OVERVIEW OF WATER RESOURCES MANAGEMENT IN TANZANIA

BY:

DAVID MANYAMA

SENIOR HYDROGEOLOGIST

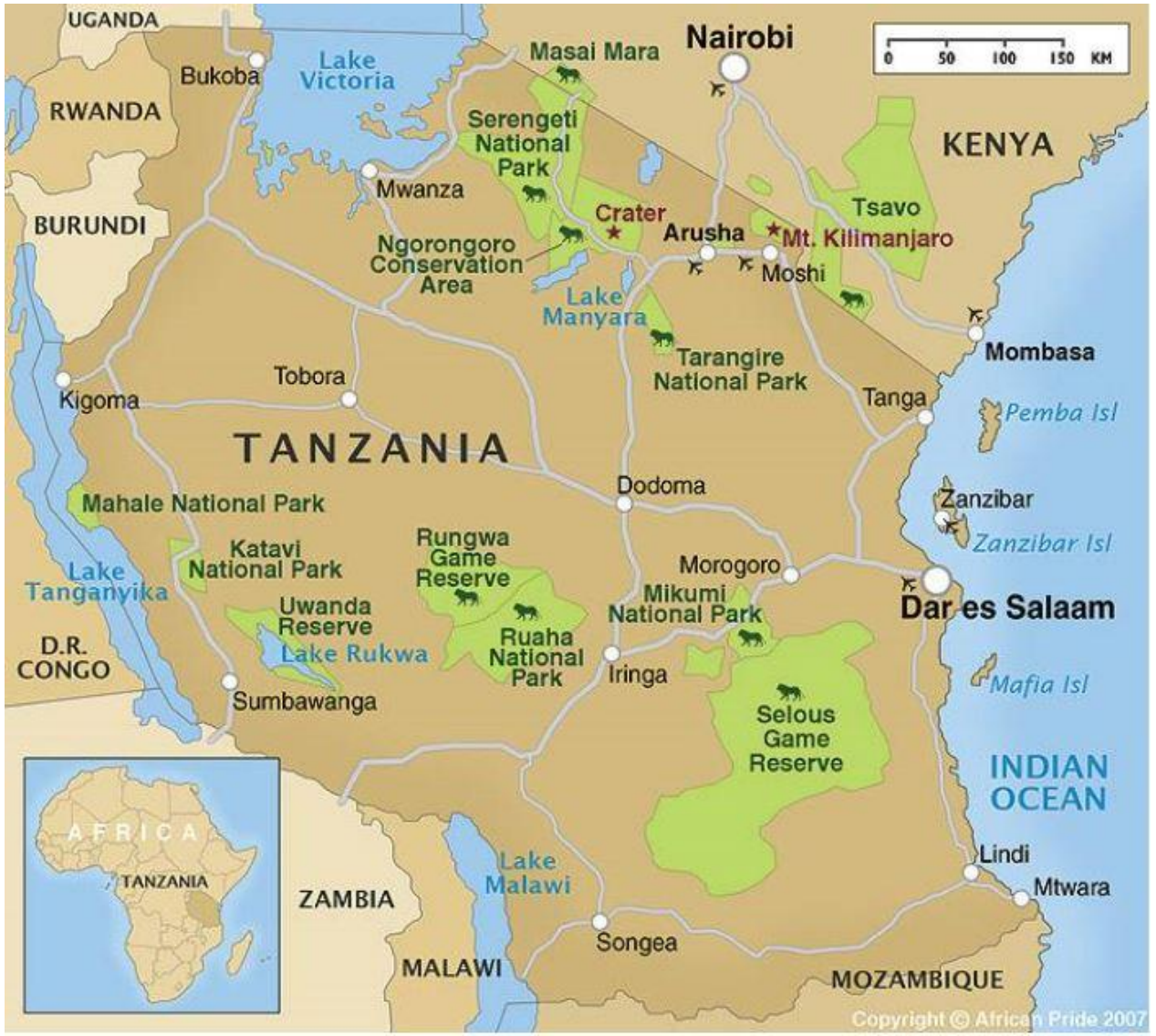
MINISTRY OF WATER

DODOMA

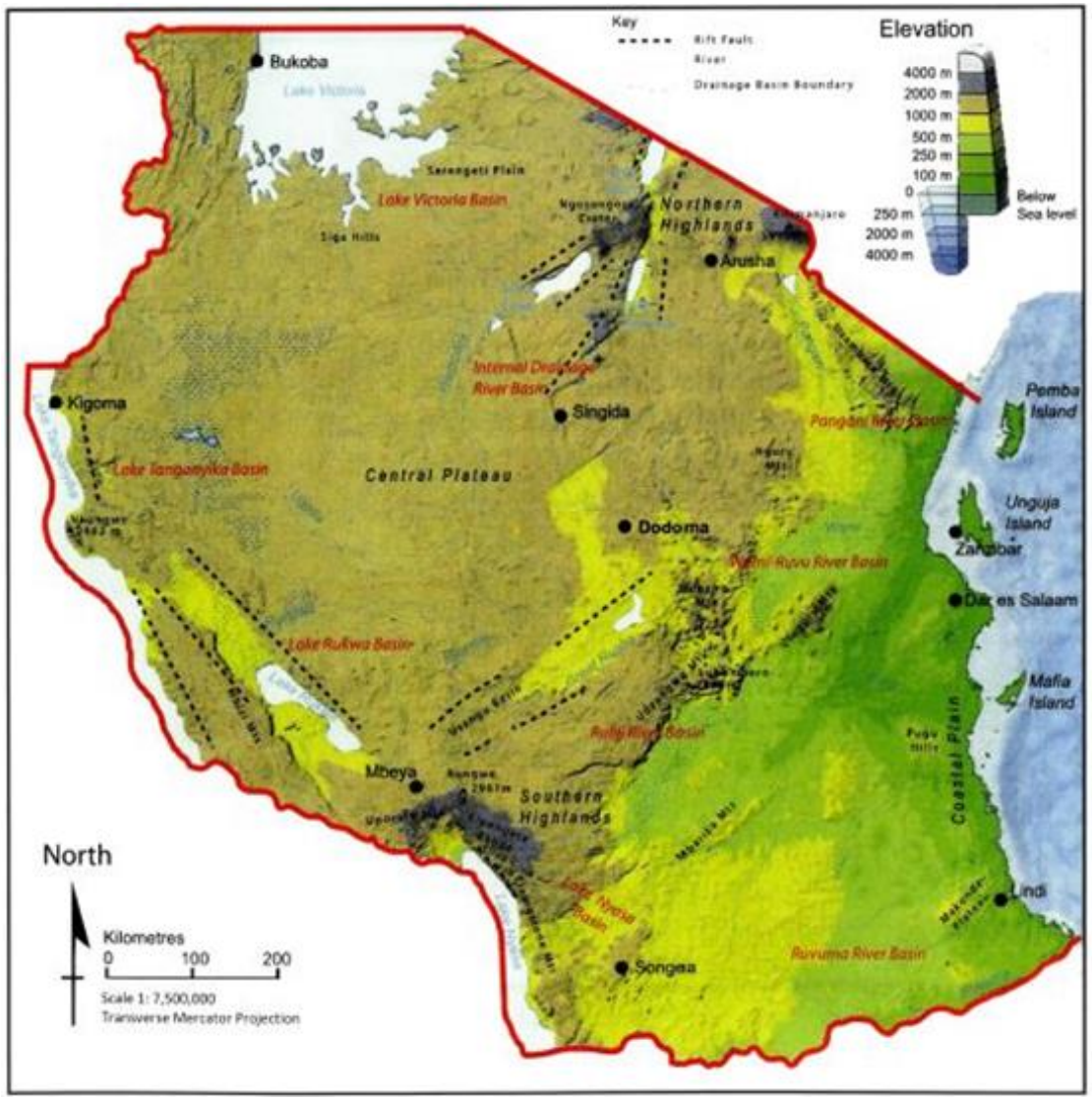
Outline

- General description of Country:
- Geography:
  - Physiography and climate:
  - Drainage:
  - Socio-economic context:
- Groundwater resources:
  - Hydrogeology:
  - Groundwater systems:
  - Aquifer yield, recharge and groundwater potential:
  - Groundwater quality:
- Groundwater development and utilization:
  - Groundwater abstraction:
  - Groundwater utilization:
- Institutional and legal framework:

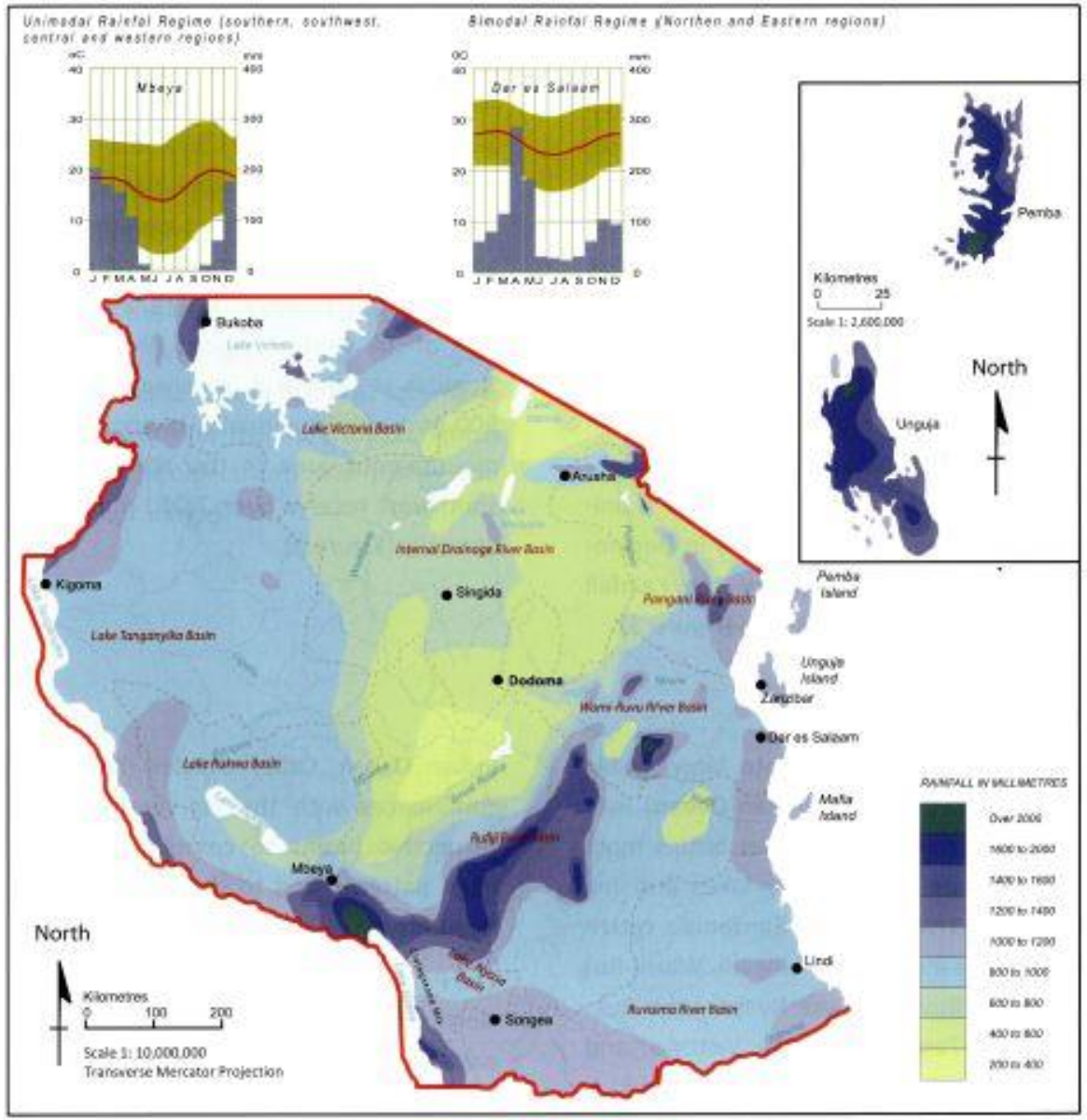
- Location: Longitudes 29°E to 41°E and Latitudes 1°S to 12°S
- Eight neighbouring countries
- Area = 947,300km^2
  - Land = 885,800 km^2
  - Water = 61,500km^2
  - National Parks = 57,365km^2
  - Game Reserves = 117,454km^2



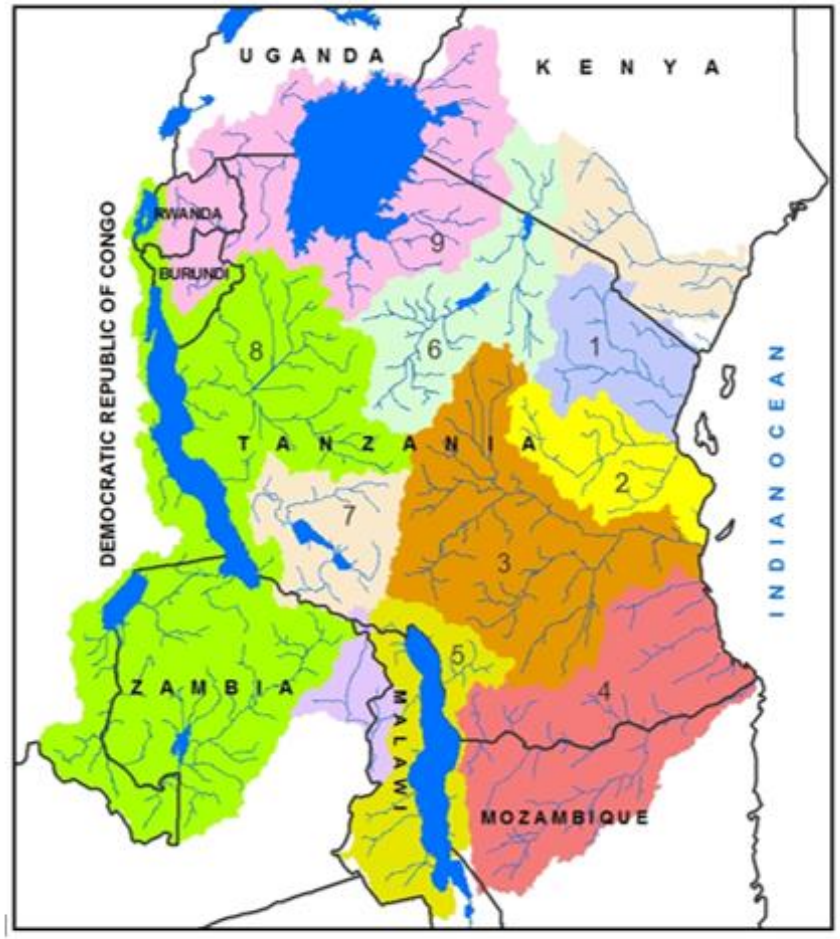
- Relief:
  - The islands and coastal plains to the east (1000m)
  - The inland central plateau (1,000-2,000m)
  - The Northern and Southern highlands (2,000 -5,895m)
  - Highest mountain, the Kilimanjaro
  - The Ngorongoro Crater
  - Large Lakes in Africa
  - The Serengeti National Park



- Climate: warm equatorial
  - Tropical to subtropical and arid to semiarid
  - Av. annual tem. range 32°C to 10°C
  - unimodal and bimodal rainfall regimes
  - Annual rainfall varies from 500 mm to 3,000mm
  - Av. Rainfall = 1,071mm



- Drainage:
  - Nine Basins, 7 Basins are Transboundary
  - Six trans-boundary Lakes,
  - Five trans-boundary Rivers,
  - Seven trans-boundary aquifers,
  - Drains into 3 of the Africa's River Basins (Congo, Nile and Zambezi)
  - Annual av. runoff = 128.29km^3/yr (12.67% of the Annual Av. Precipitation)



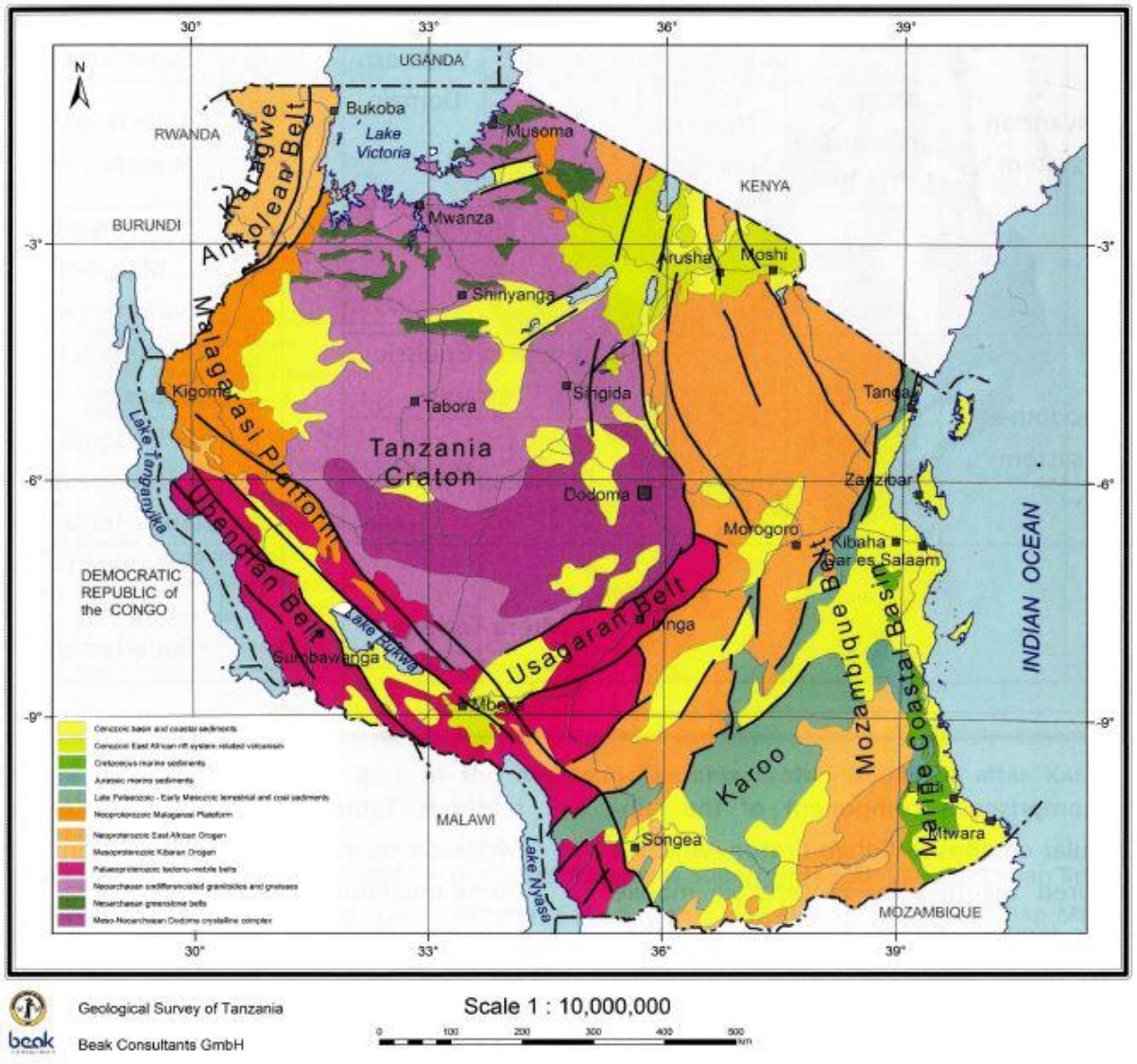
River and Lake Basins in Tanzania

Key:

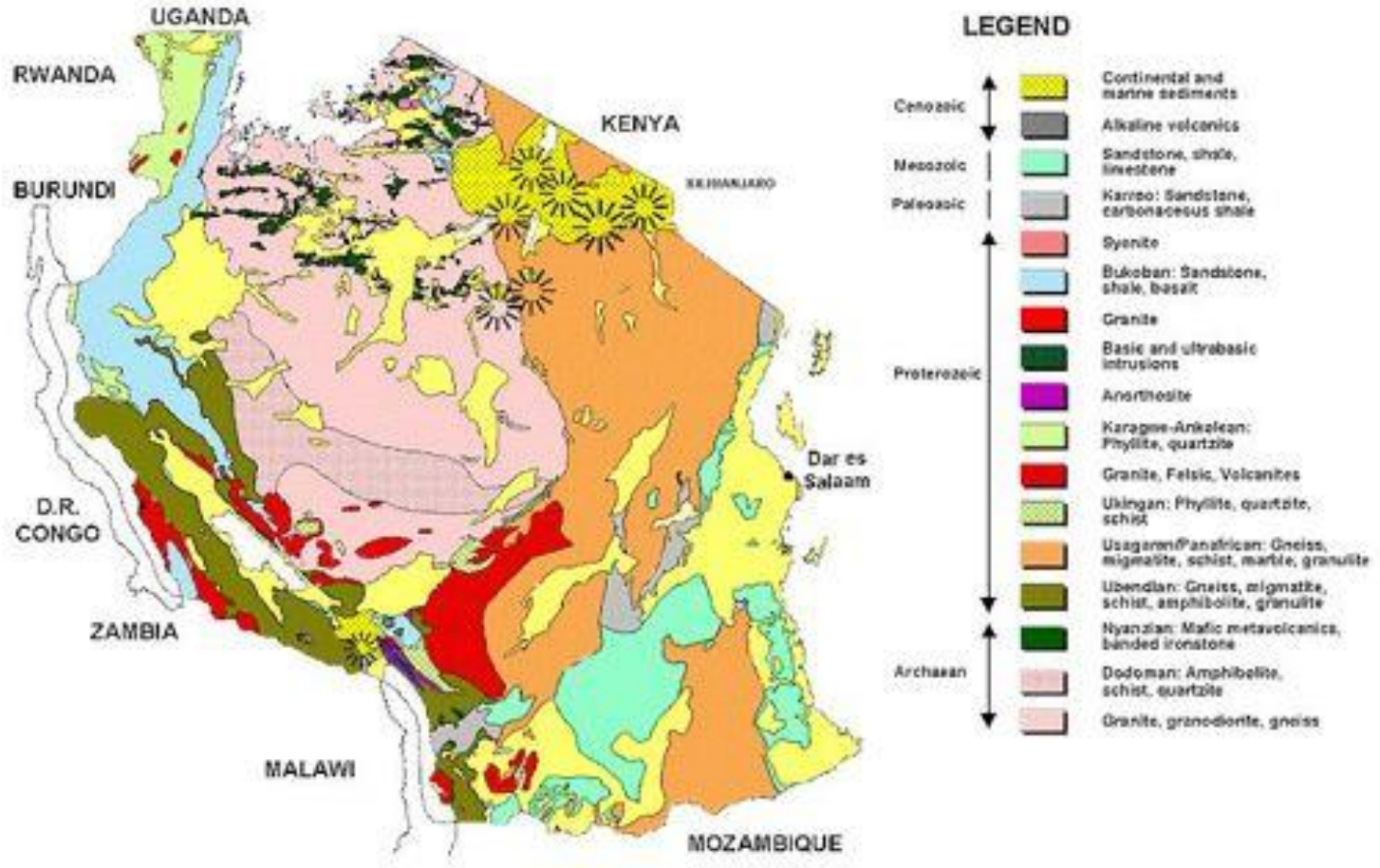
1: Pangani River Basin
2: Wami/Ruvu River Basin
3: Rufiji River Basin
4: Ruvuma and Southern Coast River Basin
5: Lake Nyasa Basin
6: Internal Drainage Basin
7: Lake Rukwa Basin
8: Lake Tanganyika Basin
9: Lake Victoria Basin

- Social-Economic:
  - Population = **55,890,747 (2019);** 27,356,189 are male and 28,534,558 are female,
  - About 69% resides in rural areas,
  - Average annual inter census growth rate and fertility rate = 3.1 and 5.5, respectively,
  - Average population density is about 60 persons per km^2,
  - Main economic activities are agriculture, tourism, mining, services and industry,
  - GDP growth =7.1% (2017),
  - Inflation rate = 3.3% (December, 2018)

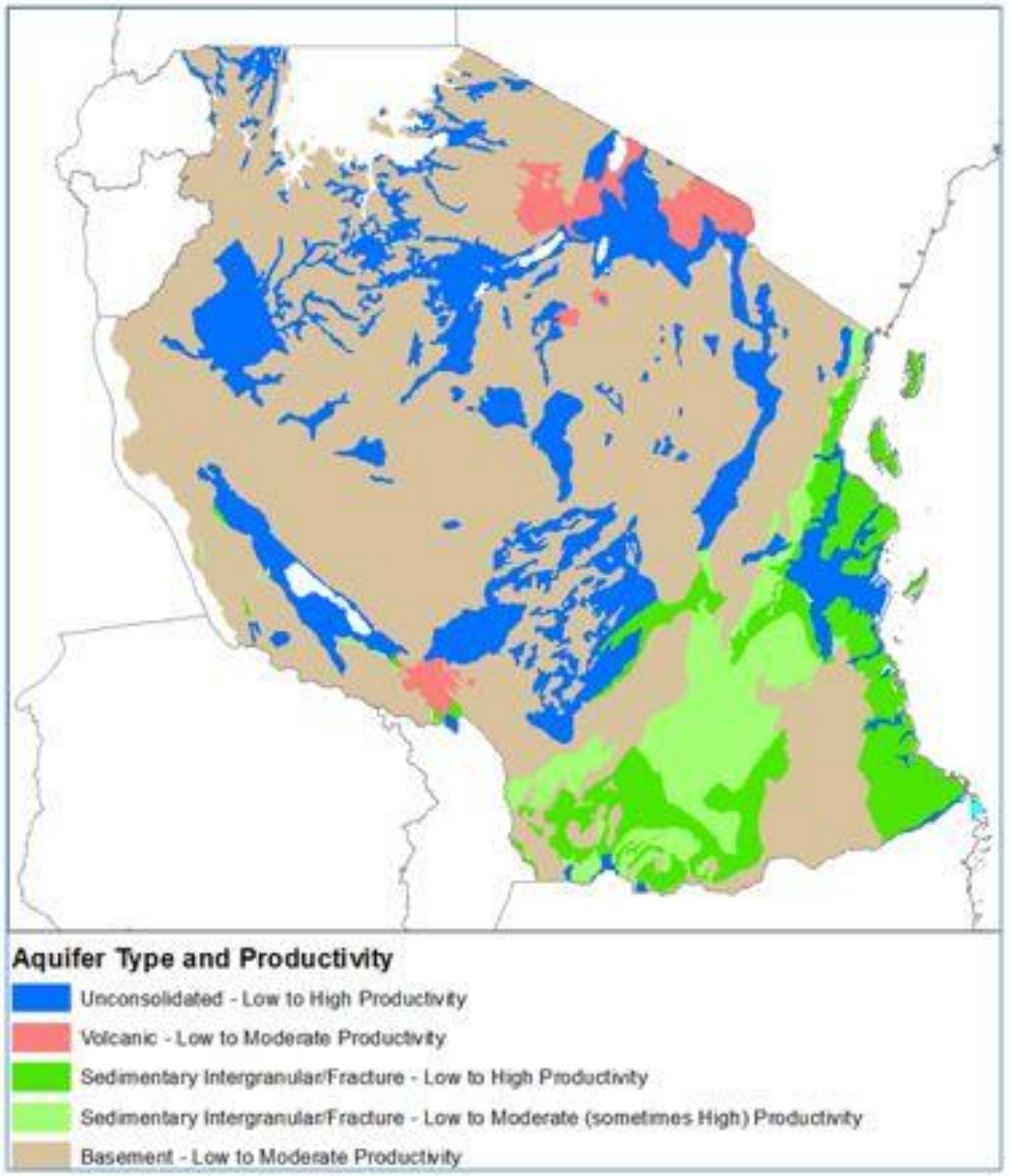
- Groundwater occurrence is governed by geology, climate, topography and vegetation cover.
- The geology of Tanzania is depicted by rocks of almost all types with varying age from Archaean to recent.



- Four groundwater systems:
  - Both natural and anthropogenic pollutions
  - Precambrian aquifers (medium to high yields; low pH, high salinity, medium to high EC and low TDS)
  - Palaeozoic aquifers (Karoo formations characterized by medium to low yields and good to moderate water quality)

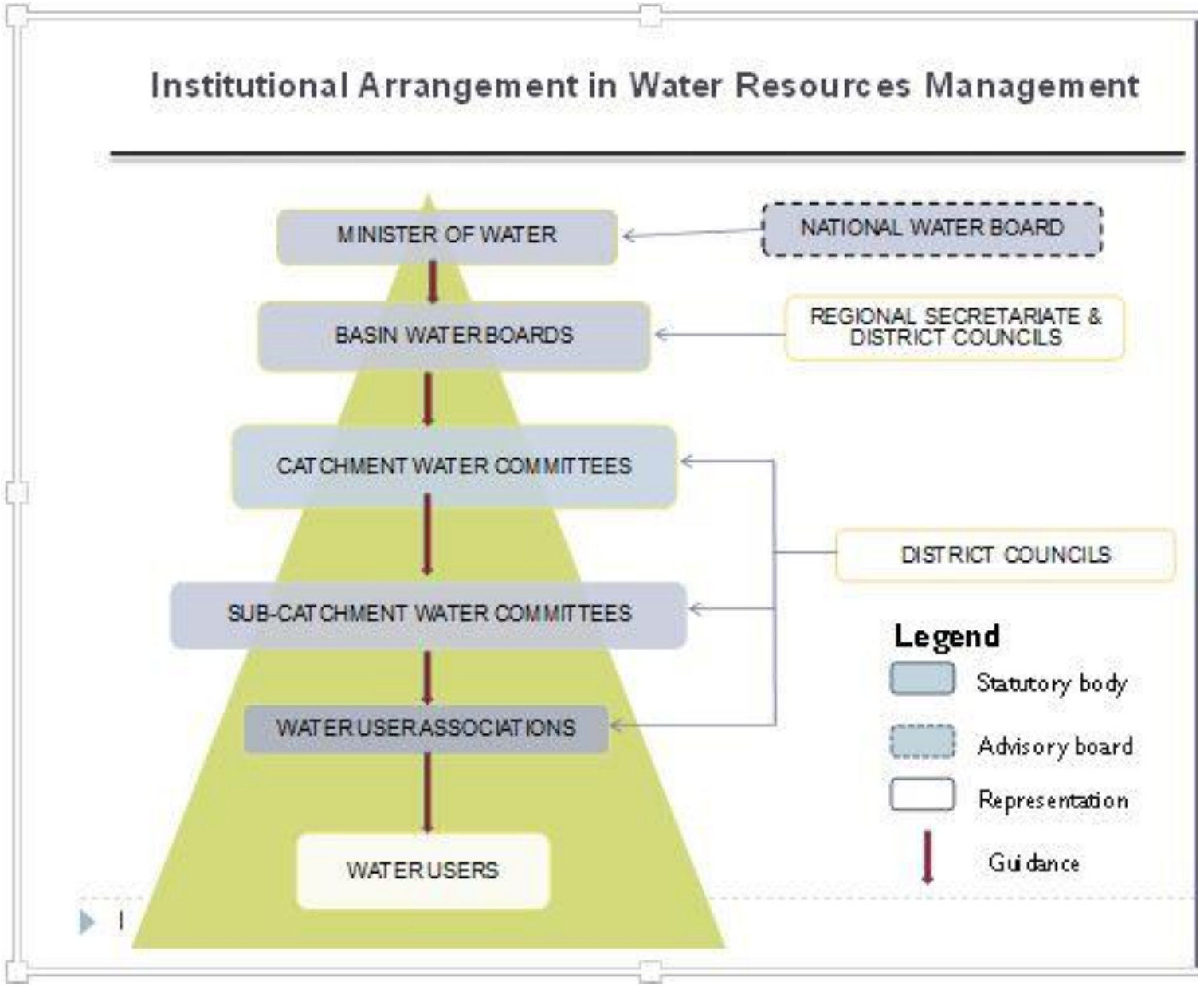


- Mesozoic aquifers (Jurassic: medium to low potential, high salinity (carbonates) and elevated pH values; Cretaceous: high to moderate potential, good water quality)
- Cenozoic aquifers (Low to high yields; poor to good water quality)
- Annual potential = 21.2 km^3
- Av. annual recharge = 66.59km^3 (6.58% of av. annual precipitation)



Institution Framework

- NAWAPO, 2002
- WRMA, 2009; Regulations and Guidelines
  - The Minister
  - DWR
  - National Water Board
  - Basin Water Boards
  - Catchment/Sub-catchment Water Committee
  - Water User Associations
  - USERS



Ahsanteni
Thank You
Merci
Namaste