

Alternative Approach to Objectively Define the Equitable Utilization Concepts of the UN Water Convention: The Case of the Nile Basin

Semu Moges (Ph.D., P.E.)

**Consultant & University of Connecticut
(UCONN)**

*2020 International Conference on the Nile and Grand Ethiopian Renaissance
Dam: Science, Conflict Resolution and Cooperation, August 20-21, 2020,
Florida International University, Miami, FL USA (Virtual)*

Table of Content

1. The concept of Equitable Utilization and Benefit sharing of the Shared Water Resources
2. Approach/Methodology
3. *Assessment of water for basic human needs: Water For Food Basic Food Needs*
4. *Preliminary results at 2015*
5. *Assessment of the Non-Reserved (Economic) Water Resources*
6. *Challenges to the application of the Methodology*
7. Conclusion and Recommendation

1. The concept of Equitable Utilization and Benefit sharing of the Shared Water Resources

- ***Equitable Utilization:*** It is the right of all Individuals living within countries of shared Water Resources to be entitled for basic human needs equally
- ***Benefit Sharing:*** It is the right of riparian countries to benefit from the shared water resources for economic development equitably
- **NBI Vision also incorporates such terms**
 - *“To achieve sustainable socio-economic development through **equitable utilization of**, and **benefit from**, the **common** Nile Basin Water Resources”*

1. What does this mean?

- Does it mean equitable allocation of the water resources to the riparian countries or equitable sharing of the benefits derived from the water resource?
- How does this be achieved?
- How can it be quantified?
- This research experimental and tries to indicate objective quantification of these questions

2. Approach/Methodology

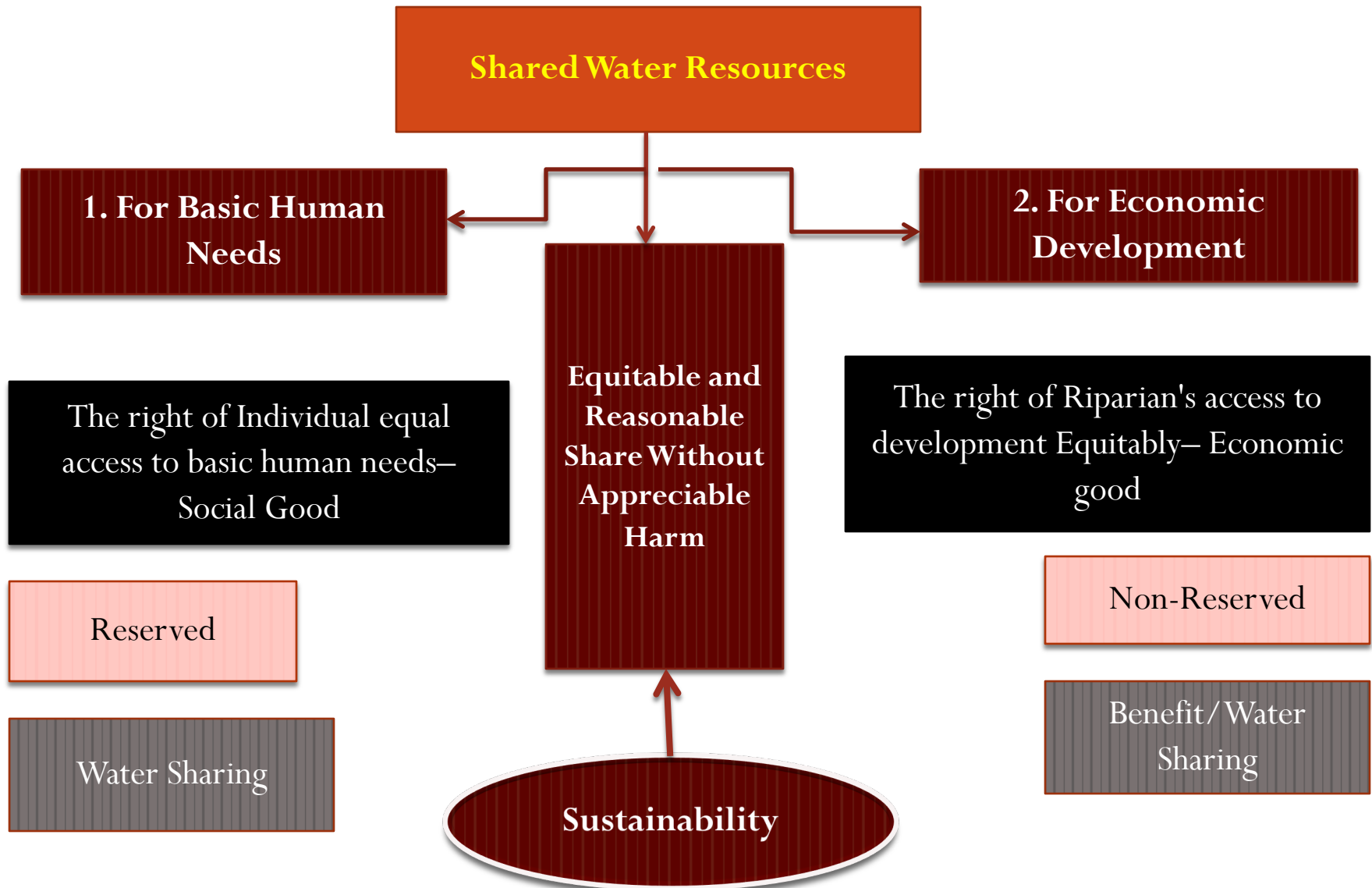
1. Principle:

- Based on the UN Convention on the Law of the Non-Navigational Use of International Watercourses (1997)
- To provide a framework for negotiations between countries sharing an international water resource.
- One of the convention defines the obligation

- The right to reasonable and equitable use / share as co-equal criteria for the allocation of water between riparian countries

- Without causing appreciable harm to Watercourse States

2. Operationalizing the approach



2. Implementation of the Approach

1. 2015 Baseline Population* (Nile Basin part of Population)

Year	Ethiopia	Sudan	Rwanda	Burundi	Egypt	DRC	Uganda	Tanzania	Eritrea	Kenya
2015	35.7	32.4	5.2	6.3	71.7	3.5	28.2	8.4	1.6	14.0

2. Assessment of the basic water needs of each riparian countries.

- 1.1 Water requirement to fulfill the minimum food/calorie requirement
- 1.2 Requirement for Domestic Water Supply
- 1.3 Requirement for Livestock production
- 1.4 Requirement for Basin Industrial goods

3. Separating the **Reserved (social)** and **Non reserved (economic)** part of the shared water resources

**In all the slides Sudan = (South Sudan + The Sudan)*

3. Assessment of water for basic human needs:

Water For Food Basic Food Needs

- From the World Bank policy study from the year 1986:
 - *Food security is access by all people at all times to enough food for an active, healthy life.*
- UN World Food Council, 1988, has a more general definition:
 - *Adequate food available to all people on a regular basis*
- Reardon and Matlon, 1989, propose a limit or a value for a measurement of food insecurity:
 - *Consumption of less than 80% of WHO average required daily caloric intake.*
- UNICED, 1990, points out the meaning of the sustainability:
 - *The assurance of food to meet needs throughout every season of the year.*
- FAO, 1998,
 - *"The human right to adequate food and freedom from hunger"-*
- *Therefore, the minimum per capita calorie requirement was considered as the basic requirement — 2700cal/cap/day*

*3. Assessment of water for basic human needs: **Water For Food Basic Food Needs***

- According to IWMI (2004) water required to produce 1 kg of cereals food item is in the range of 0.4 to 3 m³ (1 kg maize contains 3650 calories)
- Using this concept and taking 2700 cal as minimum acceptable level of per capital calorie supply for each country, the required water for food security for each respective basin countries is estimated based on this consideration
- Note that some countries have per capita calorie above this value,

3. Assessment of water for basic human needs: *Domestic Water Supply*

- The quantity of water required for domestic purposes can be divided as:
 - i) Drinking
 - ii) cooking and
 - iii) bathing
- According to Rangwala (2000)
 - World's average urban water consumption per capital is about 150 liters per day or about 55m³ per year
 - the world's average rural consumption per capital is only 50 liters per day and about 18m³ per year.
- Using this concept the basin population is divided into Urban and Rural and Domestic water estimated

3. Assessment of water for basic human needs: *Water Requirement for Livestock*

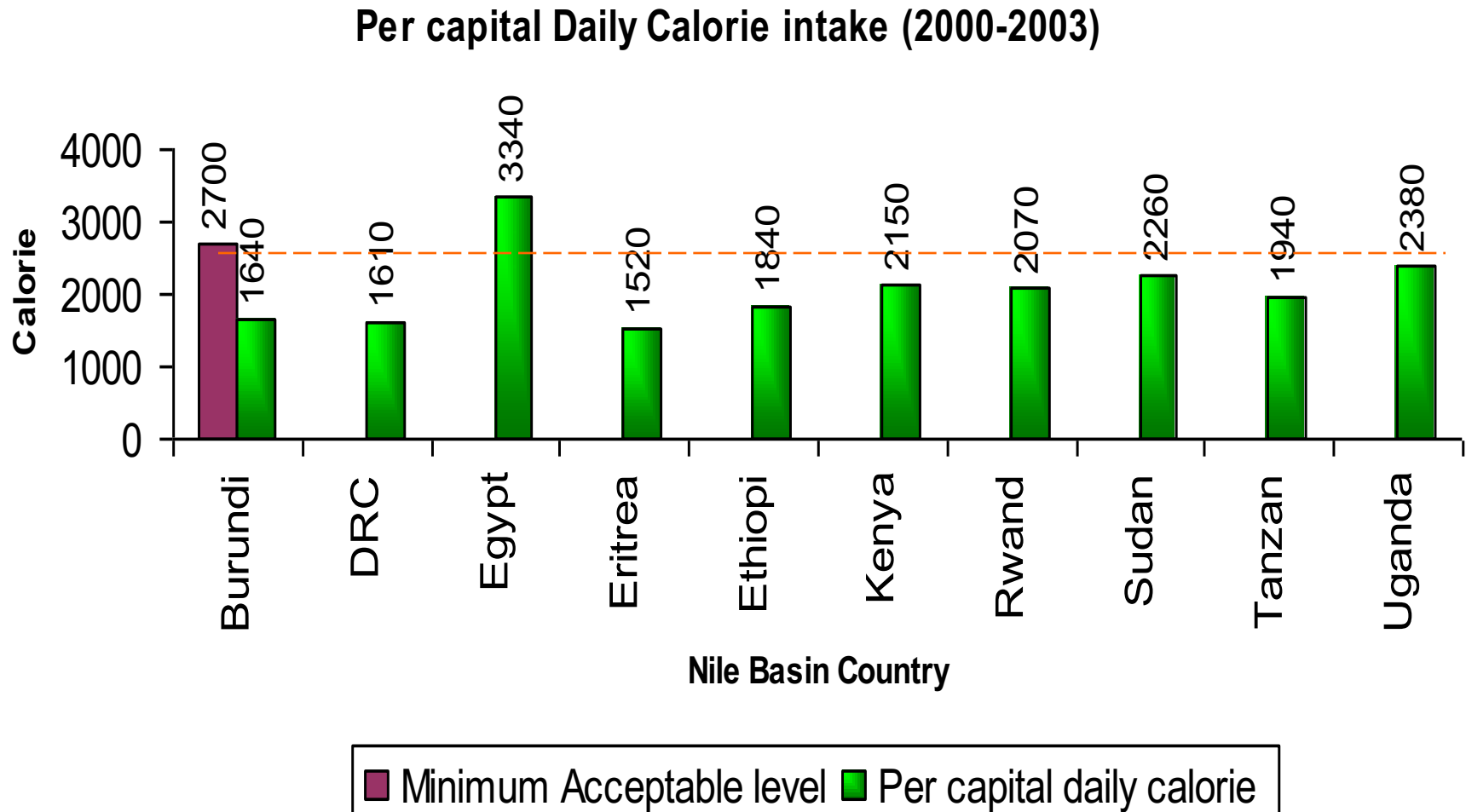
- More than 58 million tropical livestock units (TLU) comprising cattle, sheep, goats, camels, horses, donkeys, pigs and poultry occupy the Nile Basin (IWMI, 2006)
 - *One TLU equals 250kg of live animal weight*
 - *About 450 m³ of water is required annually to produce feed to maintain one TLU*
- Feed production to maintain these animals requires about 26 billion m³/year of water

3. Assessment of water for basic human needs: *Industrial Water Requirement*

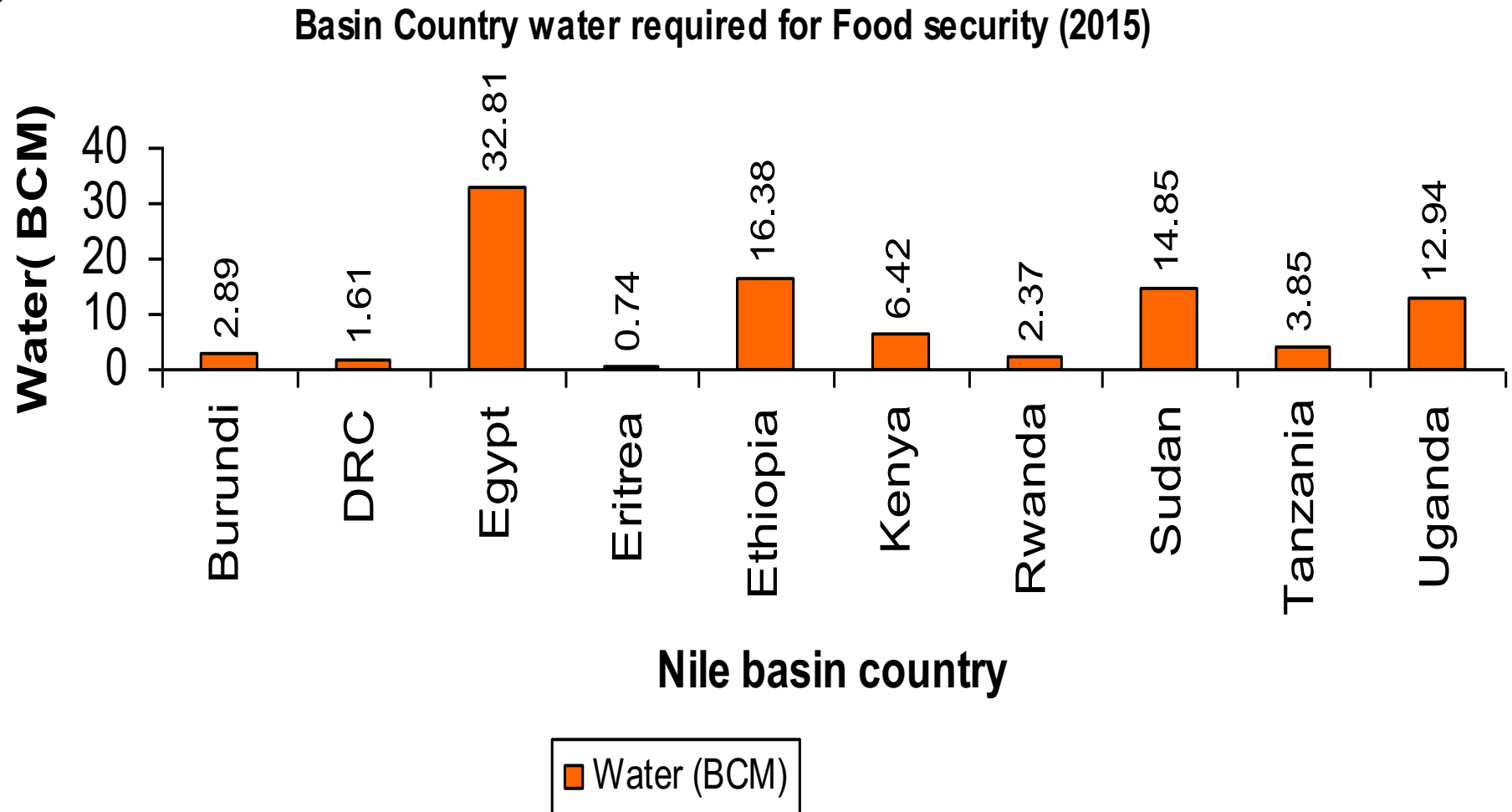
- Although industries considered as economical benefit, the basin population needs basic industrial products for their daily consumption and ingredients for cooking their food
 - For such situation moderate factories needs 50 liters per kg of their product (Rangwala 2000).
 - Using the concept of Rangwala, water for basic industrial use of the basin country estimated and presented

4. Preliminary results at 2015: *Food Requirement*

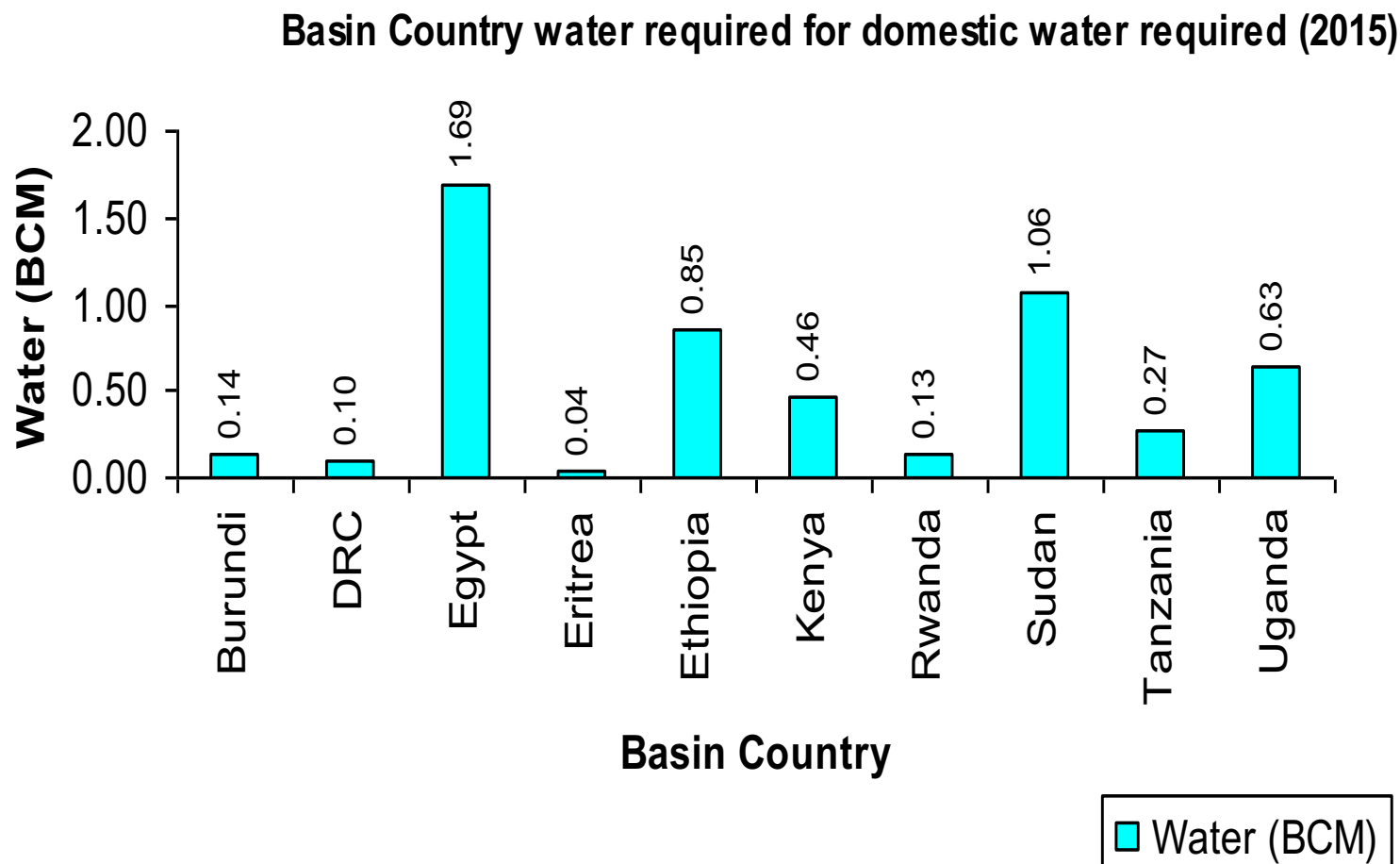
Minimum Per capita Calorie requirement



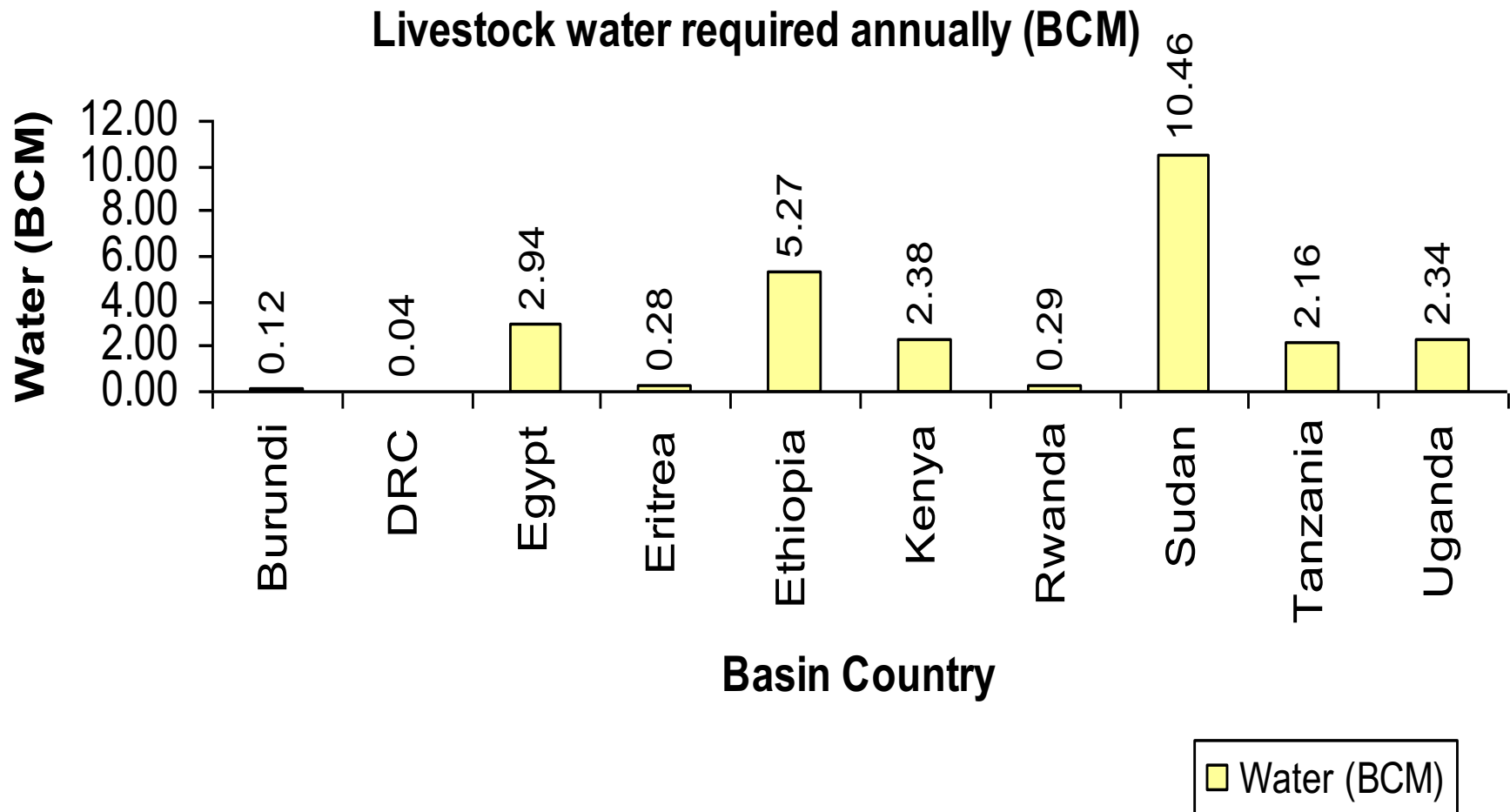
4. Preliminary results at 2015: *Water For Food* *Basic Food Needs*



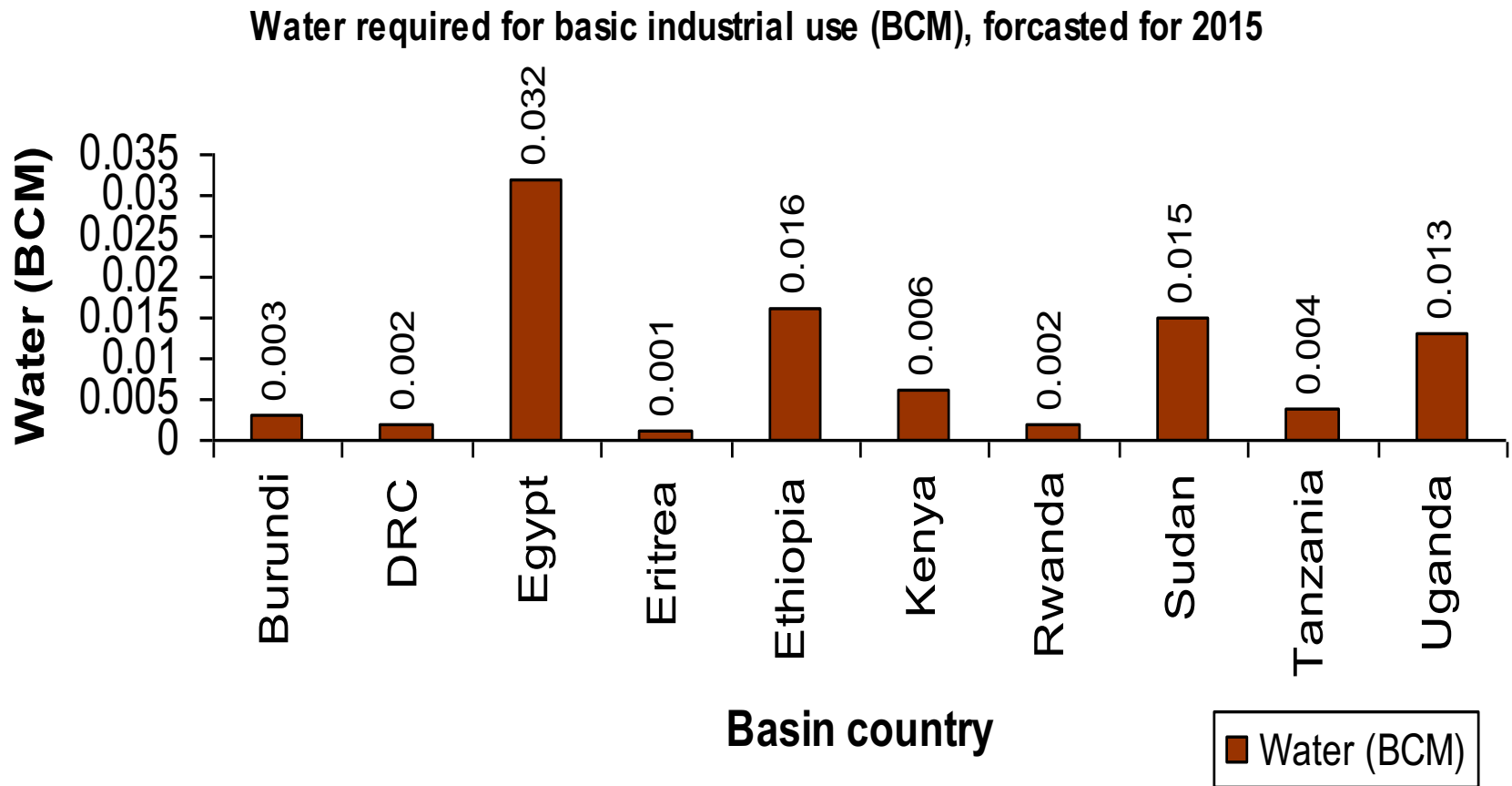
4. Preliminary results at 2015: *Basic water supply for Urban & Rural*



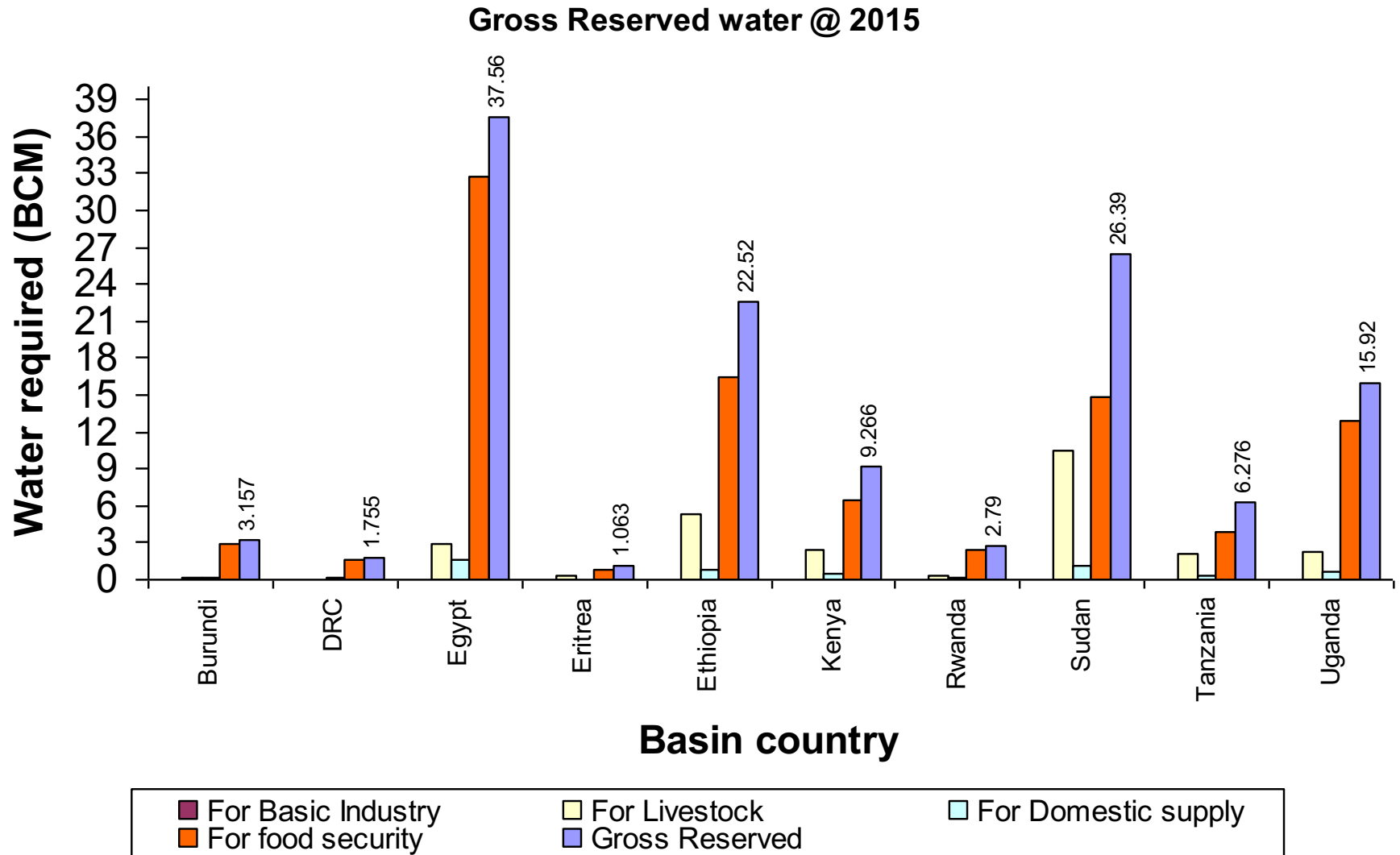
4. Preliminary results at 2015: *Water Requirement for Livestock*



4. Preliminary results at 2015: *Industrial Water Requirement*



4. Preliminary results at 2015: *Total Water required for Basic Human Needs*



5. Assessment of the Non-Reserved (Economic) Water Resources

- The water remaining after fulfilling basin populations' basic human needs is the **Non-Reserved Water (Economic water)**
- This water is available for economic development for riparian countries equitably on the basis criteria developed by UN convention on International courses

6. Challenges and limitations to the application of the Methodology

- Should we use the total country or basin part of the population for accounting the resources and estimating demands?
- The methodology is independent of the water supply and the current water use status
- Human rights based water sharing analysis is static against the changing nature of the water demand and supply

Concluding Remarks and Recommendation

- *Objective based quantification* needs to be the guiding principle for water sharing or benefit sharing agreement in the Nile basin
- *Human right based* analysis provides insight into the larger issue of equitable and reasonable water sharing issues in the Nile basin
- Objective definition of the *UN criteria* for equitable water sharing (UN, 1997) provides a better approach as the criteria embeds both *water supply* and *demand* elements but it still remains subjective and can be objectively defined.
- There is no one method that resolves all the needs, interests and positions of the Nile basin for equitable and reasonable water utilization
- *Continued transparent and responsible, institutionalized engagement is the way for future Nile basin cooperation and building hydro-solidarity*



THANK YOU