

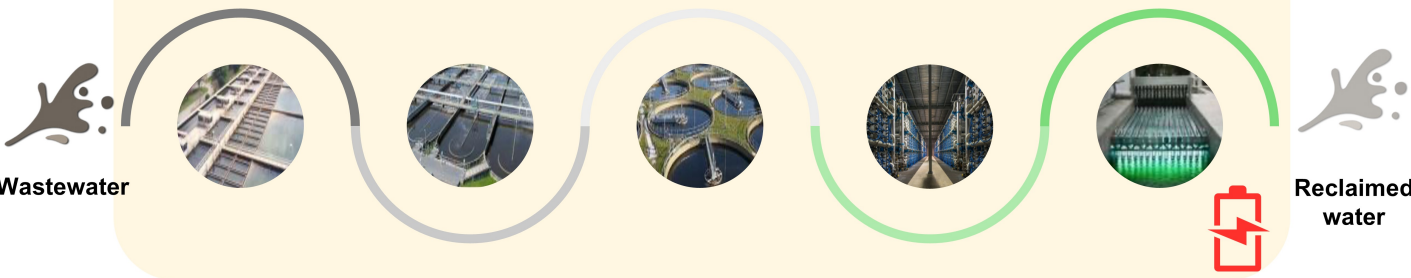
# A Paradigm-shifting, Fully-integrated, Compact Wastewater-to-resource Facility (WWRF)

## CONCEPT ILLUSTRATION



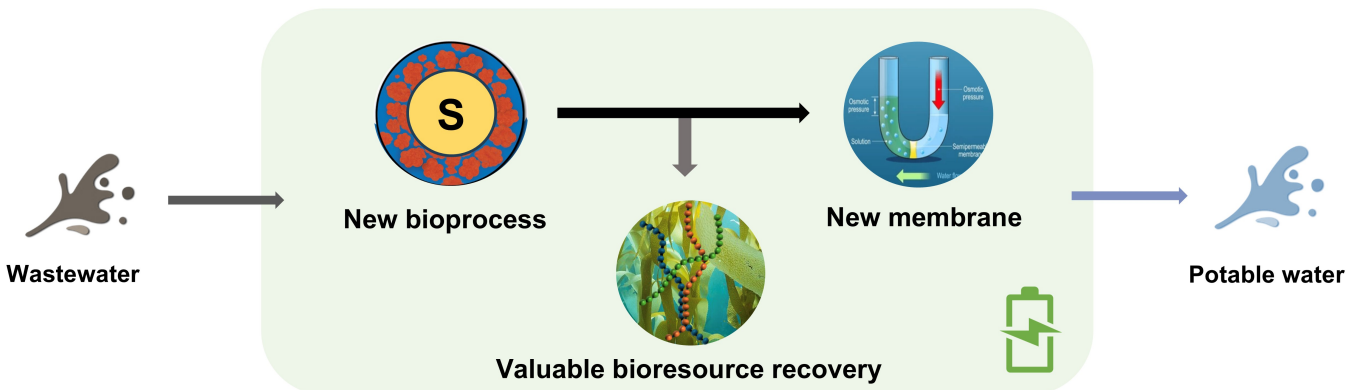
## CONVENTIONAL WASTEWATER TREATMENT FACILITY

Wastewater treatment → Water treatment



- ✗ Large footprint
- ✗ Energy-intensive
- ✗ Limited water reuse

## FUTURE WATER FACTORY



- ✓ Compact
- ✓ Energy minimization
- ✓ Resource recovery maximization



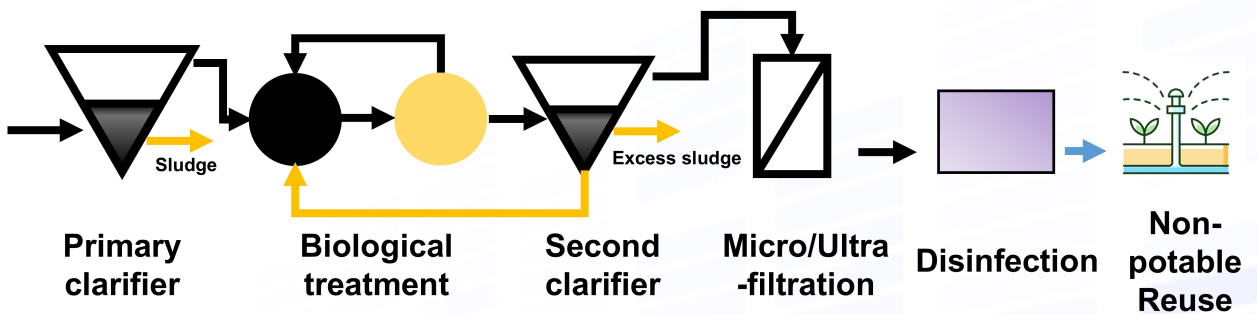
# A Paradigm-shifting, Fully-integrated, Compact Wastewater-to-resource Facility (WWRF)

## BRIEF INTRODUCTION



Water scarcity is increasingly affecting urban development and sustainability worldwide. Hong Kong, which imports about 70% of its freshwater from mainland China and applies seawater for toilet flushing, faces significant water management challenges. Traditional wastewater reuse practices have been costly and inefficient. In response, a collaboration among water science experts has developed the WasteWater-to-Resource Facility (WWRF), a new system designed to efficiently convert saline wastewater into potable water and recover valuable biochemicals. The WWRF uses advanced membrane, chemical, and biological technologies to minimize waste, energy use, and space requirements. A pilot-scale plant is in development, with trials expected to be completed by 2025.

## CONVENTIONAL WATER RESOURCE RECLAMATION FACILITIES



## BREAKTHROUGHS IN WASTEWATER-TO-RESOURCE FACILITY (WWRF)

**Chemical enhanced primary treatment**

**FO-RO hybrid System**

**Novel biological treatment-Sulfur-driven anammox process**

**Polysaccharide (PS) recovery from sludge**

**Disinfection-Far-UVC radiation**

**Potable water**

**Energy efficient**

**Comparison with conventional process, WWRF is anticipated to save:**

Space	30 - 50%
Energy consumption	20 - 40%
GHG emission	20 - 40%
Operation cost	15 - 35%

**Space saving**



Nature index SCI 60/175 (1/3)



US patents (4)



IWA Best Scientific book



Government awards (3)