BORNEO INTERNATIONAL WATER AND WASTEWATER EXHIBITION & CONFERENCE (BIWWEC) 2024

Topic: **Need to adopt scaled decentralized systems in the water infrastructure to achieve sustainability and build resilience?**

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Borneo Convention Centre, Kuching, Sarawak

The Malaysian Water Association

INDUSTRY LEAD BODY (WATER)

MWA, an NGO for the water + sewerage + resources

MWA participated actively in promoting science and technology and synergise members in advancing the industry

Promote Capacity Building – Competency upskilling, multi tasking

Established Malaysian Water Academy (MyWA) – training company fully owned by MWA

Adopting the National Occupational Skills Standards for water sector where MWA acts as Industry Lead Body (ILB)

MWA collaborates with Government and academic institutions to promote TVET

Decentralised vs Centralised systems

- **Decentralised system –** which uses smaller facilities within water supply demand, serving a localised area; scalable
- **Centralised system -** is characterised by large-scale facilities that serve large area, municipal or region. Failure of one system give enormous impact
- **Ideal scale –** engineering challenge
- **Economies of scale –** large plants have the economies of scale, particularly for fixed costs, smaller plants have low set-up costs
- **Connectivity –** decentralised, by definition may compromise connectivity
- **Portability and scalability –** quite impossible for centralised system
- **Capital and operating expenditures –** decentralised – shorter main lines, however fixed costs can surpass savings from low distribution cost
- **System loss (NRW) –** shorter distribution for decentralised

Sustainability for Decentralised

- **Economic benefits**
  - Cost savings due to the phased and modular development of infrastructure
  - Cheaper and easier operation owing to less hydraulic losses
- **Social benefits**
  - Equitable water distribution for entire system
  - Greater sense of ownership
  - Faster to construct
- **Environmental benefits**
  - Reduced operational energy, hence reduced greenhouse gas (GHG) emissions
  - Opportunity to create circular economy at the local scale

Sustainability for Decentralised

Opportunity for recycled water

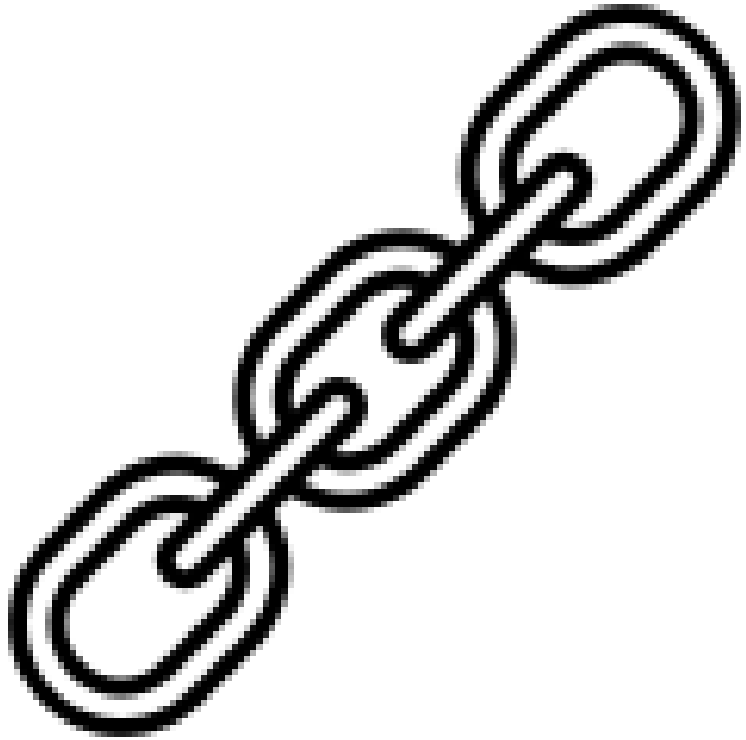
- The availability of demand of treated water and reclaimed water within close vicinity avoids excessive distribution cost of reclaimed water – eg. suitable for industrial area where reclaimed water can be sold
- Opportunity to create circular economy at the local scale and easier to control water quality – abide zero discharge policies

Ease of execution

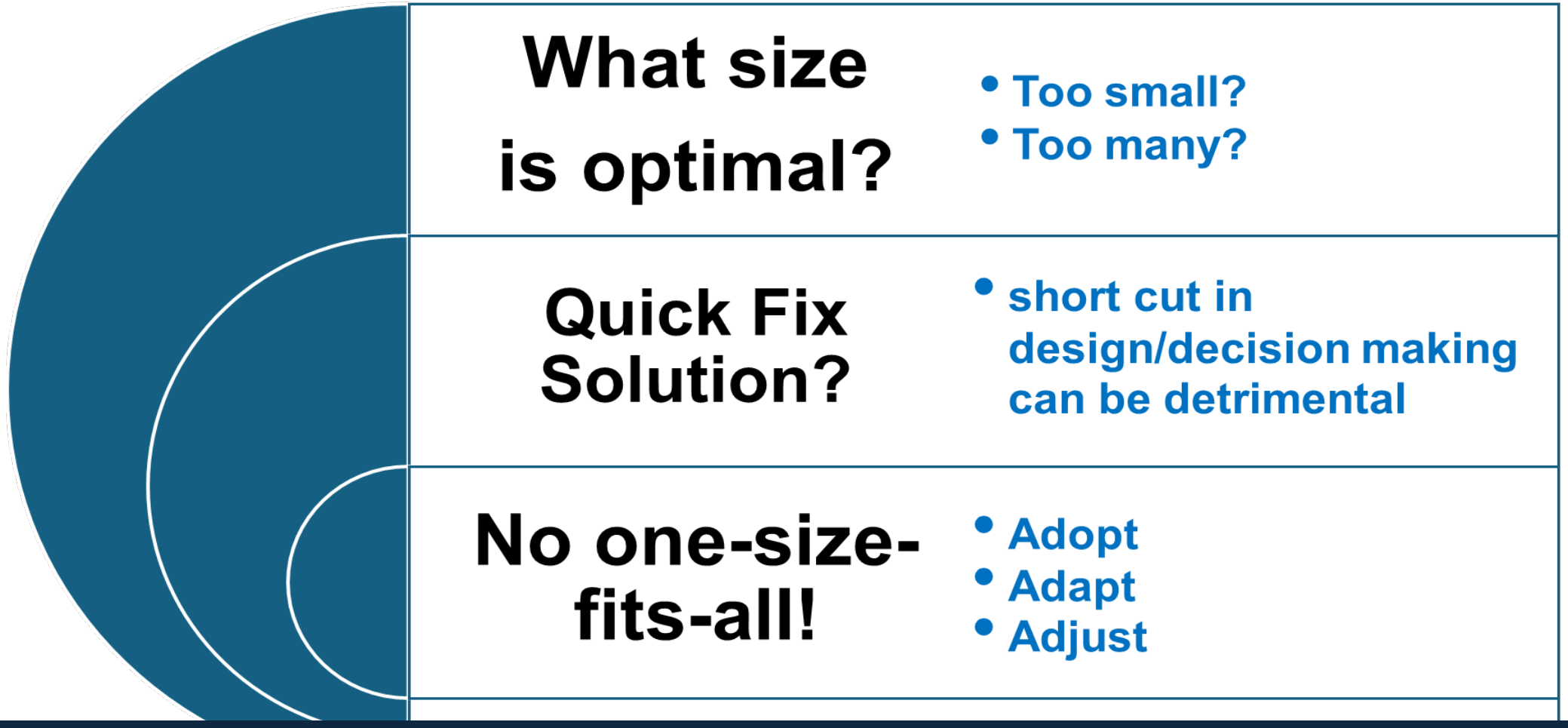
- The installation of decentralised systems involves less complexity due to lesser number of agencies involved
- The tendency of delays in large infrastructure projects due to land acquisition and tendering is avoided in decentralized systems
- Full capacity utilization reducing unnecessary wastage of resource

Resilience for Decentralised

- Robust
  - Vulnerability to extreme weather
  - Failure of system impact limited
- Adaptive
  - Ease of expansion
  - Adaptability to site
- Flexible
  - Retrofitting and improvement adapting to local conditions
  - Easy to be fit site



Engineering challenge & Conclusion



The need to adopt scaled decentralised systems in the water infrastructure must consider several factors and viability in the pursuit to achieve sustainability and build resilience.

Thank you

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