers and drains into L. Baringo	Narosura, Esageri, Eldama Ravine, Tigeri, Chemususu Dam, L. 94	Narosura, Eldama Ravine, Chemususu,
5	2E	Endao River origin is Tugen Hills and drains into L. Baringo	Kirandich dam	Endao
6	2C	Kerio River origin is Mau water towers and Kerio Hills and drains into L. Turkana	Turukwei, Embara, Kaptich, L. Kamnarok, Beregei	Turukwei, Mbara Kaptich, L. Kamnarok, Beregei
7	2EB	Wasseges origin is Nyandudo and Bahati hills and drains into L. Bogoria	Subukia, wards, Watkins, Lari	L. Bogoria Basin