



ELECTRICITY CONSUMPTION IN THE MUNICIPAL WATER SECTOR IN THE KINGDOM OF BAHRAIN

Speaker: Eng. Maryam Juma Marzooq
Maryam.marzooq@gmail.com

▼ **Researchers: Dr. Maha Al Sabbagh**

Eng. Maryam Marzooq

Eng. Rehab Hasan

Arabian Gulf University (AGU)

Content

- Introduction
- Methodology
- Results
- Conclusion & Recommendations



Introduction



1- Electrical Use

6 CLEAN WATER
AND SANITATION



**2-Performance
Indicator**

7 AFFORDABLE AND
CLEAN ENERGY



13 CLIMATE
ACTION



3-Benchmarking

Introduction

- The Municipal Water Sector in Bahrain

1

Production



2

Transmission



3

Distribution



4

Drinking Water End-Users

Wastewater Transfer



Wastewater Treatment



Wastewater Collection



4

7

6

5

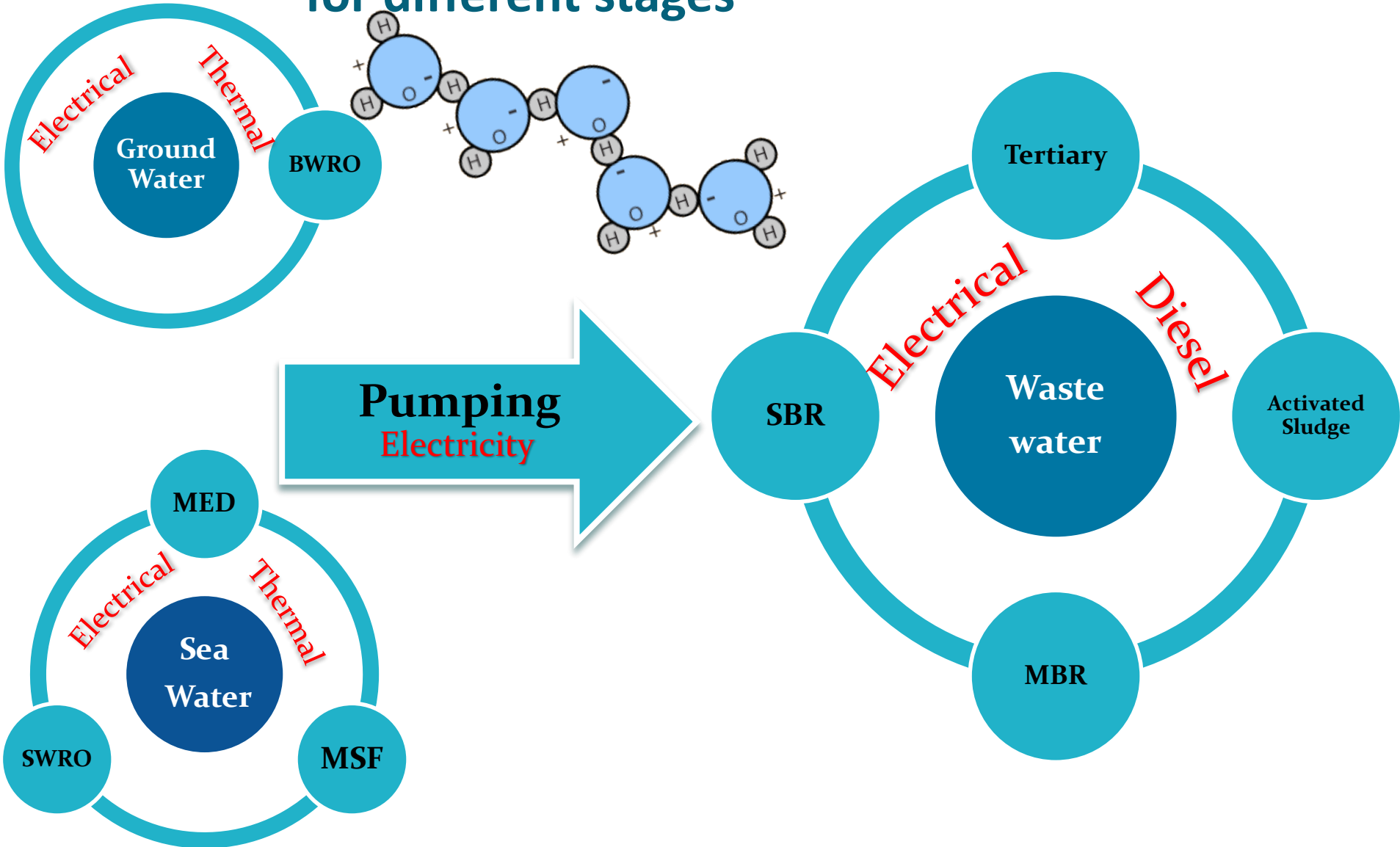
8

Treated Wastewater End-Users

8

Introduction

Technologies & Energy sources
for different stages



Methodology

Bottom-up approach

▼ Measurements & Equations

Electrical
Power=Voltage*Current*
 $\sqrt{\text{Number of phases}}$ *Power
Factor

Specific Electrical
Energy= Amount of
Electricity/Amount of
water

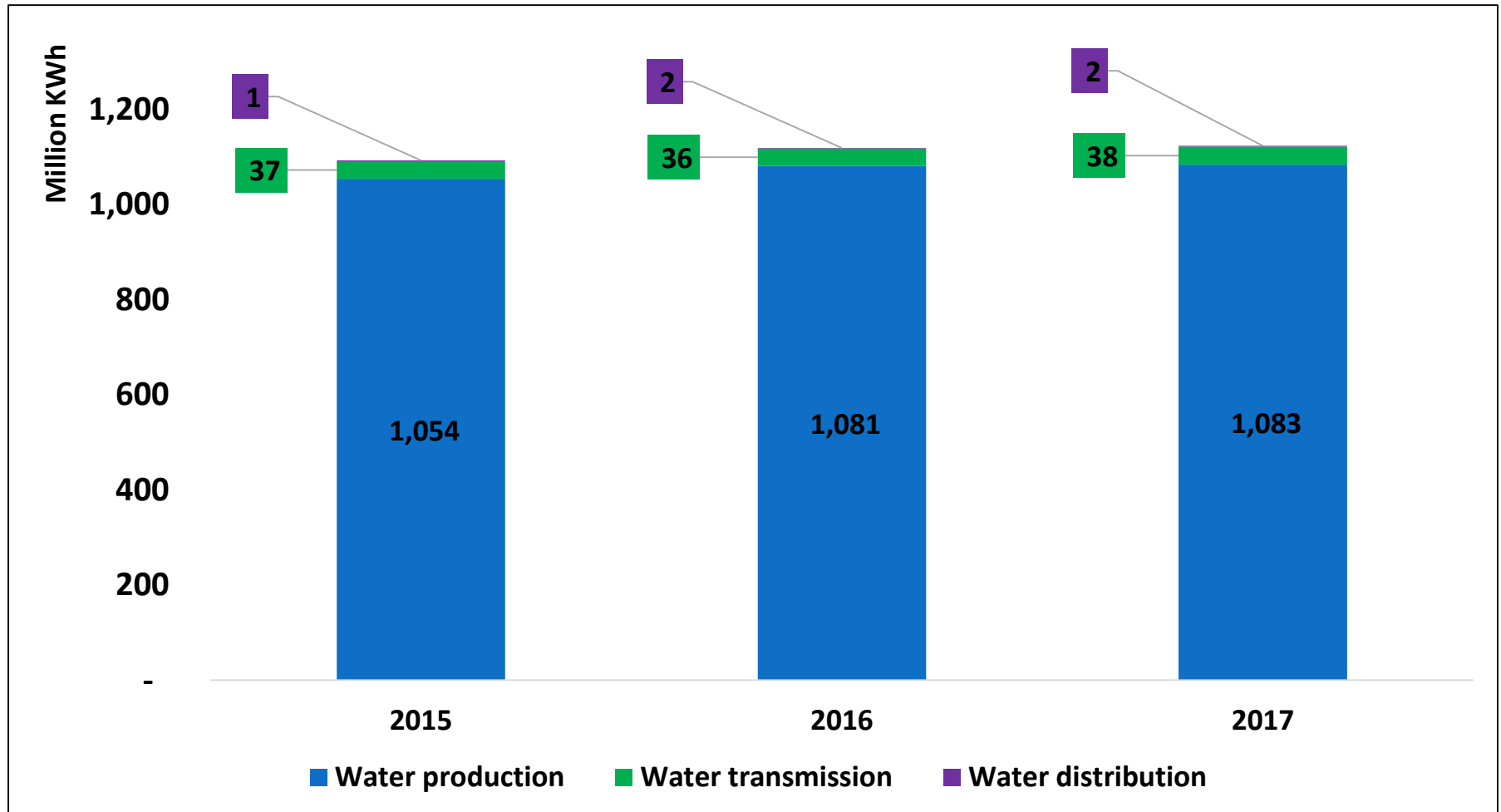
▼ Electricity Consumptions (Bills)

Monthly (2015-2017)

Top-down approach

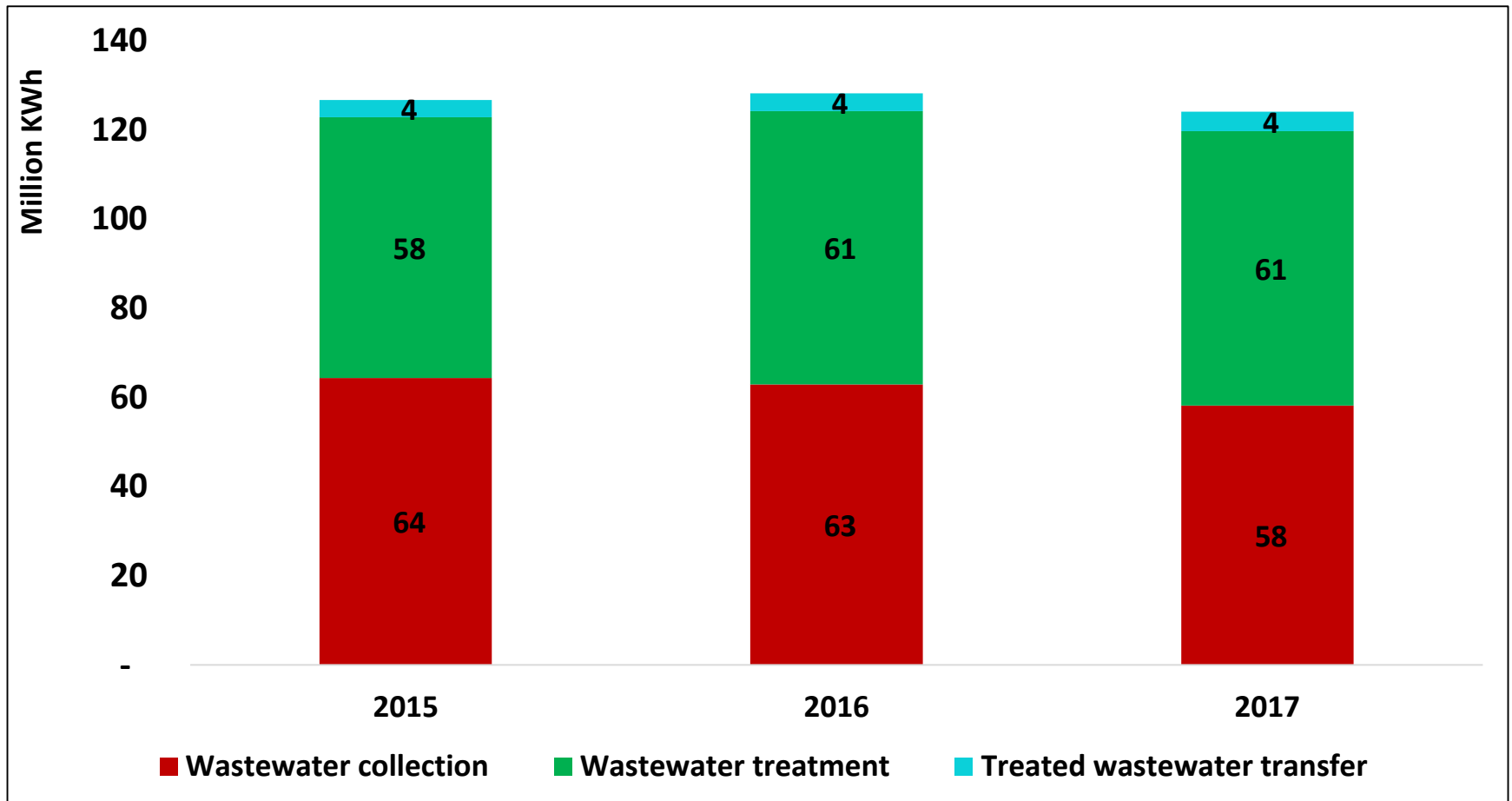
Results

- Electricity consumed in **Water Supply** for the period 2015–2017



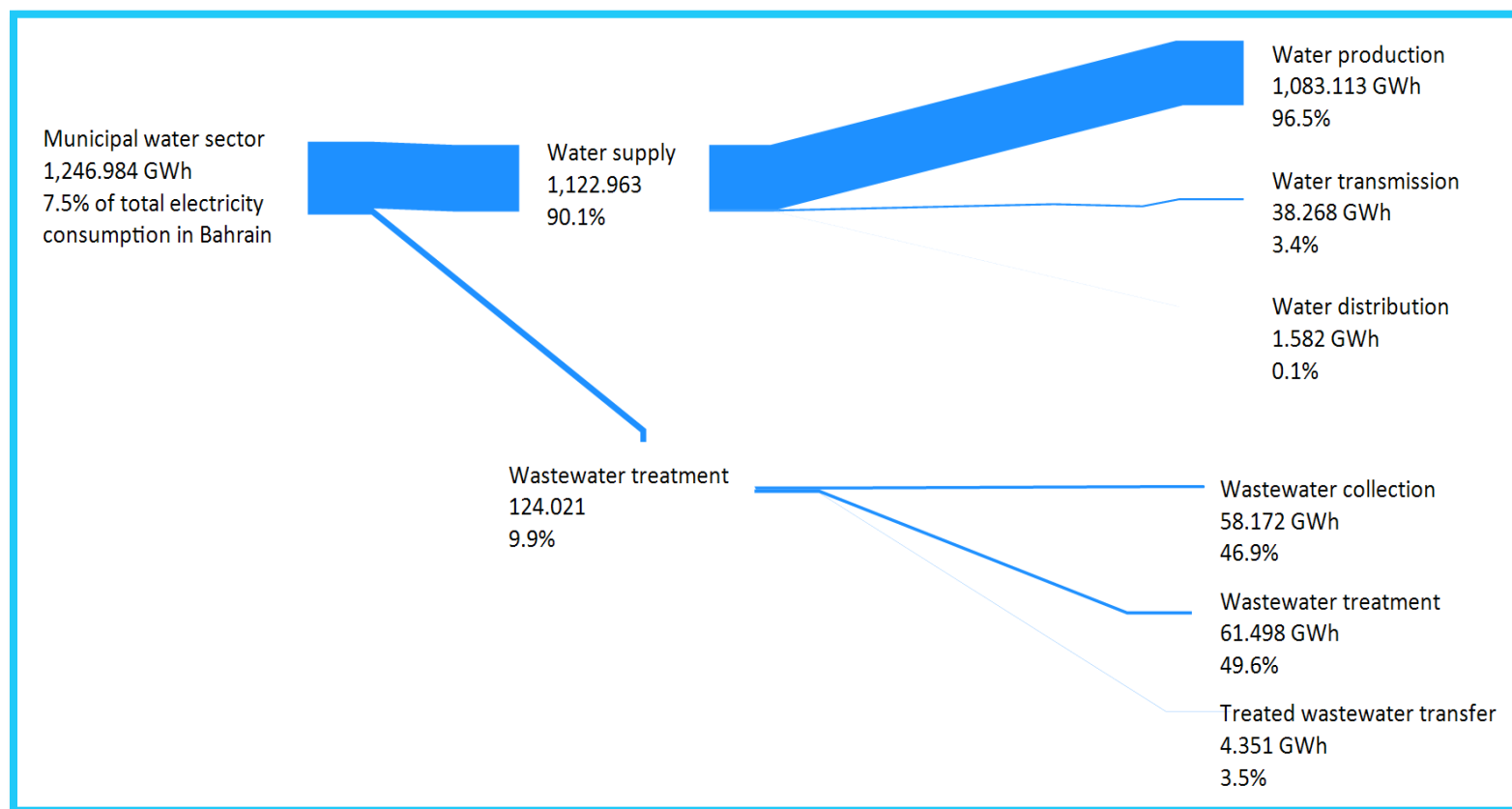
Results

- Electricity consumed in **Wastewater** for the period 2015–2017



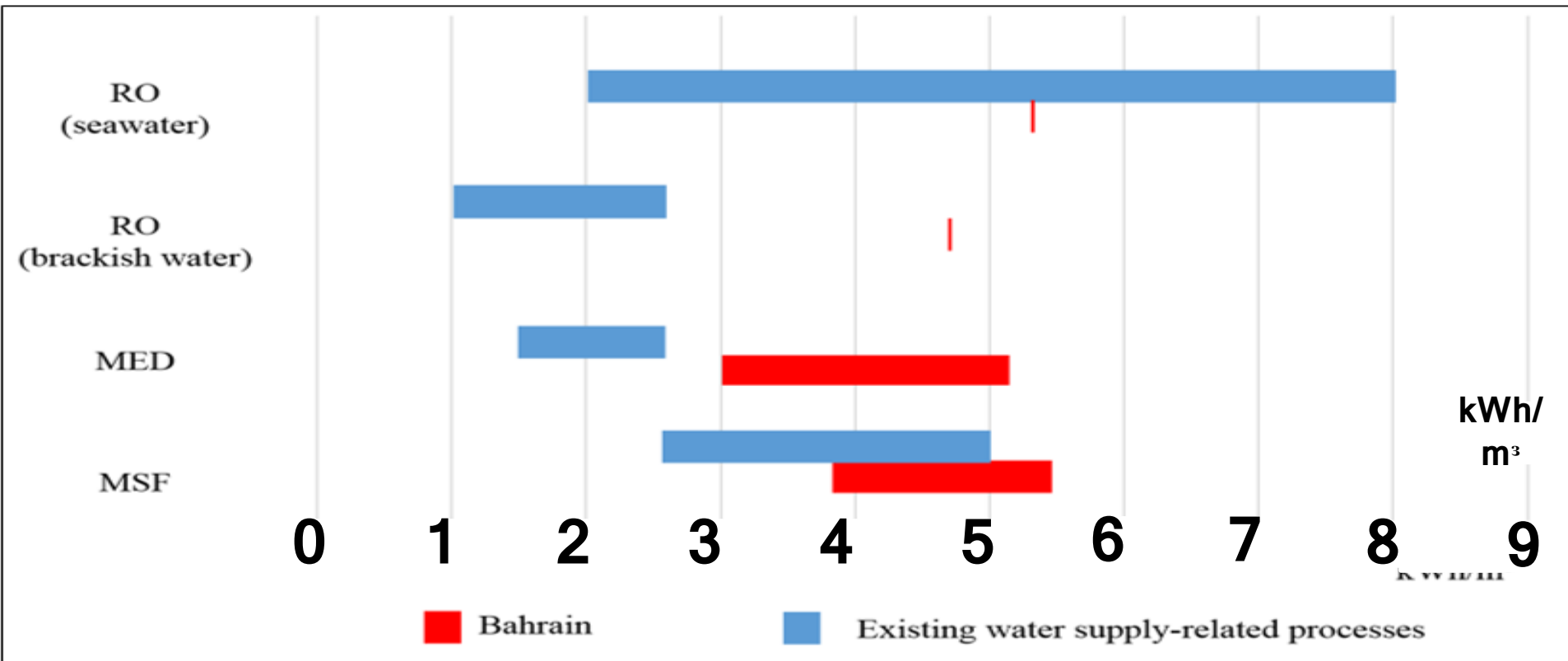
Results

- Sankey diagram of the **water-related electricity consumption in 2017 in Bahrain**



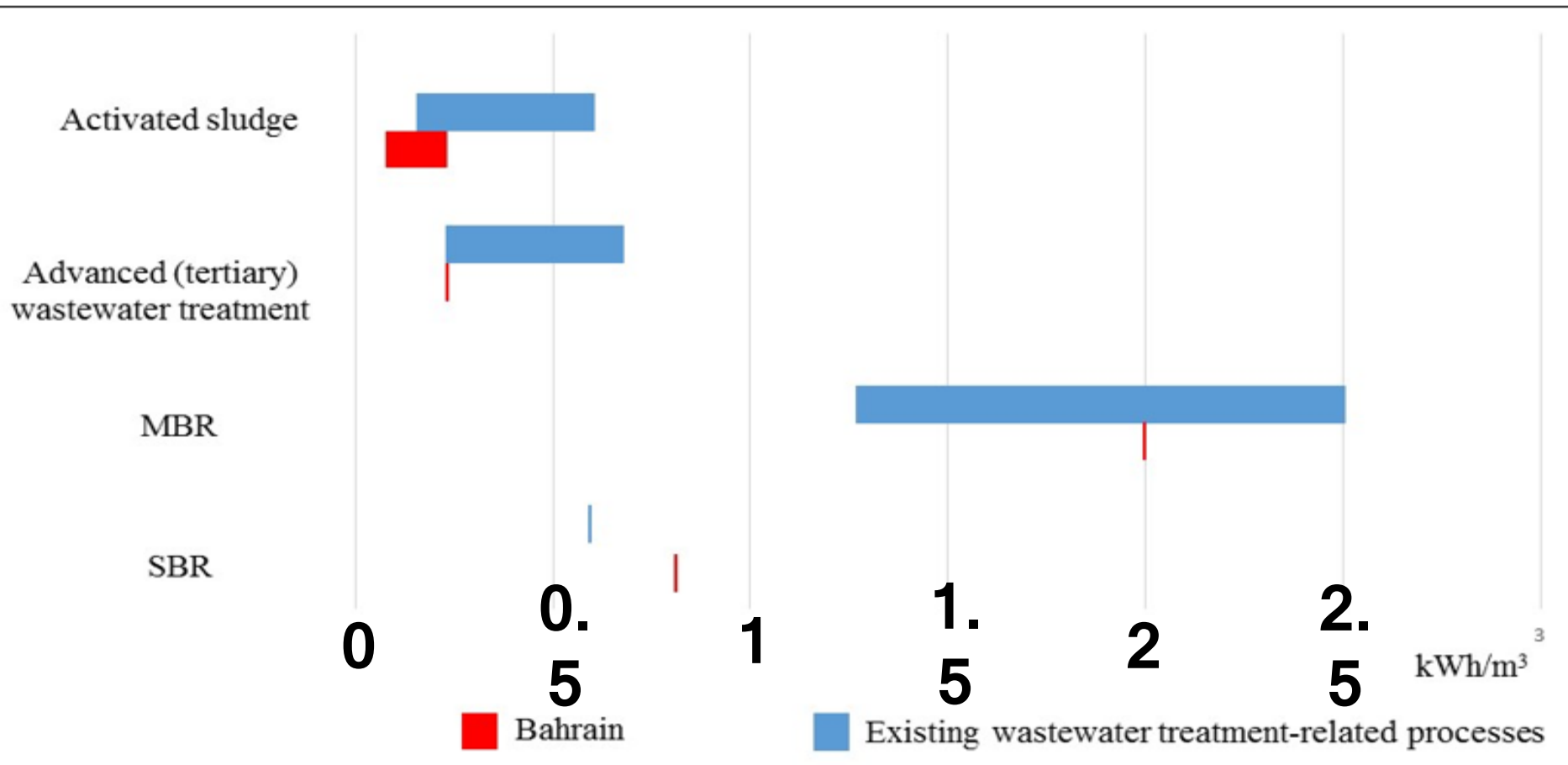
Results

- Benchmarking- **Desalination plants**

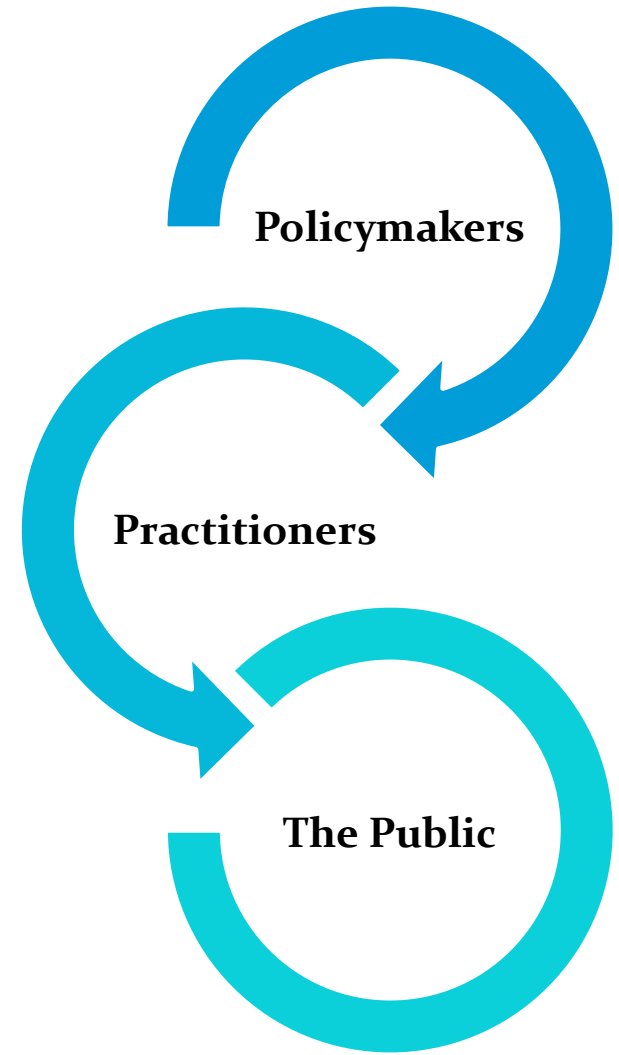


Results

- Benchmarking- **Wastewater Treatment plants**



Conclusion & Recommendations





Thank you

Maryam.marzooq@gmail.com