



# **Water Management in Campus: A Framework in Optimising Social Cost**

**Universiti Utara Malaysia  
Kedah, MALAYSIA**

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# INTRODUCTION

## UUM in Green Forest

- Our campus is surrounded by green forest with hilly terrain.
- We are committed in protecting our preserve nature and have been awarded
  - Verified Green University (GC-Mark)
  - Winner of Green World Award (The Green Organisation, UK)
  - IQNet SR:10 (DQS GmbH)
- Our sustainability developments cover setting and infrastructure, transportation, water, waste, energy, and education.





**Water management** is one of the initiatives that is aggressively executed by UUM. We put continuous efforts to preserve the rivers and protect clean water for citizens' consumption for many years.

85% of water consumed are from piped system. However, UUM make continuous effort to educate its denizen to use water efficiently.

# ISSUES

## Cost in Managing Water

Intention to estimate the exact cost in managing water in campus, including the social cost.



## Late Action Taken

Leakage water occur in water distribution with estimated 15% lost every month. Inspection is carried out by staff, but sometimes fail to identify the leaking.



## Old Facilities

Rusty pipes have been noticeably affected the quality of water in terms of colors and odors, which affect about 5,000 residents daily.



## Protection on Clean Water

We instill river rehabilitation and restoration in attempt to support SDG intention. We encourage activities in campus to protect water. However, the acceptance from residents still low.

## Lesson in Water Conservation

- UUM needs a proper to instill affordable water efficient appliances suitable with our environment.

## Water Leakages

UUM spends about USD\$1.2 million to accommodate water usage around 4.5 million cubic meters. However, about 15% of water distribution is loss, mostly due to human weaknesses and also vandalism.

# Challenges and Lessons From Water Management

## Lesson in Protection on Clean Water

- To ensure all residents aware about the urgency to protect clean water.
- To get residents directly involve in protecting water through structured programs.

## Water Conservation

In 2018, over 75% of collection and storage of the rainwater used as non portable resource for toilet flushing and garden sprinkler system. Water efficient appliances is one of the crucial initiatives.

## Lesson in Water Leakages

- To consider technology device to locate water leakages, alternative to human inspection.
- The need to regularly monitor the water distribution.

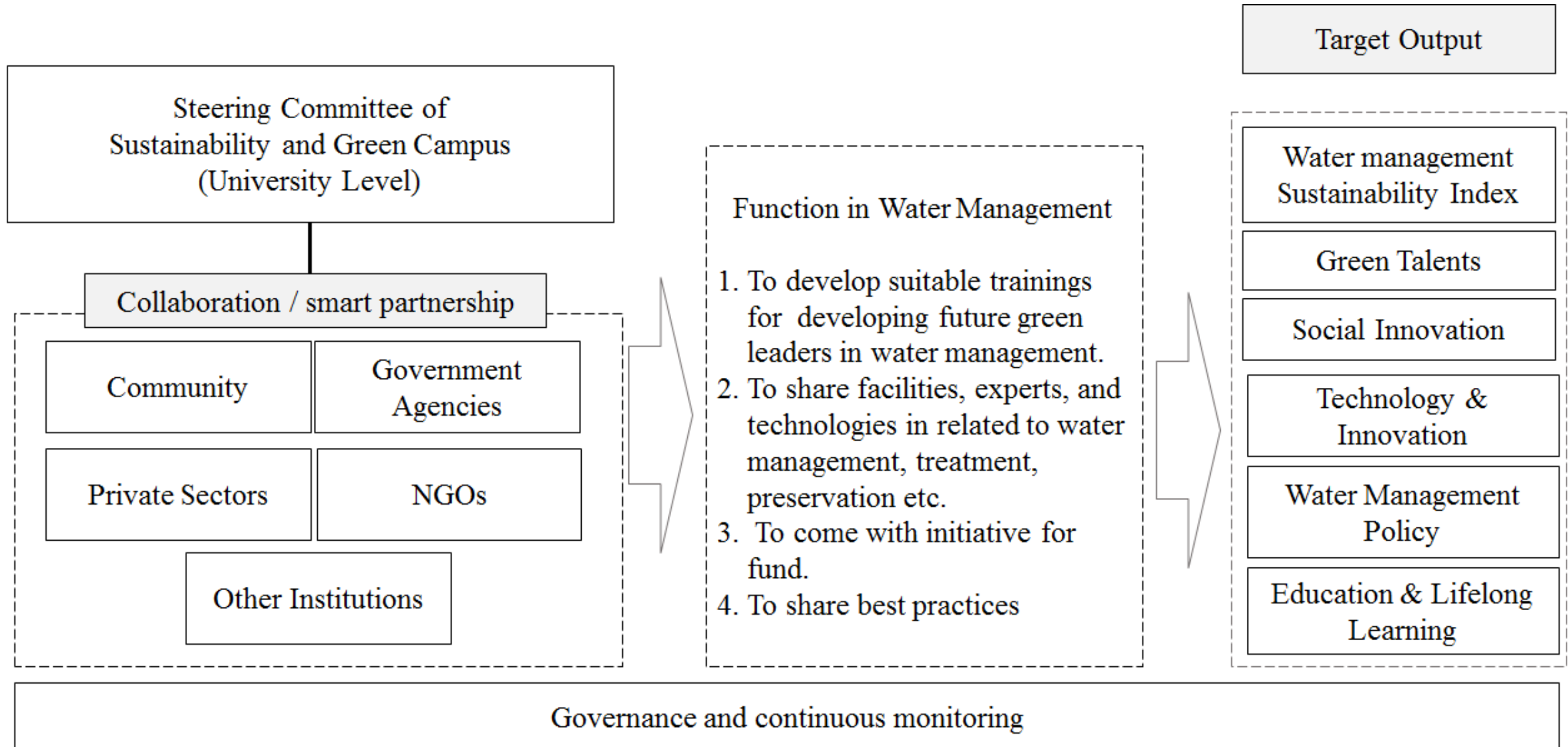


# MORE LESSONS

Obviously, most efforts on water management are carried out by a department (Development and Maintenance Department) and few units, but almost without interactions. Therefore, there is a need to pull all related experts in the campus regardless of different field expertise as long as they are able to achieve the goal – [protect water and its ecosystem](#).

In order to do this, we will consider an implementation model that aim to develop residents to have a soul in achieving greater sustainable ecosystem. Therefore, the cost calculated in protecting water and its ecosystem should include both [savings and social improvement score](#).

# UUM Water Management Framework



# IMPLEMENTATION / ACTION



## STRUCTURED DEVELOPMENT PROGRAMS THROUGH RICE

- All development programs are linked to research and innovation activities, with involvement of more than a unit.
- University provide some money to cover both development and RICE activities together with teaching and learning.

- Current model on commitment of green is purely to save cost. We take another step by including the amount of social cost that need to be bare if environment is neglected. Calculator for measuring the cost is being developed.

## DEVELOPMENT OF GREEN COST MODEL



# Structured Development Program

Program	Goal	Classification	Commitment
Smart water reticulation leakage system	Detect and give early warning pipeline leakage in academic zone for reducing water leakage	Research & innovation	Allocation of RM1.3 million on research grant and project.
Management of food waste at the lake restaurant	Avoid river pollution as a result of waste disposal of food and plastic	Research & Innovation	Drafting of policy making to protect the rivers from pollution.
Rain harvesting system	Systematic program that supports a water conservation program	Sustainability project development	Project handle through Service Learning, output from classroom into action.
No single-used plastic campaigns	Minimising the number of plastic used in campus and preventing occurrence of plastic in the rivers	Education	All UUM citizens and retails/food providers.
Replacement of rusty pipes	Secure clean water consumption in campus	Sustainability project development	Development and Maintenance Department
Development and Ecosystem Research grant	Initiative to embark on serious research activities in area related to water management	Research & innovation	Total amount of RM50 thousands and rolling project amount RM5,0000.



The experience in participating UI GreenMetric has created some concerns and responsibility to protect our world even in a university territorial. This has led UUM to re-look at our strengths and developed a framework for delivering better sustainability programs. We use our campus as a test bed, but the intention is to replicate successful programs or ideas with community and government in a hope to have a better and safe place for our generation to live.

**CONTACT US**

**Please Connect With Us At:**



**Secretariat of Living Campus  
Centre for Testing, Measurement & Appraisal  
Universiti Utara Malaysia  
MALAYSIA**



**Phone: +6(04) 924 4980**



**Email: [cetma@uum.edu.my](mailto:cetma@uum.edu.my)**

