

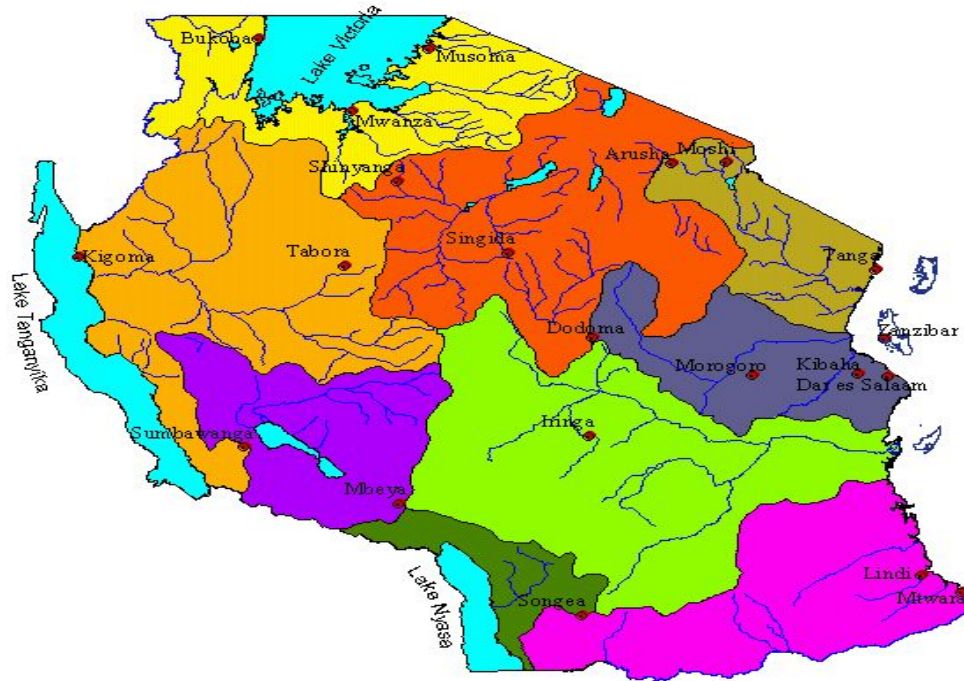


The Rufiji Basin

- Tanzania manages her water resources through 9 hydrological units called basins.
- One of these Basins is the Rufiji Basin
- It has an area of over 178,000 sq.km
- The Great Ruaha catchment is a portion of a larger Basin called Rufiji.

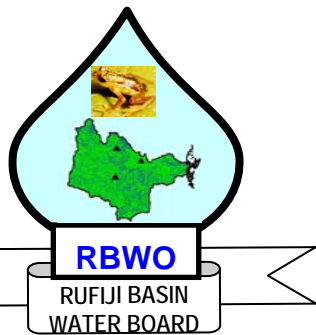


River Basins in Tanzania



Basins	
	Lake Victoria Basin
	Internal Drainage Basin
	Lake Tanganyika Basin
	Rufiji Basin
	Pangani Basin
	Wami/Ruvu Basin
	Lake Rukwa Basin
	Ruvuma and the Southern Coast Basin
	Lake Nyasa Basin

300 0 300 Kilometers

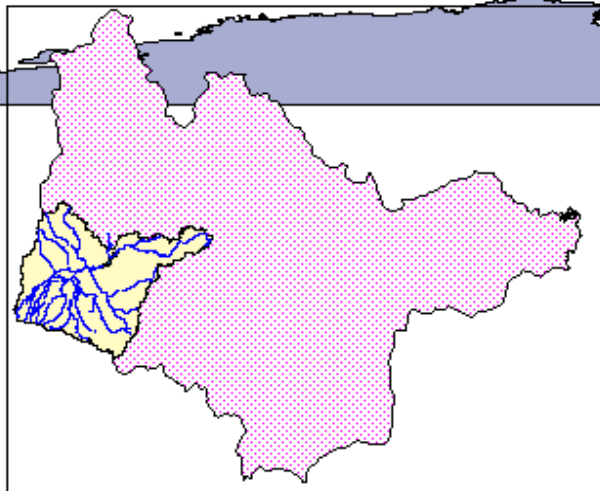
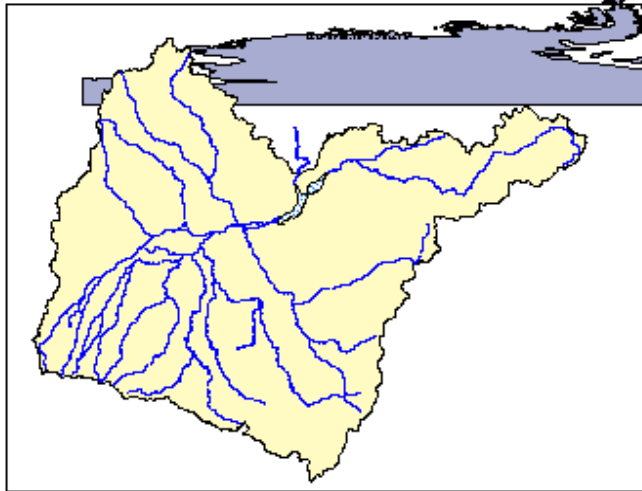
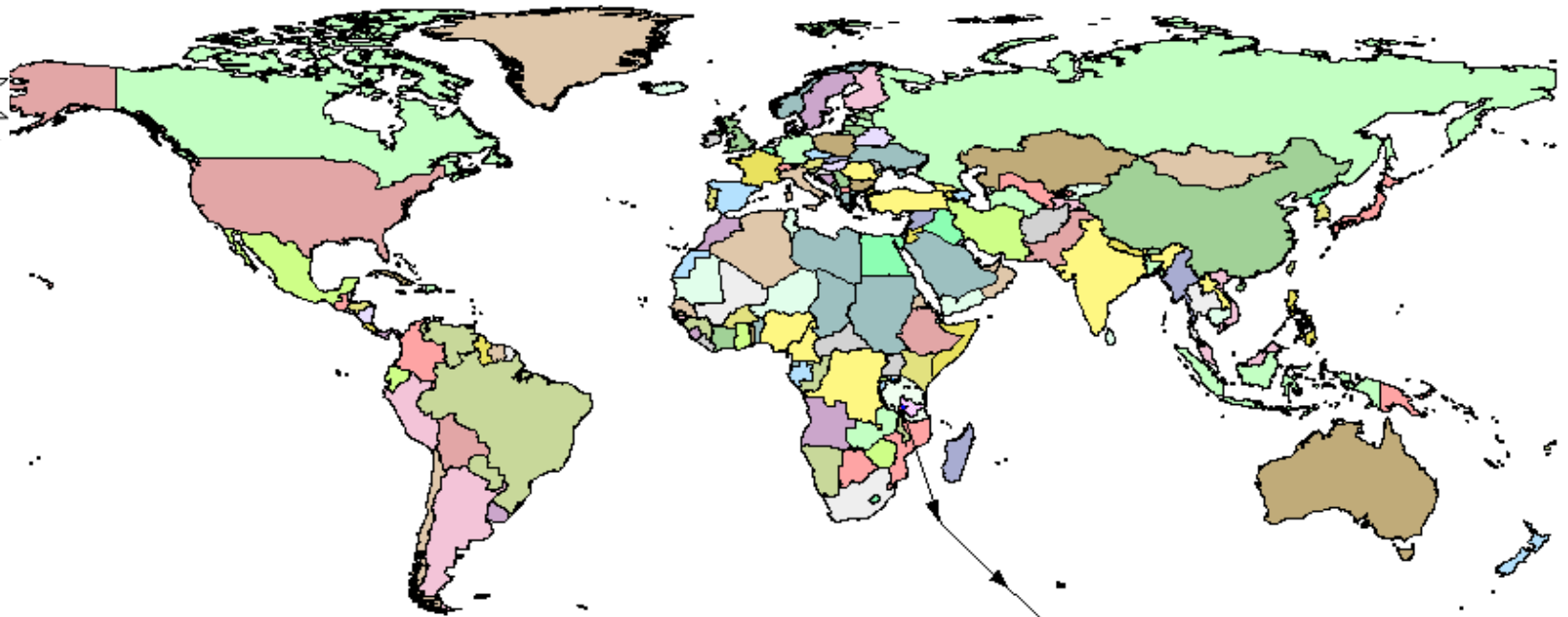


The Rufiji Basin

Table 1: The Four major Rivers in the Rufiji Basin

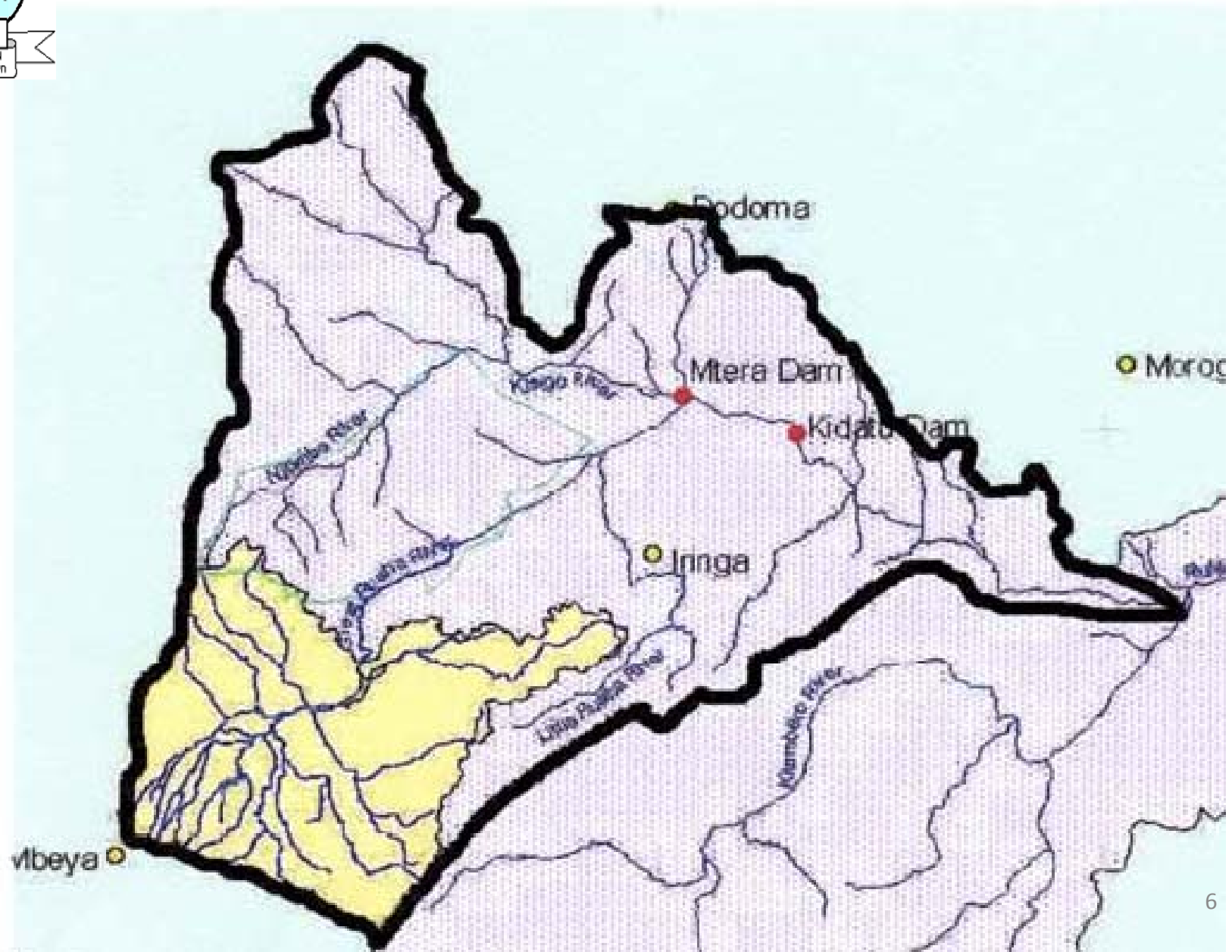
No	Subbasin	Catchment Area	% Of Drainage area	% Of Annual runoff
1	Great Ruaha	83,979	47	15
2	Kilombero	39,990	23	62
3	Luwegu	26,300	15	18
4	Rufiji	27,160	15	5
	Total	177,429	100	100

SMUWC PROJECT AS VIEWED ON THE WORLD MAP GEOGRAPHICALLY





The Great Ruaha River Catchment





Some Facts about the Basin

Rainfall

- Rainfall in the GRR sub-basin is extremely seasonal, highly localised and spatially varied.
- Two seasons, one rainy season (November to May) and one dry season (June to October).
- Mean annual rainfall for the highlands is ranges between 500 – 1600 mm



Facts ...

Runoff

- Runoff pattern is closely related to the rainfall pattern.
- The GRR starts rising in December with a peak in March-April.
- The River is regulated by two hydropower dams the Mtera and Kidatu.
- This has greatly altered the hydrology of the River downstream of the upper reservoir (Mtera) where the mean flow is about $140 \text{ m}^3/\text{s}$.



Facts ...

- The main tributaries of the Great Ruaha are Kimani, Mbarali, Great Ruaha, Ndembera, Chimala, Mkoji (in the South), Kisigo (in the North), Little Ruaha (in the South West), Lukosi and Yovi (in the east)Rivers.
- The river flows generally east wise into the Rufiji River and eventually into the Indian Ocean.



Facts

Groundwater

- Groundwater has not been studied extensively in the Great Ruaha sub-basin, however generally the GW potential is known to be extensive.
- There are a number of boreholes mainly for domestic water supply use.
- There are a few monitoring wells in the sub basin.

Water Quality

- Available data show that the chemical quality of surface water sources is good, salinity of surface water is low and hence the water is good for irrigation purposes.
- Bacteriologically, surface water sources are generally polluted.
- The quality varies between the seasons.
- There is limited data on sediment transport.

Facts ...

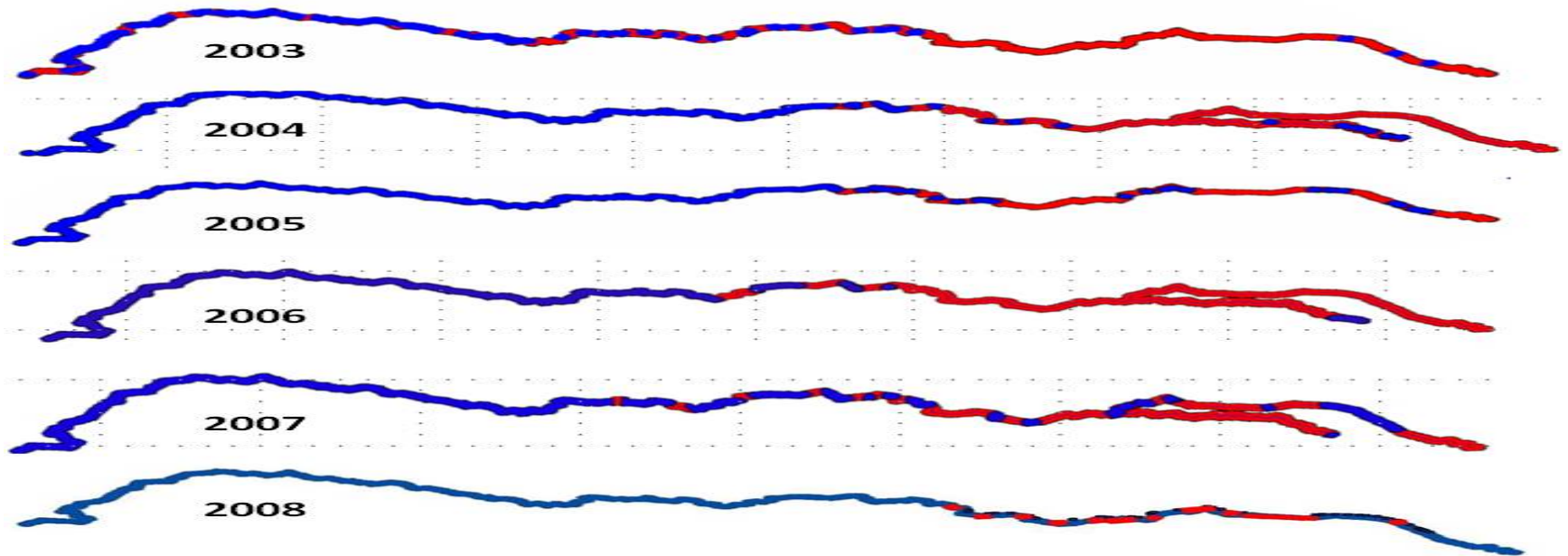


Studies have indicated that the Great Ruaha River flow regime has changed significantly with time.

- The changes in the river hydrology are dry-season changes, with dry season flows declining since the early 1970s.
- Nevertheless, the analysis of wet season flows for the Great Ruaha River show no long-term trend.
- Part of the Great Ruaha River, between the perennial swamp (*Ihefu*) and the stretch through the Ruaha National Park has been drying up since the dry season in 1993.
- The most common dry period is between September and December.
- but in some years the river dried even earlier and extended to March of the coming year.
- This declining and drying of the river impacts the biodiversity and other water users.

Facts: ...The Great Ruaha Restoration Results

DRY SEASON HABITAT 2003-8 (AREAS <1KM FROM SURFACE WATER)



■ Lost habitat
■ Remaining (but altered) habitat



**RUAHA
LANDSCAPE
PROGRAM**



Importance of the River

The Great Ruaha Catchment is very important for supplying water to GRR and to downstream users and uses. The major users and uses include:

- Mtera and Kidatu hydropower plants depend on the waters of the GRR (over 50% of the countries electricity is dependent on the GRR).
- Rural and urban domestic water supply;
- Agriculture (both rain fed and irrigated). Valley-bottom cultivation (Vinyungu) is widely practiced during the dry season in meeting the livelihood of the rural poor. Crops grown include paddy, maize, millet, cassava, sweet & round potatoes, beans, sugarcane, fruits and vegetables;



Importance ...

- Planted forests (e.g., Eucalyptus, pines) and natural vegetation (e.g., miombo woodlands, baobab trees, grass and bushes);
- Seasonal and permanent wetlands;
- Livestock grazing in the riverbanks, *Ihefu* and *Ifushiro* swamps;
- Fishing activities (in Mtera dam, the wetlands and rivers), brick making (along river banks);
- National Parks and Game Reserves (the Ruaha National Park, Udzungwa, Mikumi, Selous Game Reserve etc).



Upper Portion of the River
(Intensive Irrigated
Agriculture)



Livestock keeping in the
upper wetlands



GRR Flowing with water



Dry GRR



When the GRR is Dry (our Challenge)



Elephants digging for water when GRR is dry





Coping with the challenges

Coping initiatives include:

- Rational Allocation of water to cater for water scarcity (including efforts for restoration of dry season flows in the GRR)
- Assessment and monitoring of available water resources (hydrological stations including hydrometeorological and groundwater networks)
- Encouraging and development of integrated water resources management through establishment and capacity building of IWRM institutions.
- Encouraging and promoting research activities in the area.
- Using Policy and Legal Instruments
- The new National Water Policy is used as a tool



Conclusion

- The Rufiji Basin is facing many challenges
- Definitely like any other place in the world we are facing the realities of climate change and variability challenges.
- The Great Ruaha River is an important river in the economy of our country.
- There is need to understand the dynamics of all aspects of the basin characteristics in order to address ourselves to all emerging issues including those which are due to changes in weather.

- Thank you for your attention

