

NP5007

INTRODUCING STORMWATER GARDENS WIDELY ACROSS CITIES

Research Question

Considering the expected higher and more unpredictable rainfall, concentrated amounts of pollutants dissolved in stormwater in cities, and increasing temperatures in highly urbanized areas, the transition from centralized water treatment systems towards distributed water treatment systems (flexible, modular, and permeable) becomes worthy of serious consideration. Stormwater gardens (green public spaces in areas across urban areas actively filtering water before it enters the water collection system) can be a significant component to this transition. This research aims to perform an in-depth quantitative analysis of the relevance and feasibility of widely introducing stormwater gardens across cities.

Methodology

The research is in its early stages, with progress expected to be made along 2017 and results obtained by 2018.

It will focus on identifying, quantifying, estimating, and comparing the costs and benefits (from an environmental, economic, and social points of view) of the wide implementation of stormwater gardens within the urban sphere, as well as assessing the degree of resilience associated to its implementation.

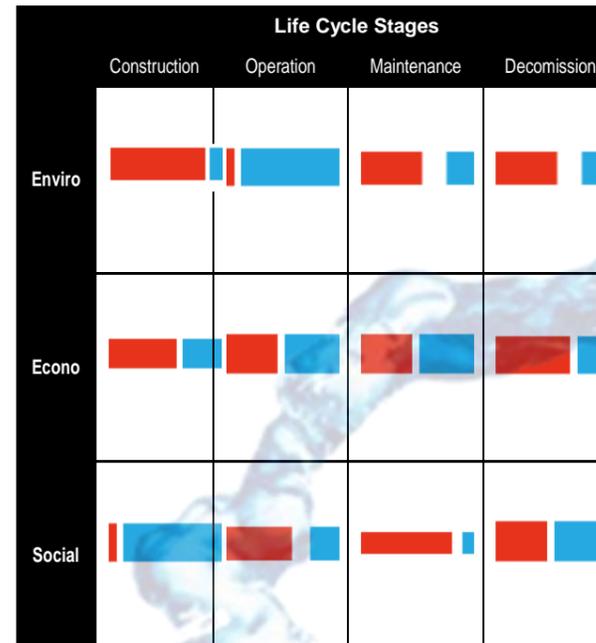
It aims to consider all the stages comprising the life cycle of a stormwater garden, mainly, construction, operation, and maintenance, and compare them against traditional ways of treating and circulating storm water.

The table below shows the steps that that will be followed:

Stages of the Research Project	months
Literature Review of relevant concepts and processes	
Definition of appropriate temporal and spatial scales	
Characterization of Stormwater Quality and Quantity linked to selected specific location	
Definition of size and specimens to be included in a single (modular) stormwater garden (Prototype).	
Estimation (modelling) of Short-term & Long-term costs and CO2 emissions as a result of treating stormwater quantities in Stormwater garden.	
Estimation of Short-term & Long-term costs and benefits as a result of treating stormwater quantities centrally at WWTP	
Setting up a test pilot of the Storm garden, to inform and calibrate model.	
Adjusting model based on test pilot	

Results

The results of the prototype stormwater garden will be collected and presented in a way similar to the tables below:



Resilience Considerations	Traditional water collection and treatment	Wide use of Stormwater gardens
Reflexivity	+++	+
Resourcefulness	-	-
Inclusiveness	+	+
Integration	-	+++
Robustness	++	-
Redundancy	-	+
Flexibility	+	-

Anticipated impacts (50 words)

The main objective of this research is to contribute valuable information to local governments to facilitate the process of decision making, considering lower carbon emissions together with higher levels of resilience in cities. This is also expected to have a positive impact on the community living in areas where the gardens are expected to be implemented.

Citi-wide stormwater gardens- putting the case forward:

An in-depth quantitative analysis of the feasibility of widely introducing stormwater gardens across cities.

Further information

<https://msd.unimelb.edu.au/future-cities-node-project>

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