

HUMAN SECURITY INITIATIVE.

NATURAL RESOURCES CONFLICT IN AFRICA: IS WATER REALLY THE NEW OIL?

INDIGENOUS COPING STRATEGIES TO WATER RESOURCES VARIATIONS IN THE LAKE VICTORIA BASIN

Donald Anthony Mwiturubani (Ph.D)
Senior Researcher – Environmental Security
Programme (ISS), Nairobi.

mwiturubani@yahoo.com,
amwiturubani@issafrica.org

INTRODUCTION

- ❖ Water is a scarce resource in the semi-arid climates
- ❖ The main source of water is rainfall which varies significantly over time and space hence affects availability and reliability of water for different uses
- ❖ Despite water scarcity people have been living in such climate/environment for centuries
- ❖ This study was conducted to understand how people use their Indigenous Knowledge Systems (IKS) to manage water resources, which is scarce in order to meet their water requirements

Understanding IKS

- The terms Indigenous Knowledge System (IKS), Local Knowledge System (LKS) and Traditional Environmental Knowledge System (TEKS) are used interchangeably
- IKS and LKS seem to be general, covering all sets of knowledge and techniques developed and used by local people around their specific socio-cultural and ecological conditions
- In many cases iKS are not written but passed from one generation to the next through narrations, observation, practices and experiences

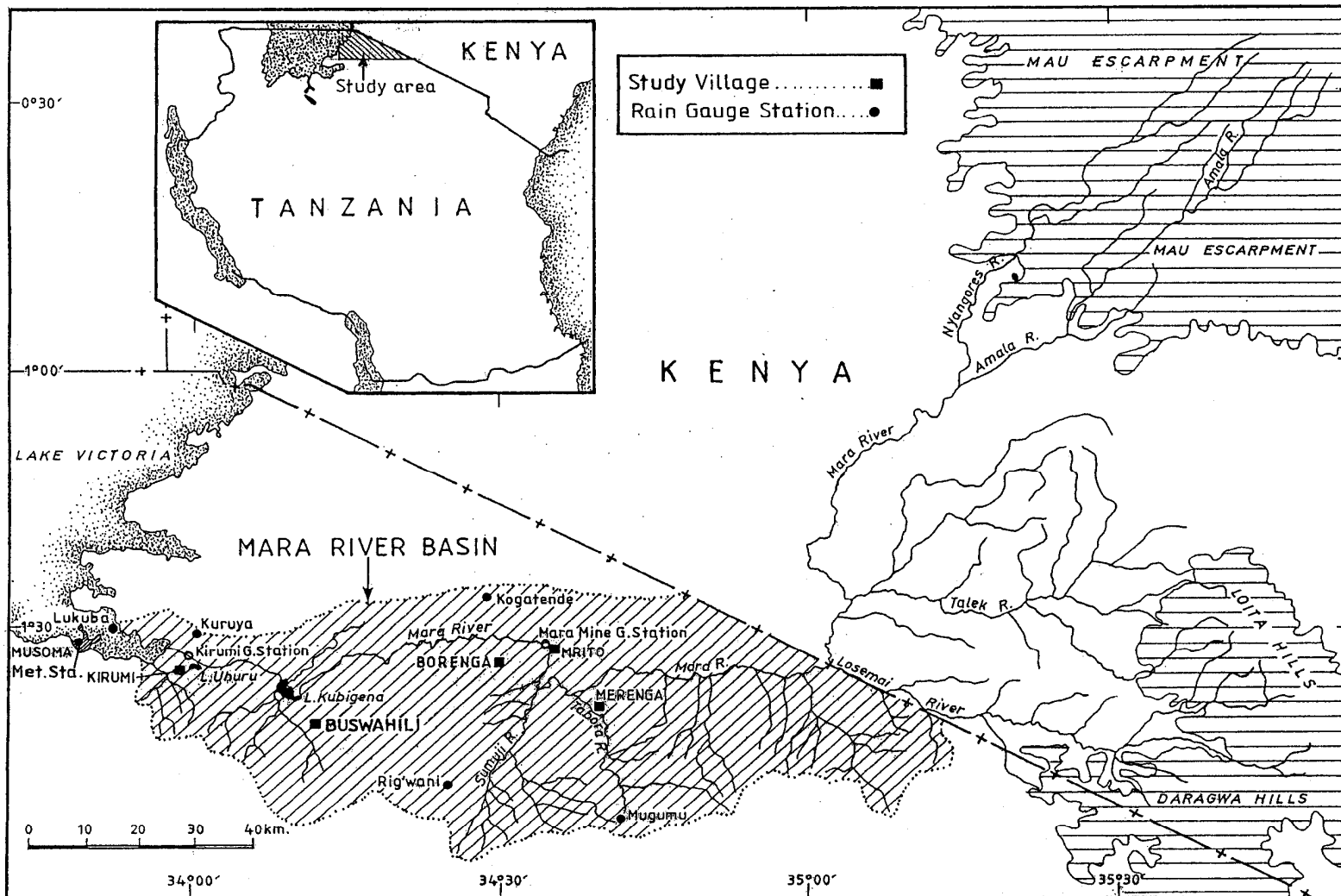
Research Questions

- How do IKS employed in rainfall forecast enable local people to understand rainfall changes and variations and hence planning for water use systems?
- To what extent are IKS effective in rainfall forecast rainfall changes and variations and to water resources management?
- Are there Components of IKS which can be incorporated in water policies and legislation formulation in Tanzania?

Methodology

- The study was carried in the Mara River Sub-Basin (MRSB).
- Methods of data collection include: interviews, focus group discussions, questionnaires, participatory mapping, participant observation, and pair-wise ranking

Mara River Sub-Basin – study area



Location of Tanzania in East Africa

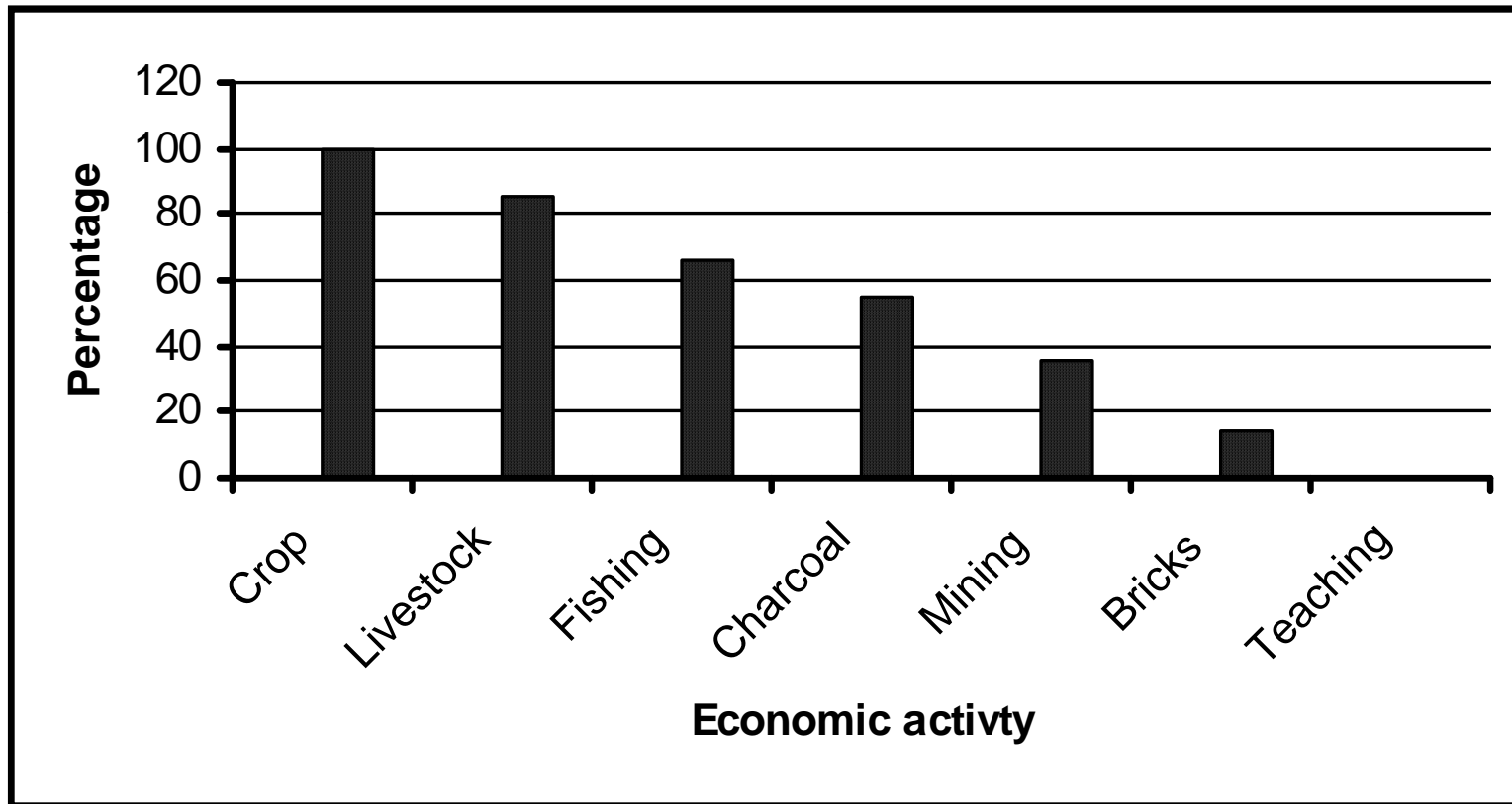


❖ Results

- The population in the study villages increased from 8634 in 1978 to 16427 in 2002 (47% increase)
- Population density is 109 people/sq km
- Population growth rate is 2.5 percent
- Average household is 7.3 compared to 5.5 at the national level
- High dependency ratio (112)
- 52.5% of the respondents had no formal education, 46.1% had attended primary schools and only 1.4% had secondary education

Results

❖ Main economic activities in the study area



❖ IKS on rainfall Changes and variations

- Each month is given the local name depending on the amount of rainfall that falls
- Months of planting and harvesting
- Type of crops grown eg. drought tolerant crops
- Nature of the landscape (flat, hilly, lowland) in which different types of crops are grown
- The amount of rainfall is described as low, moderate or high depending on how deep it wets the soil – dig using a hand hoe
- The main sources of IKS – taught by parents/grandparents and observation on signs of end or begin of rainfall (91.1%) and radio, television and extension officers (8.9%)

❖ IKS on water resource changes and variations

- Measuring the amount of water variability can be done in each specific rain season, between seasons, over a year or between years
- measurement is mainly qualitative through observation of different changes in crop production systems, vegetation and wild animal species (bio-climatic indicators) over time and space.
- These include wild animal behaviours and movements – wildebeest, crop harvests, water levels, natural springs, plant and grass species and wild fruits

Tools for rainfall forecast

- ❖ The main tools, which are used to forecast the onset and end of rainfall are in seven major categories:
 - elements of weather – wind systems (the direction blowing to or from), whirling winds (direction of the movements), temperature (night, high or low) moisture & dew (increase or decrease)
 - wild animal behaviours – hyena, wild dog (crying near/away from settlements)
 - insects behaviours – red ants (increase movements) white ants (build anthills)

Tools cont....

- astronomy science – Stars (group together, direction), crescent moon (mist signs), lightning (morning, direction)
- water bodies characteristics – water levels (increase or decrease during dry season)
- birds behaviours – swallows (movements), pigeon & owl (frequent singing)
- Fishing – fishes (increase or decrease catches)
- one tool and its indicator(s) is not enough to forecast the onset and/or end of rainfall, but a combination of tools and their indicators.

❖ Knowledge to water policies and legislation

- Tanzania is governed by 2002 national water policy
- Water Utilisation (Control and Regulation) Act No. 42 of 1974 and its subsequent Amendments
- Under Amendment Act No. 10 of 1981 River Basin Water Office (RBWO) is responsible to control and allocate water resources – granting use rights to different users
- Local people have either no or limited knowledge about the water policies and legislation (98.4% women and 88.2% men) – written in English, poor dissemination strategies

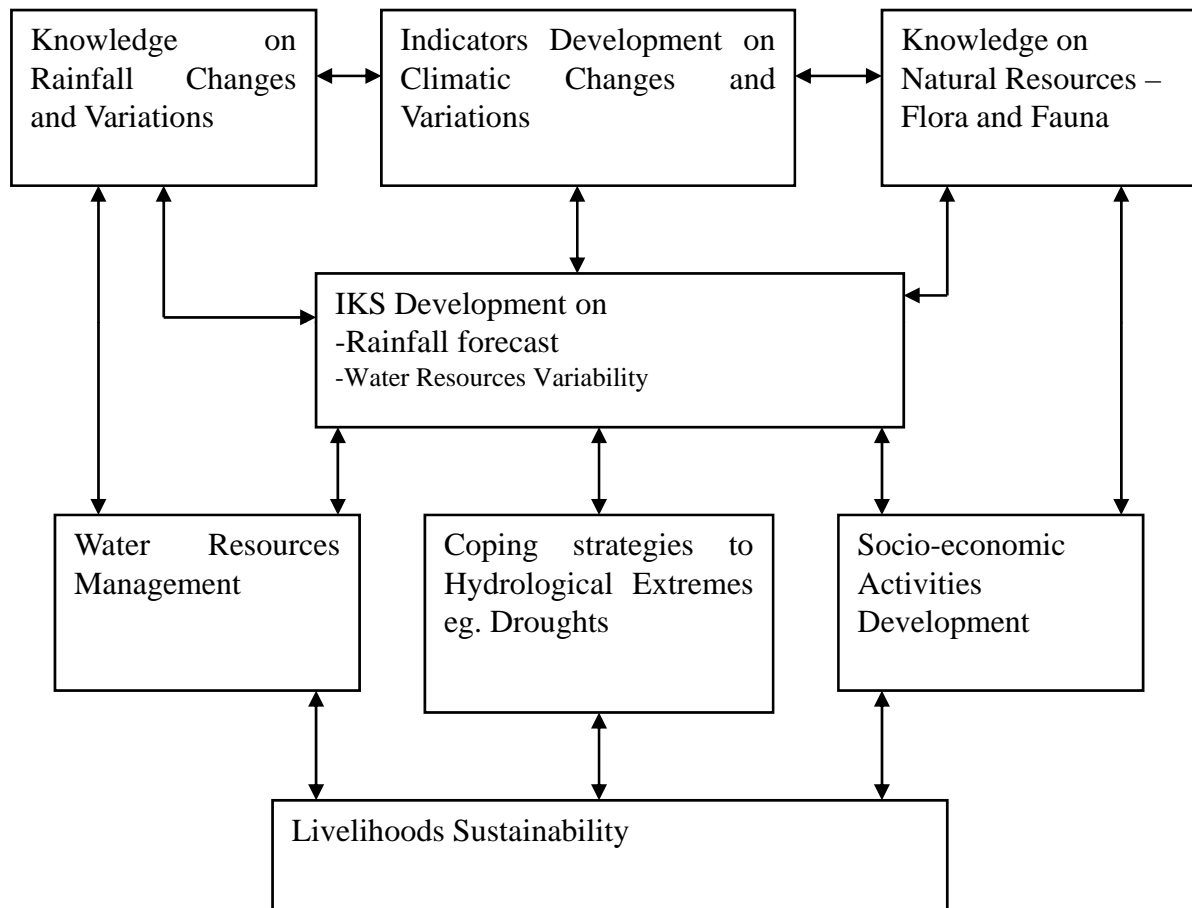
IKS on water resources management

- Tribal religious leaders set rules and mechanisms to comply with the rules on water management
- Tribal spiritual leaders are the local experts in several aspects, of the society and surrounding environment, such as local medicines, knowledge of environmental changes in their area and location of different resources.
- Tribal spiritual leaders play the key role in governing and controlling all cultural practices and utilisation of some specific resources, particularly forests and water at certain point and time
- Practice spiritual/cultural activities around and near water sources and within forests hence limit and/or regulate accessibility to the resources

Coping Strategies

- ❖ **Coping strategies on the changes and variations of rainfall and water resources include:**
 - **Rain making – apply traditional medicine; high knowledge of signs and indicators about onset and end of rainfall**
 - **Rainwater harvesting – tap from the roofs, collect in the constructed and natural basins**
 - **Plant drought-tolerant crops such as cassava – require less moisture**
 - **Cultivation techniques – moisture preservation**
 - **Settlement patterns – uplands/hills, flat land & lowland**
 - **Cultivation seasons – supplementary seasons**
 - **Cultivation patterns – highlands and lowlands cultivation**

IKS development on climatic changes and variations for livelihood sustainability



Challenges to IKS

- Commercialization of natural resources – disrupt local systems of access to and use of resources
- Rapid population growth mainly due to immigration
- Urbanization – people with different socio-cultural and economic background
- Transboundary resources and problems – cross border catchments, climate change

Conclusion

- Rainfall changes and variations determine the ways local people utilise water resources in the study area
- Local people poses tools and indicators, which are effective in understanding rainfall changes and variations and hence water resources management
- The tools and indicators employed are specific and detailed describing when certain hydrological conditions, are expected and therefore prepare themselves
- Local people not only have limited access to MEKS based tools and data on understanding rainfall and water resources changes and variations, but also have no appropriate technology to use them
- Tribal spiritual leaders set rules and regulation to govern the utilisation of natural resources including water resources and Local people adhere mostly to these rules and regulations
- These informal institutions however are not backed by legislation.

Recommendations cont.....

- Policy formulation procedures be reviewed to enable local people actively participate during the formulation of water policies and legislation in order to take on board their views, perceptions, needs and knowledge
- Clear guidelines and mechanisms be put in place to disseminate the contents of the policies and legislation to local population particularly those living in the rural settings
- Since informal institutions are equally important in sustainable water resources management in the study area, there is a need to have them backed by policies and laws
- Sector specific policies be reviewed to include issues of climatic change and variations in the utilisation of natural resources both on spatial and temporal scales.