



Valuing Water in Tanzania

(Re)assessing the Contribution of Water to the National Economy

Objectives of the Study

- To conduct a study that focuses on the monetary value of water in a limited number of economic sectors
- To identify whether improvements could be made to the cost and benefit sharing structures
- To spark a multi-stakeholder conversation around the need to revalue water

UNITED REPUBLIC OF TANZANIA
MINISTRY OF WATER

Tel: +255 (0) 26 2322602

Website: www.maji.go.tz
Email: psmw@maji.go.tz

When reply please quote:
Ref. No. AB. 30/199/02



Government City,
Maji Street,
P. O. Box. 456,
DODOMA.

11 January, 2022

The Executive Director,
Tanzania Water Partnership (TWP),
P.O Box 32334,
DAR ES SALAAM.

**RE: SUPPORTING THE MINISTRY OF WATER IN ESTABLISHING THE
VALUE OF WATER IN TANZANIA**

Kindly refer the heading above.

2. The Ministry of Water continues to appreciate Tanzania Water Partnership collaborative efforts in support of the Water Sector. We value your institutional expertise as well as your linkages with regional and global partners in water resources management and climate resilient.
3. In recognition of the theme for 2022 World Water Week being **Seeing the unseen: The value of water**, and the desire by Ministry of Water to establish the contribution of water resources in the country's economy, we would wish to request your support in drafting a concept note on establishing the value of water in Tanzania.
4. In this regard, we would appreciate your support in developing a concept and at the end preparation of the same Report. We kindly request you, to indicate your availability so that we can arrange for a meeting to discuss our initial thoughts.
5. Thank you for your continued cooperation.

A handwritten signature in black ink, appearing to read 'George V. Lugomela'.

Dr. George V. Lugomela
For: PERMANENT SECRETARY

About the Study

It was developed through the Support Programme, upon request of the Ministry of Water, Tanzania

It was only intended to focus on the economic valuation of water

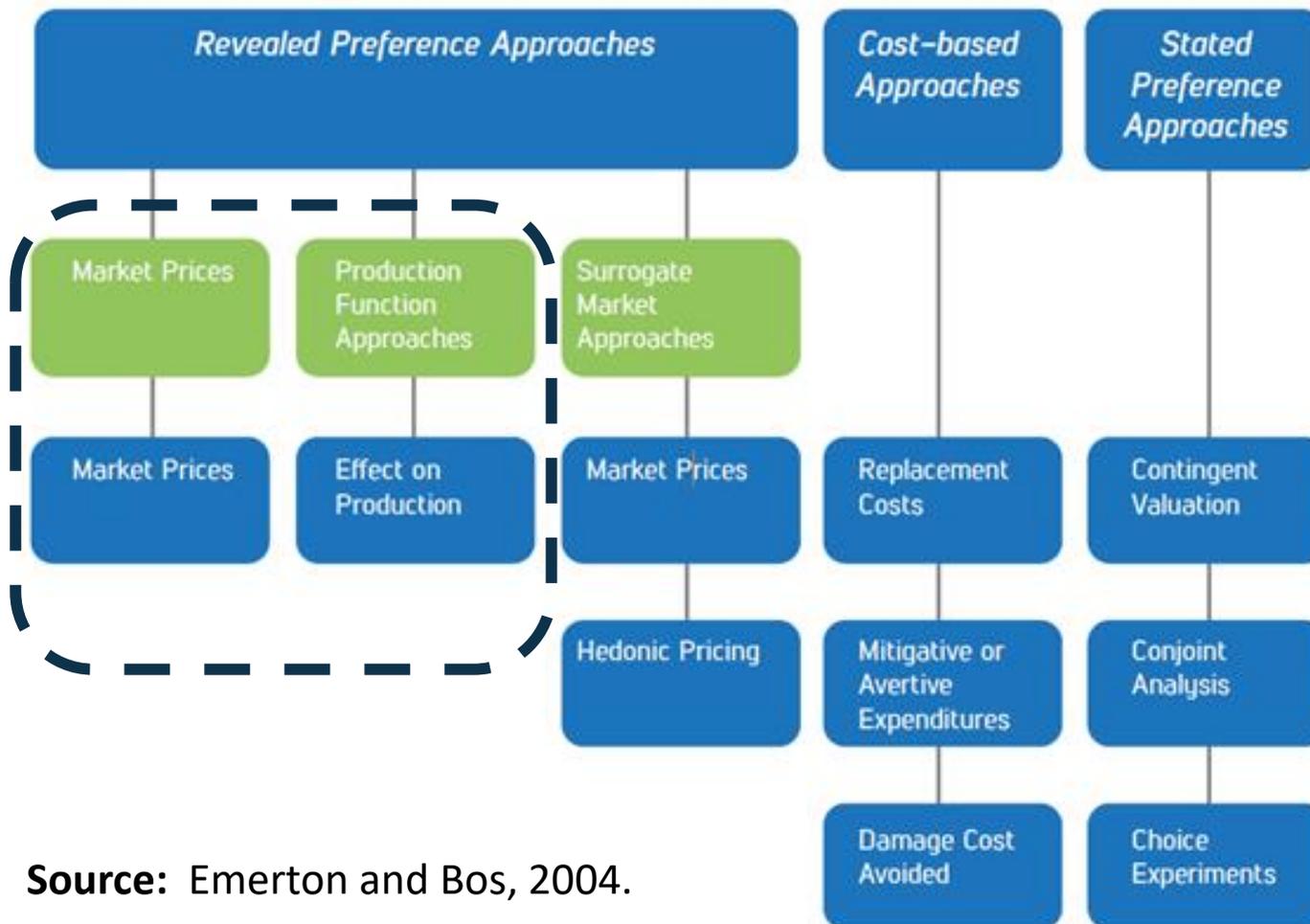
It was developed only using secondary sources, with data limitations

The study focuses on 3 sectors: Agriculture, Manufacturing and Mining

It was meant as a conversation starter more than a conclusive end-product

Methodological Approach

Environmental techniques for water valuation

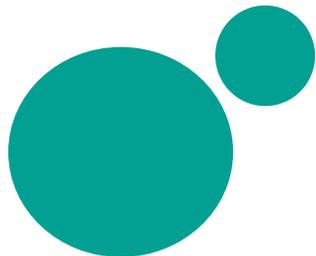


Source: Emerton and Bos, 2004.

Cost Based Production Functions

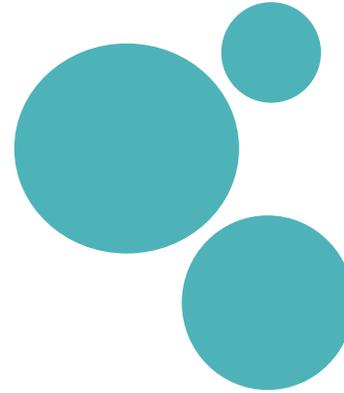


What is the value of mozzarella on a margarita?



1. Find the proportion of the production costs related to mozzarella

2. Extrapolate this proportion to the selling price of the pizza.



Ex. Mozzarella is 3\$ of a total production cost of 5\$ for the pizza. You sell the pizza at 10\$, then the value of the mozzarella is 6\$



Datasets

- *Water Resources Factsheets (n.a.)*, published by MoW, include information for the country and its nine basins as of 2015.
- *National Environment Statistics Report (2017)*, published by the Government of Tanzania (GoT), present a comprehensive repository of environmental statistics related to water resources in mainland Tanzania.
- *The Project on the Revision of National Irrigation Master Plan in the United Republic of Tanzania - Final Report (2018)*, developed by JICA on behalf of the MoW, presents the National Irrigation Master Plan 2018 (NIMP 2018) and provides a detailed account of water resources and water resources demand for 2015, 2025, and 2035.
- *Tanzania Water Resources Atlas (2019)*, developed on behalf of MoW by YEKOM Consulting Engineers, is a repository of maps and statistics on Tanzania's water resources.
- *State of the Environment Report 3 (2019)*, published by the Vice-president's Office, intended to inform policymakers about the environmental challenges and provide policy recommendations to support the country's sustainable growth.
- *Water Sector Status Report 2015-2020 (2020)*, published by MoW, consolidates the progress and issues on the water sector's components.
- *Tanzania Water Sector Assessment for Strategy Development (2020)*, published by USAID, presents an overview of the most critical water resources challenges and stress factors, including climate change.
- *Tanzania Water Resources Profile Overview*, available at: <https://www.globalwaters.org/resources/assets/tanzania-water-resources-profile>

Production Functions – Agriculture Sector

National Value of Water for Livestock Subsector

$$NA_{LWv} = L_{GDP} * P_{LWv}$$

Where:

- NA_{LWv} : National Value of Water for Livestock Subsector in Tanzania 2020
- L_{GDP} : Value of Tanzania's GDP for the Livestock Subsector in 2020
- P_{LWv} : Proportion of value of water for Livestock subsector in 2020

Production Functions – Agriculture Sector

National value of water for the crop subsector

$$NA_{Cwv} = C_{GDP} * P_{Cwv}$$

Where:

- NA_{Cwv} : National Value of Water for Crops in Tanzania in 2020
- C_{GDP} : Value of Tanzania's GDP for the crops subsector in 2020
- P_{Cwv} : Proportion value of water for the crops subsector in 2020

Production Functions – Manufacturing Sector

National value of water for the manufacturing sector

$$NA_{Mwv} = M_{GDP} * P_{Mwv}$$

Where:

- NA_{Mwv} : National value of water for the manufacturing sector of Tanzania of 2020
- M_{GDP} : GDP value of the manufacturing sector of Tanzania in 2020.
- P_{Mwv} : Proportion value of water for the manufacturing sector in 2016

Production Functions – Mining Sector

National value of water in the Mining sector.

$$NA_{GWV} = G_{GDP} * P_{GWV}$$

Where:

1. NA_{GWV} : National value of water for the mining sector of Tanzania in 2020
2. G_{GDP} : GDP value of the mining sector of Tanzania in 2020.
3. P_{GWV} : Proportion value of water for the mining sector in 2016

Results

Results reveal that the low bound estimation of the value of water in Tanzania is estimated to be approximately 4.8 trillion TZS in 2021, which is the equivalent of **3.31% of the national GDP**

| Sector | Subsector | Value Added Proportion Derived from Water | National Value of water (TZS/year) | National Value of water (USD/year) |
|----------------------|-----------|---|------------------------------------|------------------------------------|
| Agriculture | Crops | 17.66% | 3,871,103,258,200 | 1,687,865,767 |
| | Livestock | 6.99% | 742,933,793,947 | 323,931,560 |
| Manufacturing | | 0.24% | 27,173,364,839 | 11,848,042 |
| Mining and Quarrying | | 1.78% | 175,749,179,260 | 76,629,582 |
| Total | | - | 4,816,959,596,245 | 2,100,274,951 |
| GDP | | 3.31% | 145,429,645,000,000 | 63,409,757,618 |

Results

- **The anticipated return ratio for bean irrigation stands at approximately 4037%.**
 - In 2020 USD values, for every 1 USD allocated to bean irrigation during the short rainy season, an estimated output rise of 11.47 kg is projected.
 - Considering the 2020 price of beans at 3.52 USD per kilogram, the expected return ratio for bean irrigation is about 4037%.
- **The volumetric value of water used for different livestock was estimated:**
 - Cattle: 5,356 TZS/m³ (2.34 USD/m³)
 - Goat: 2,169 TZS/m³ (0.95 USD/m³)
 - Sheep: 1,114 TZS/m³ (0.49 USD/m³).



Results

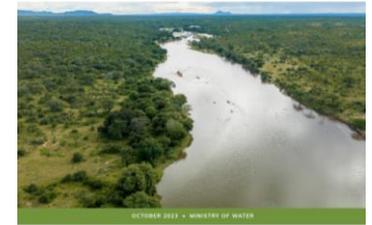
- **Water-related expenditures are negligible for the manufacturing sector:**
 - Both supply and water treatment costs account for an average of 0.05% of total expenses in the manufacturing sector.
 - Even in the most water-intensive manufacturing processes, water costs remain proportionally low; for instance, water costs for manufacturing food products and beverages represent only 0.104% and 0.914% of their total production costs, respectively.
- **Water treatment costs dominate water-related expenditures:**
 - Analysis of total water-related costs in the manufacturing and mining sectors indicates that 99.7% of these costs are attributed to water treatment. This suggests that water supply services, abstraction fees, and licensing fees are relatively minimal, particularly when compared to other production costs.



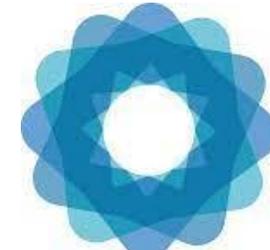
Use of the study

- Input towards the implementation and resource mobilisation of the **Tanzania Water Investment Programme** (raising the national budget for water in Tanzania)
- Potential for going deeper in the study in Tanzania, in collaboration with FAO, and **mainstreaming the approach** in the System of Environmental-Economic Accounting (SEEA)
- Input in methodological terms to the **Continental Africa Water Investment Programme** (AIP)
- Potential **replication of the methodology** across other geographies, in particular with the Valuing Water Initiative

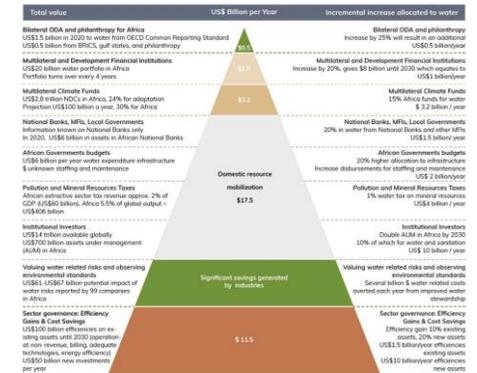
Session at the World Water Week in Stockholm to present and further discuss the results, co-convened by the Valuing Water Initiative, GWP and the Ministry of Water, Tanzania



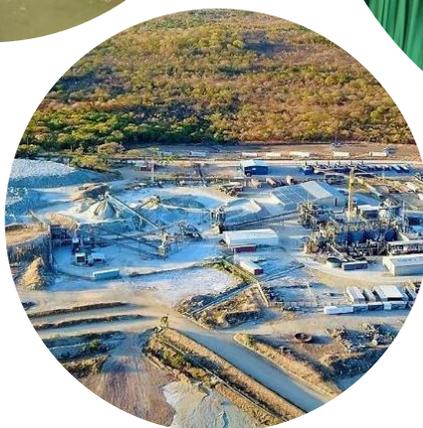
AIP CONTINENTAL AFRICA WATER INVESTMENT PROGRAMME



System of Environmental Economic Accounting



Thank you!



For more questions please contact:
colin.herron@gwp.org
laurentcharles.tremblaylevesque@gwp.org