Environment & Social Governance by Creating Water Positive Impact Initiatives at Catchment Area and Where We Operate

Road to Water Indonesia Webinar
2nd September 2025

Azwar S. Muhammad
Water Resources, Science & Process Technology Director
Danone – Aqua

IMPACT JOURNEY

Our Vision: One Planet, One Health

The health of people and the health of the planet are interconnected

Our Mission : building a healthier future from a healthy lifestyle, a healthy earth and a healthy ecosystem

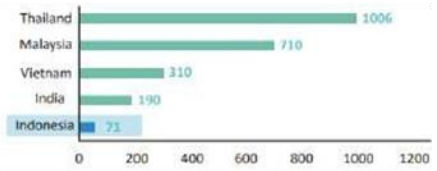
Our commitment: Double commitment to always prioritize harmony between economic and social progress through various sustainable and integrated social initiatives from upstream, middle and downstream areas

Indonesia's Water Challenge

Today's Scene

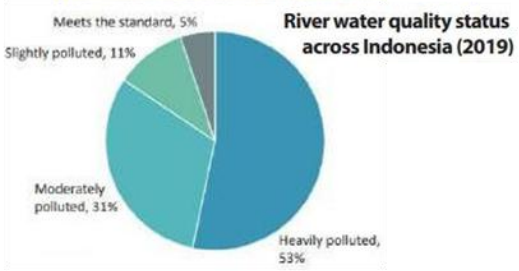
More than **1% of Indonesia's forest cover is lost every year,** affecting watersheds

Storage capacity per capita in m3



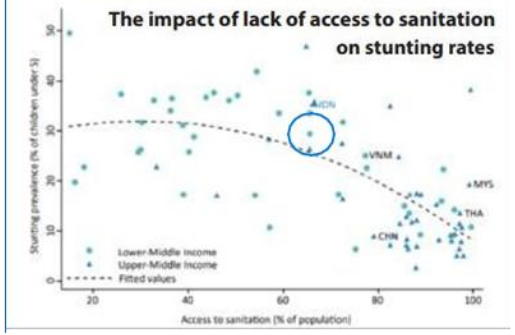
80% water demand is agricultural while its **intensive-use of chemical** also deteriorate water quality

River water quality status across Indonesia (2019)



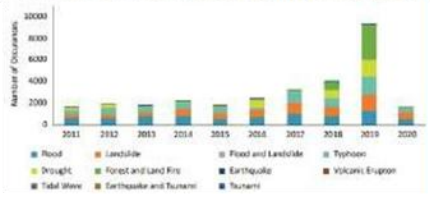
70 % of household drinking water sources **contaminated with fecal bacteria**, led to **stunting risk**

The impact of lack of access to sanitation on stunting rates

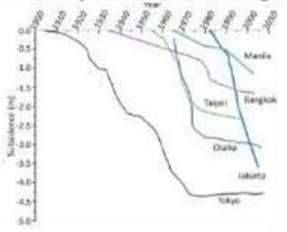


Three-quarters of Indonesia's disasters are **hydrological,** making it more vulnerable

Trend of disaster occurrence in the last 10 years

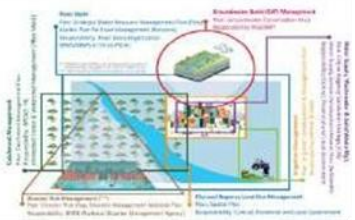


Comparative land subsidence rates across Indonesia (cm/year) and Asian megacities



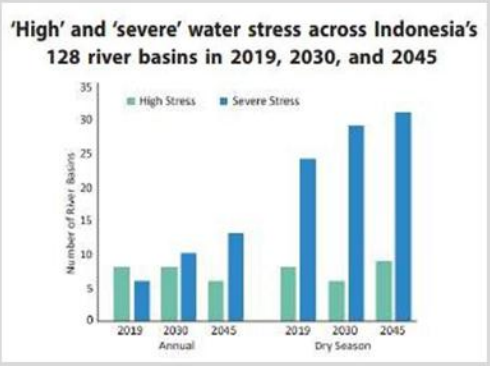
Fragmented responsibility and **overlapped jurisdiction** among water agencies, limit its functioning

Overlapping responsibilities and planning documents in a river basin



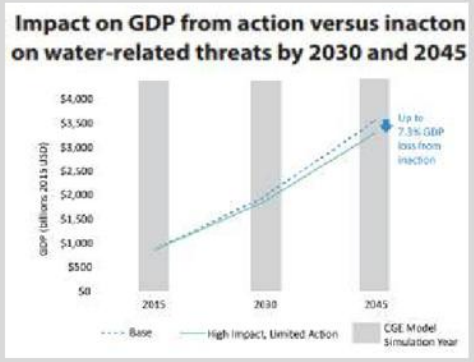
Future's Threats

'High' and 'severe' water stress across Indonesia's 128 river basins in 2019, 2030, and 2045



Indonesia's dry season water stress in relation to river basins generating 60% of GDP (2045)

Impact on GDP from action versus inacton on water-related threats by 2030 and 2045



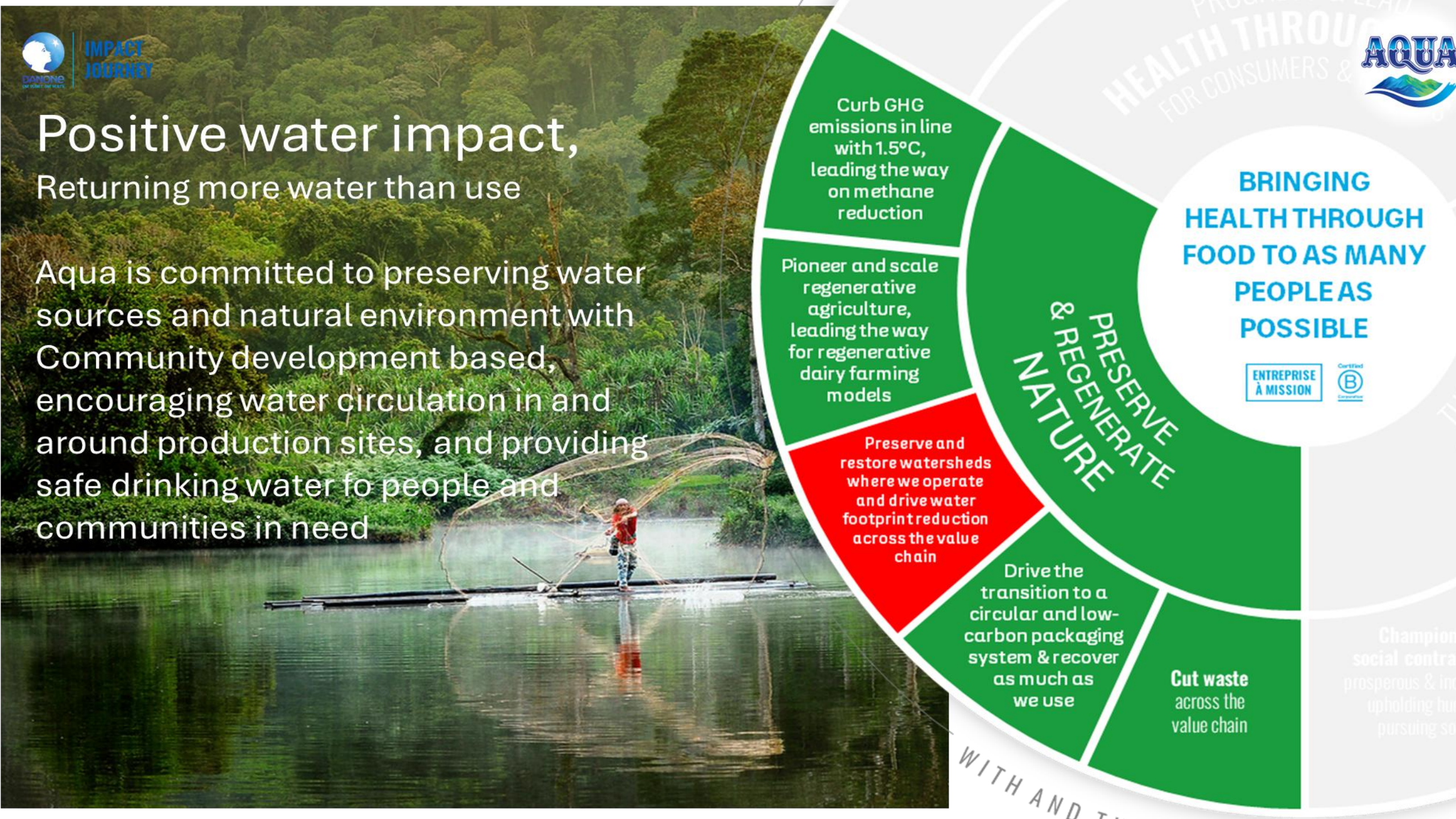
- By 2045, 31 river basins out of 128, are expected to face a **water supply-demand deficit**
- If water-related threats remain unaddressed, **GDP is projected to be 7.3% lower** by 2045 vs target

IMPACT JOURNEY

Positive water impact,

Returning more water than use

Aqua is committed to preserving water sources and natural environment with Community development based, encouraging water circulation in and around production sites, and providing safe drinking water fo people and communities in need



PRESERVE & REGENERATE NATURE Pillar

Preserved and Restore Watershed

Water Stewardship
- Watershed Study
- Water Conservation,
- Biodiversity
- Community Development

Drive Water Efficiency in and Around Production Site

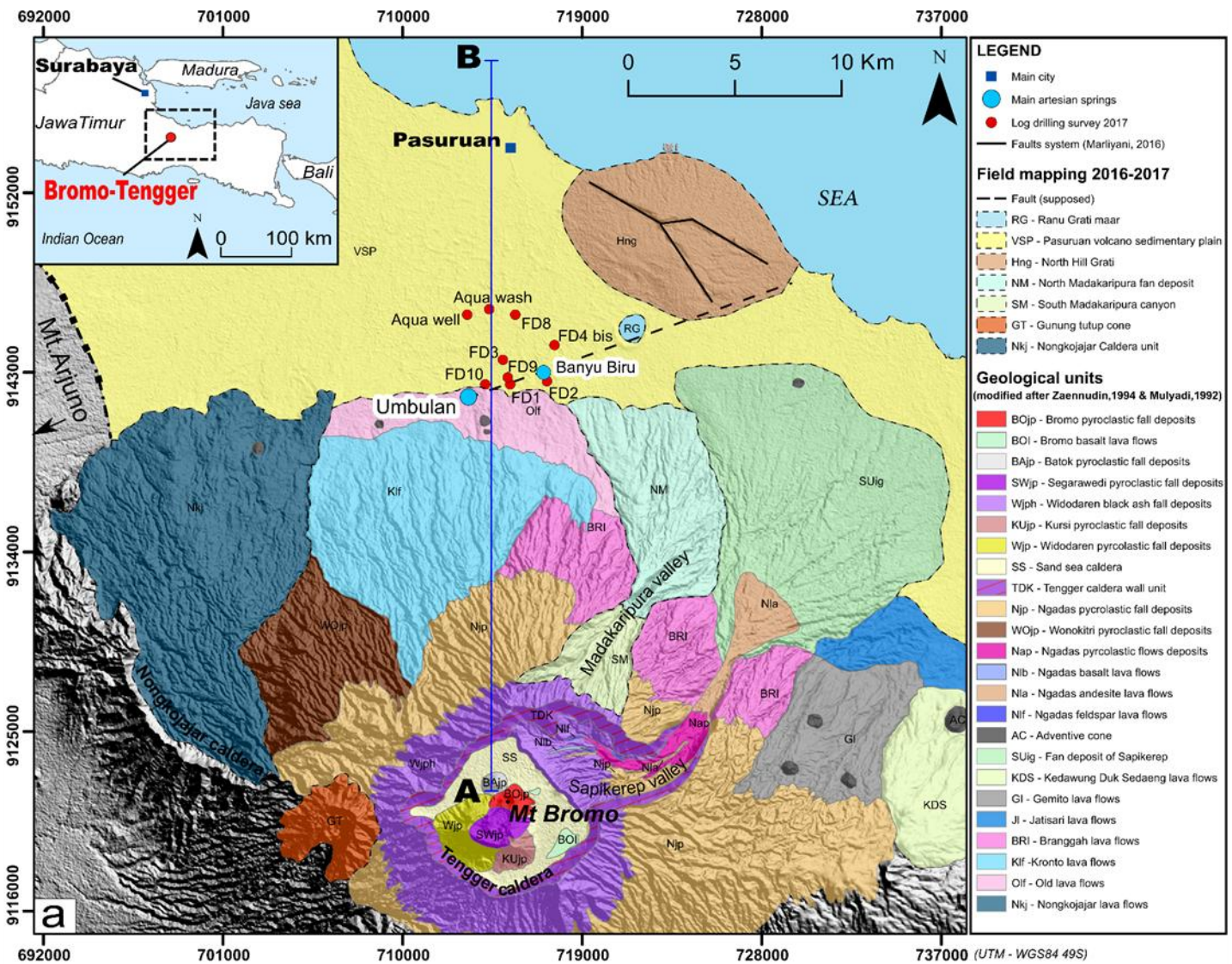
Water Efficiency and 4R and Clean Water Discharge

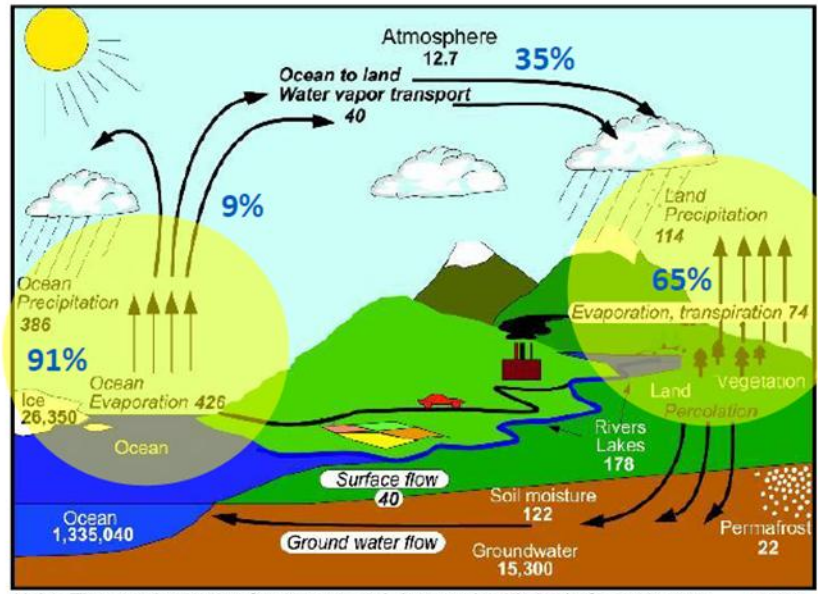
Clean Water Access

Clean Water Access, Sanitation & hygiene

IMPACT JOURNEY

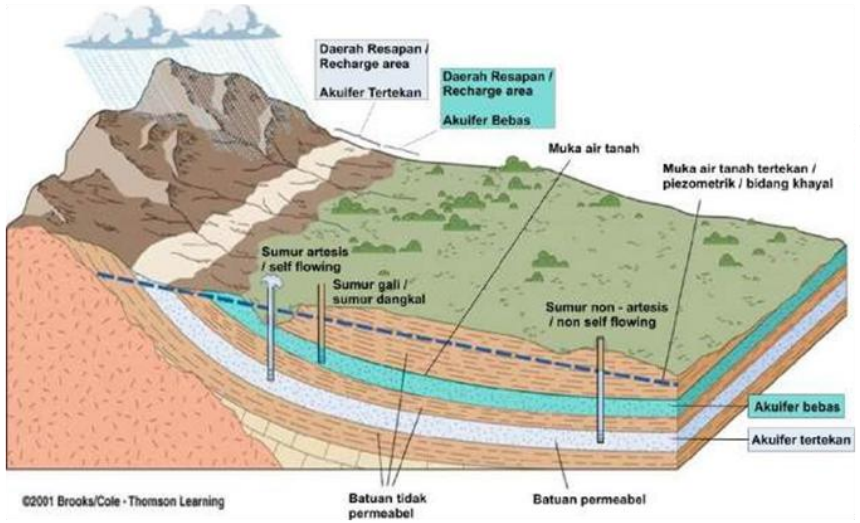
Every Water Sources have its fingerprint

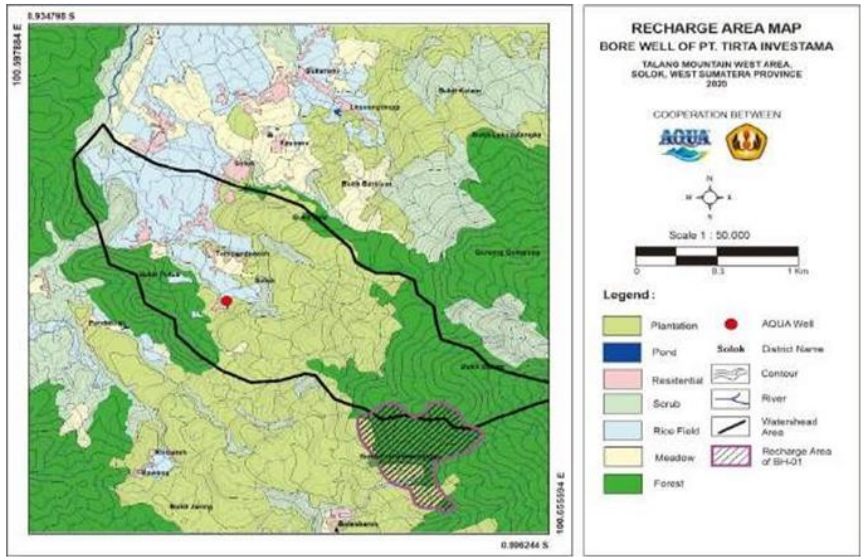




Units: Thousand cubic km for storage, and *thousand cubic km/yr* for exchanges *1990s

Developing Research-Based Water Stewardship Design





Comprehensive Hydrogeology Study

- Geology
- Geophysics
- Hydrogeology
- Hydrology
- Hydro-isotop analysis
- Hydrochemistry

Hydrogeology Conceptual Model

- Ensuring the sustainability of our water source
- Measuring water balance
- Identifying recharge area, where conservation activities Should be focusing on
- Developing a water protection zone from all possible contamination

Social

- Rapid social and stakeholder mapping
- Socio-economic study (high-stressed watershed)

- Identifying stakeholders to engage
- Knowing the biggest water usage and its users
- Understanding social risks concerning water
- Designing relevant initiatives

PUSUR Sub Watershed Context

- Within 2 Districts, Klaten and Boyolali
- Pusur river laid across within the watershed for 37 km

Midstream

Organic Farming
Agroforestry
Dairy Farming
Community Development

Downstream

Upstream – Recharge Area


Tree Planting


Infiltration Well


Rainwater Harvesting


Trench


Pond


Biodiversity

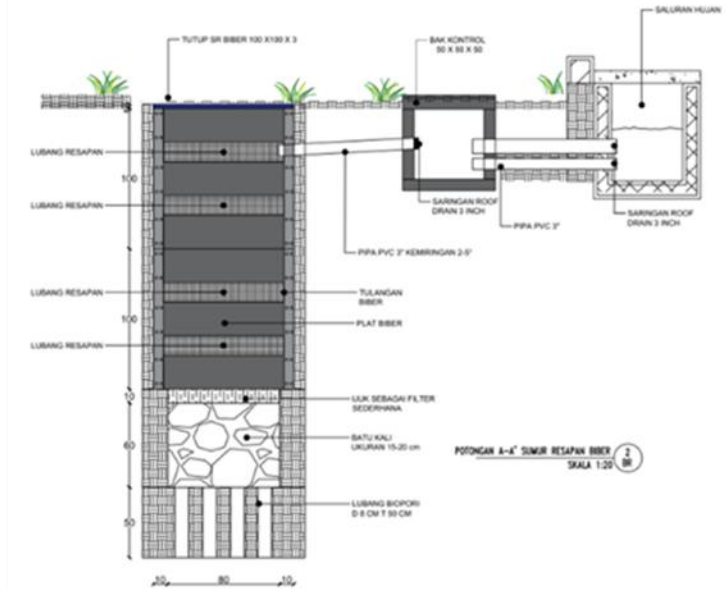

Community Development

Regenerative Agriculture


Water Access


Community Development

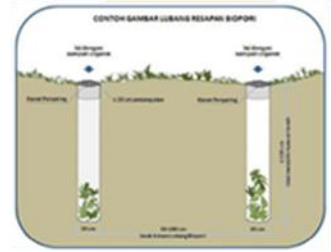
Artificial Aquifer Recharge



Infiltration Well and Recharge Well

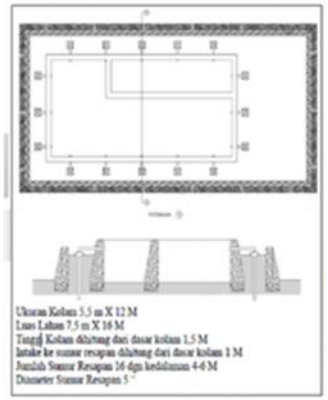
Model of infiltration wells and recharge wells from rooftop rainwater harvesting planned on site (Rohman, 2020)

Biopore



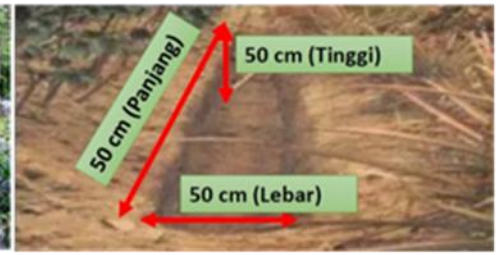
Biopore model planned on site in Indonesia language (Rohman, 2020)

Infiltration Pond



Model of infiltration pond planned on site in Indonesia language (Rohman, 2020)

Trench



Model of infiltration trench planned on site in Indonesia langage where shows the dimention of long (panjang), wide (lebar) and depth (tinggi) (Rohman, 2020)

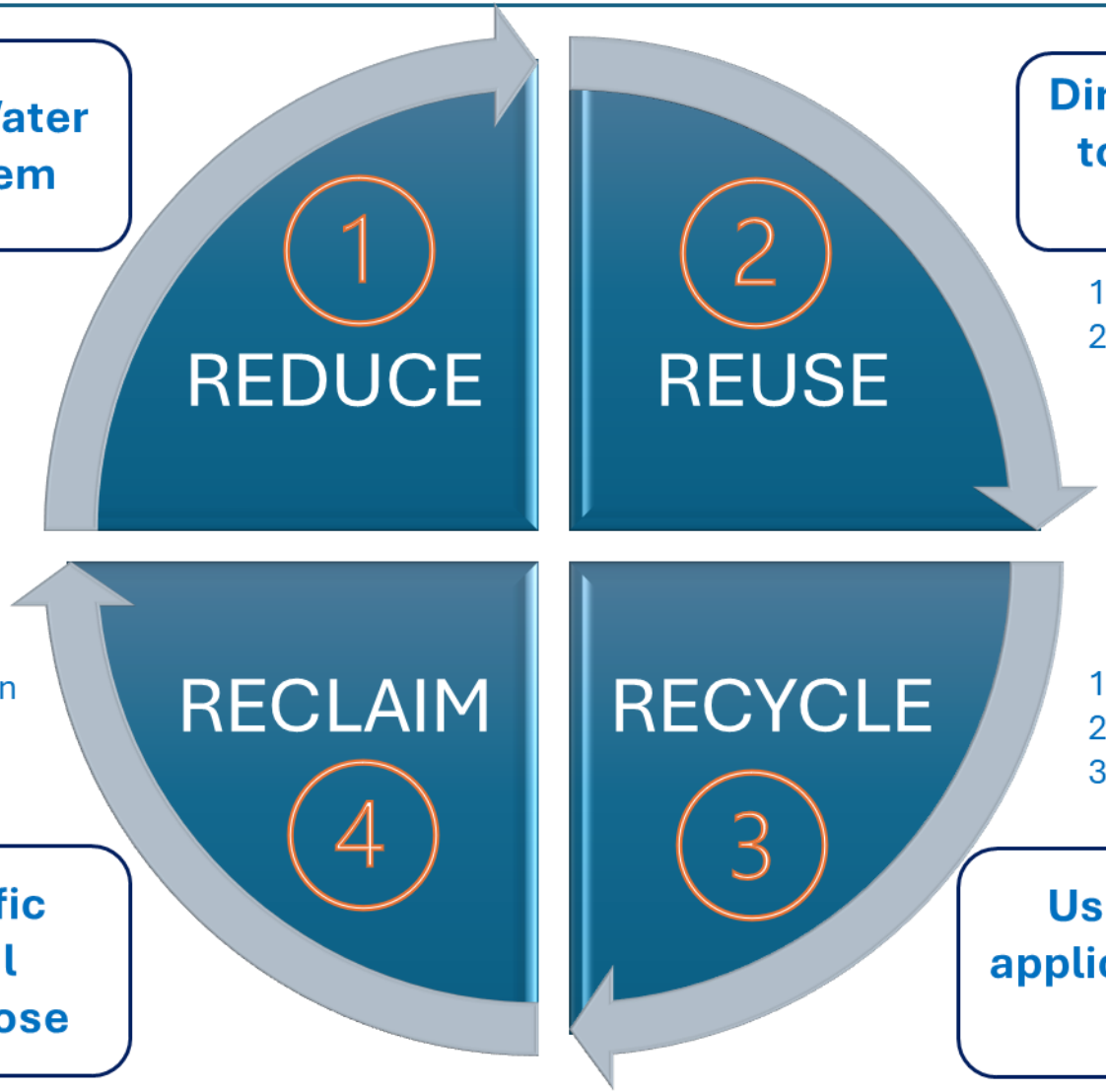
IMPACT JOURNEY

Circularity IN and AROUND

4R

Reduce the Total Volume of Water Needed to Operate the System

1. Define Water Optimal usage
2. Leak Hunting
3. Water Saving Valve
4. Rainwater Harvesting
5. Awareness



Directly use some rejected water to another application without treatment

1. Defined Water Reuse Spec and quantity.
2. Segregate Water Characteristic

1. Defined Water Usage Spec & Quantity in or around Plant.
2. Defined the optimum Technology

Treat wastewater to a specific water quality for additional internal use or external purpose

1. Defined Water Usage Spec & quantity.
2. Segregate Water based on characteristics
3. Defined the optimum Technology

Use rejected water for another application with treatment to match specific water quality

Measuring the Impact Water Stewardship

IMPACT JOURNEY

"POSITIVE WATER IMPACT"

AQUA water stewardship program validation

The planning and calculation of the water stewardship target referred to the Volumetric Water Benefit Accounting (VWBA) guide issued by the water research institute (Reig et.al, 2019). Based on the activity targets, the activities were divided into several main activities

1. Restoration of Land Cover in Recharge Areas
2. Restoration of Artificial Recharge-Catchment Areas
3. Accessibility Activities, Hygiene and Water Sanitation (Water Accessibility, Sanitation and Hygiene/WASH)

Water Challenge	Activities	Water Stewardship Outcomes
Water Quantity	Restoration of land Cover in Recharge Area - Tree Planting Restoration of Artificial Recharge Catchments Area - Infiltration Well - Infiltration Well RWH - Recharge Pond - Bio pore - Trench	Sustainable Water Balance
Water Quality	Wastewater Treatment	Good Water Quality
Water Sanitation & Hygiene	Water Access, Sanitation and Hygiene (WASH)	Safe Water, Sanitation & Hygiene

These efforts are carried out to compensate for the water extraction

Reig, P., Larson, W., Vionnet, S., & Bayart, J. B. (2019). Volumetric Water Benefit Accounting (VWBA): A method for implementing and valuing water stewardship activities.

IMPACT JOURNEY

Measuring the Impact Community Development

Social Return on Investment (SRoI) is a method used to ***measure and calculate*** the value of usefulness, or the impact of the success created from the implementation **of a social environmental program**

PRINCIPLE OF SROI

1. **Involve stakeholders:** Ensure those affected by the initiative have a say in how its impact is measured.
2. **Understand what changes:** Clearly define the positive and negative effects of the initiative.
3. **Value the things that matter:** Focus on the aspects of change that stakeholders consider most important.
4. **Only include what is material:** Establish priorities and thresholds for including impacts that are significant to stakeholders.
5. **Do not overclaim:** Claim only those impacts that can be attributed to the activity under review. Use benchmarks, trends, and baselines to assess the extent to which the activity has had impact.\
6. **Be transparent:** Make the measurement process and findings clear and easy to understand. Document decisions made during analysis and their rationale.
7. **Verify the result:** Seek independent assurance, stakeholder review, or other measures of verification that are proportional to the decisions being informed by the analysis.
8. **Be responsive:** Use the SROI to manage impact.

IMPACT JOURNEY

Summary

1. Knows your Water Fingerprint
2. Defined the effective Water Stewardships – Water Conservation activities based on science
3. Water Stewardships should involve communities – stakeholders (Community Development based on Water Conservation
4. Measure the impact of Water Conservation and Community development
5. Start now – We're late already


terima AQUAsih