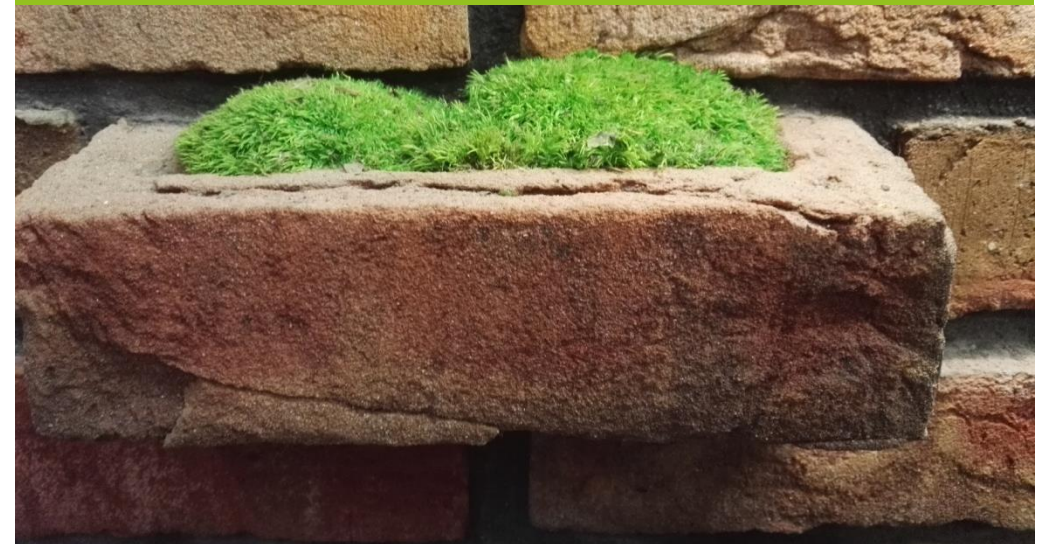


# Maribor: Public and private sectors towards a circular economy model

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## New Circular Economy Business Model for More Sustainable Urban Construction



## Nigrad d.d.

Utility company; established in 1875 in Municipality of Maribor as a fundamental maintenance and construction company.

### Nigrad`s core business is:

- ◆ maintenance of public transport areas, streets, squares and roads with related facilities and devices,
- ◆ maintenance of public sewerage, public lightning, traffic light system, and
- ◆ implementation of construction and other works for municipal infrastructure needs.

Different streams of waste will be exploited in the project:

- construction and demolition waste,
- industrial wastes,
- heavy fraction from municipal solid waste and sewage sludge,
- mostly of them currently landfilled and/or incinerated.

Their suitability for use for building materials will be demonstrated through large scale demonstration activities in Slovenia, Croatia and Spain.

- Pilot production of SRM based construction products: established modular and mobile pilot production plant for recycled and manufactured aggregates, recycled soils and building composites in Maribor (Slovenia);
- Revitalization of degraded area in Dogoše (Maribor, Slovenia);
- Construction of a small demonstration building made of green concrete in Maribor (Slovenia);
- Road construction (400 m long road section in Dogoše / Maribor, Slovenia)

## Wcycle STRATEGIC BASELINES

### EU LEVEL

Closing the loop - An EU action plan for the Circular Economy s svežnjem ukrepov to develop a sustainable, low carbon, resource efficient and competitive economy, dec. 2015

### NATIONAL LEVEL

Smart Specialization Strategy, jul. 2015

Framework program for the transition to a green economy, okt. 2015

Waste management program and waste prevention program of Republic of Slovenia, jun. 2016

### LOCAL LEVEL

Waste management strategy in MO Maribor, mar. 2015

Sustainable Urban Strategy of the Municipality of Maribor, feb. 2016

The city does not have a landfill site and does not want to have one, also does not want to dispose waste of by incineration

In the process of recovery are to be included all types of waste resulting from the population, utilities, construction, industry, agriculture and water management

The advantage of processing is the material recovery - recycling, followed by use in energy and, as a last, production of new composites

Recovery operators for specific project pillars are the companies owned by the municipality, which are already carrying out public services, the responsible for softer contents (sharing, repair, reuse, self-supply) is the municipality

New recovery capacities are planned preferentially planned in the areas of degraded municipal land with the aim for their sustainable management and revitalization

# Horizontal Organizational Project Model

Recovery operators for specific project pillars – project circles are the companies owned mostly by the municipality, which are already carrying out public services for the citizens

The municipality is responsible for softer contents (sharing, repair, reuse, self-supply)

The priority is primarily the cooperation of companies mostly owned by the municipality each within its own circle with the aim of achieving the project objectives

The responsible for each project circle additionally carry out free market services, all with the aim of improving public services for the citizens

## WHAT IS THE WCYCLE PROJECT

The project Wcycle is the strategic developmental model of the City of Maribor as an urban center in the field of integrated management of all generated waste, surplus energy and wastewater based on the policy of circular economy as material, energy and water strategy of using processed waste, energy and treated water as new sources.

## APPROACH TO THE PROJECT

Defining the strategy's baseline

Defining the project's baseline

Determining the project objectives

Designing the organizational model

Design and implementation of processes

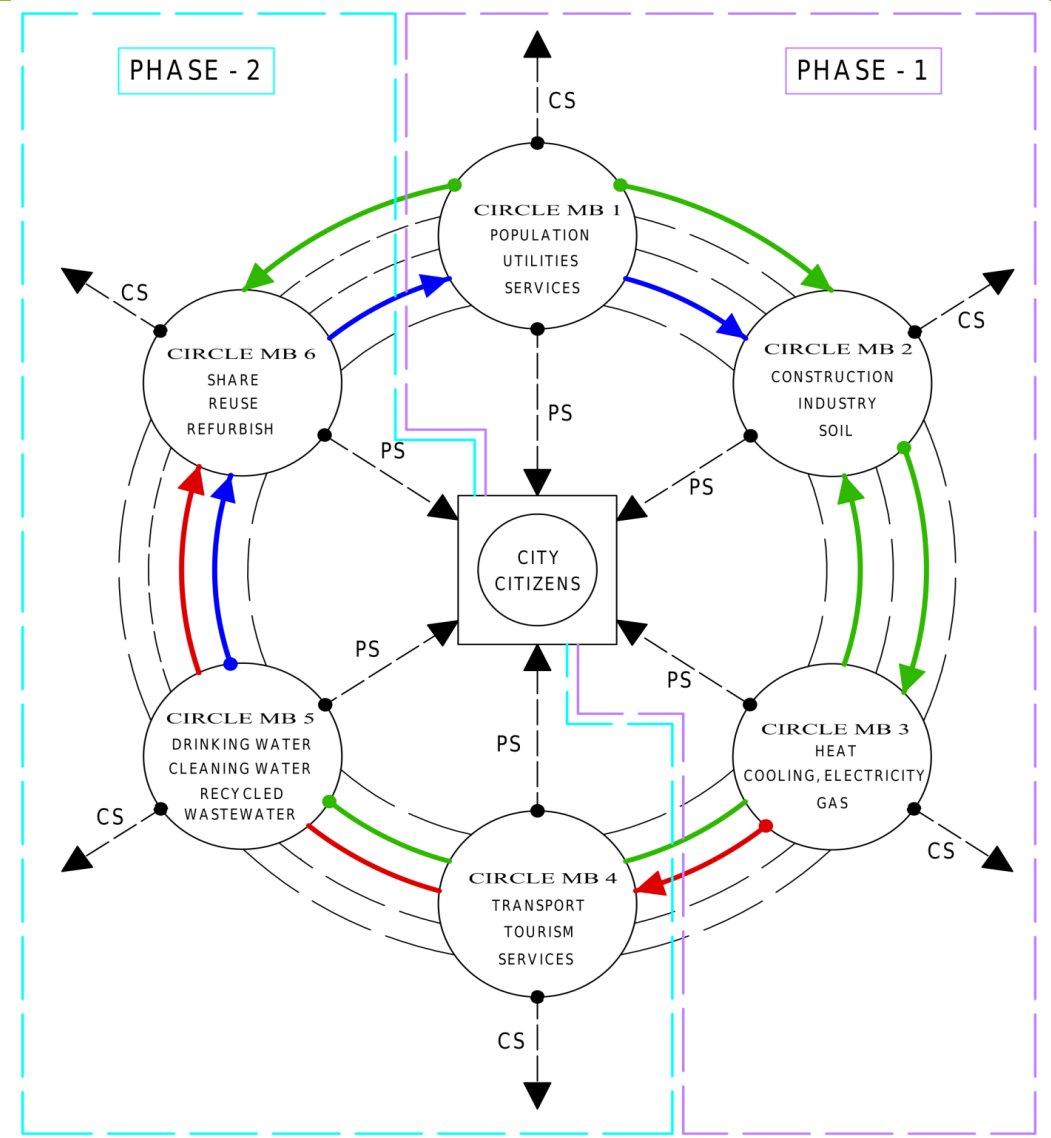
# Horizontal Organizational Project Model



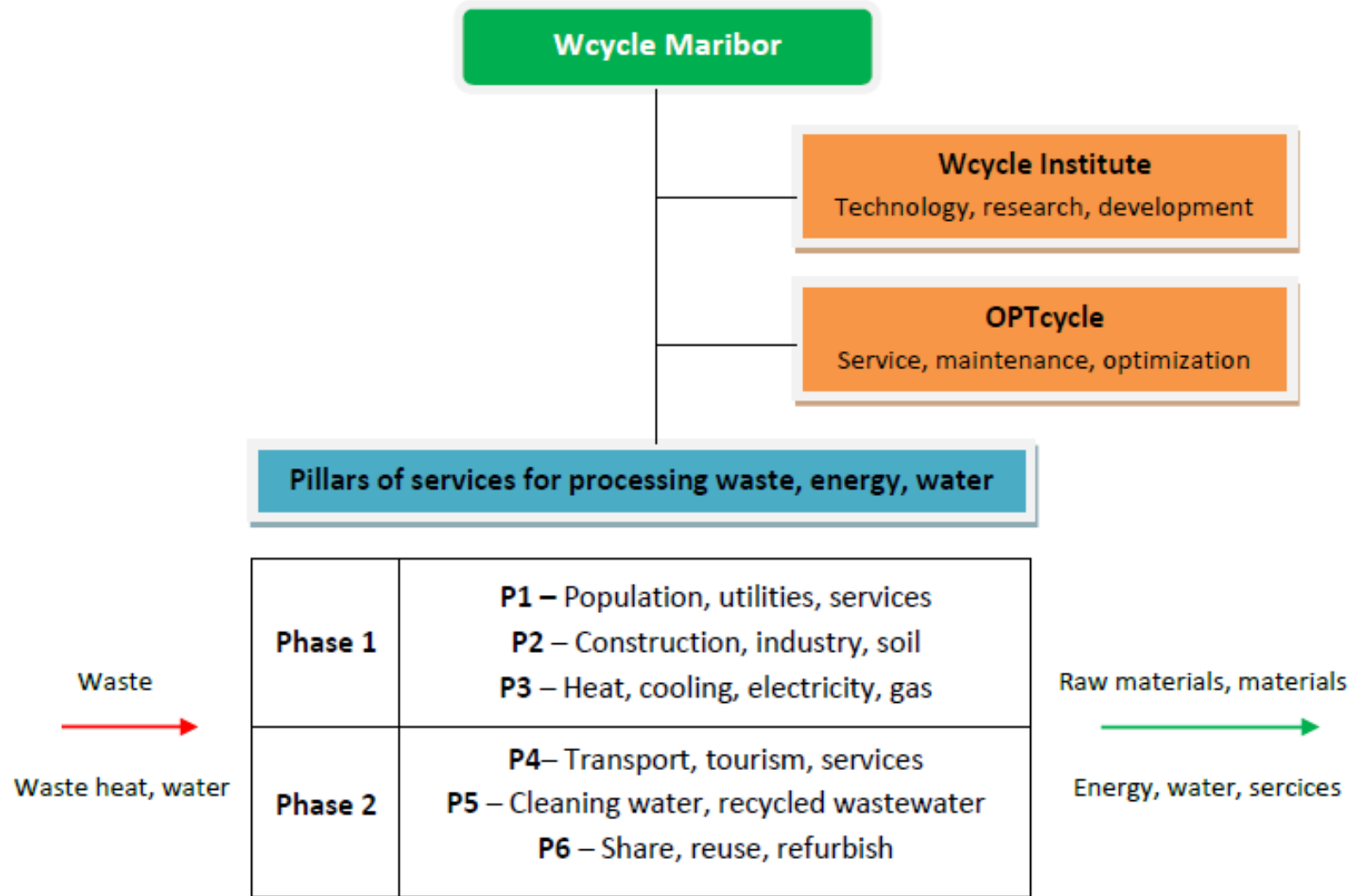
- The priority is material flow
- The priority is the flow of energy and water
- Unified flow of ideas
- Economically and with nature
- People for People
- For citizens, the market, for tomorrow
- .....

**LEGEND :**

- PS - PUBLIC SERVICES
- CS - COMMERCIAL ACTIVITY
- MATERIAL WASTE FLOW
- ENERGY FROM WASTE
- RECYCLED WASTE WATER







For research and development in the field of process and information technologies and organizational procedures companies predominantly owned by the municipality

Snaga, company for waste management and other municipal services, d.o.o.

Energetika Maribor, public company, d.o.o.

Nigrad, utility company, d.d.

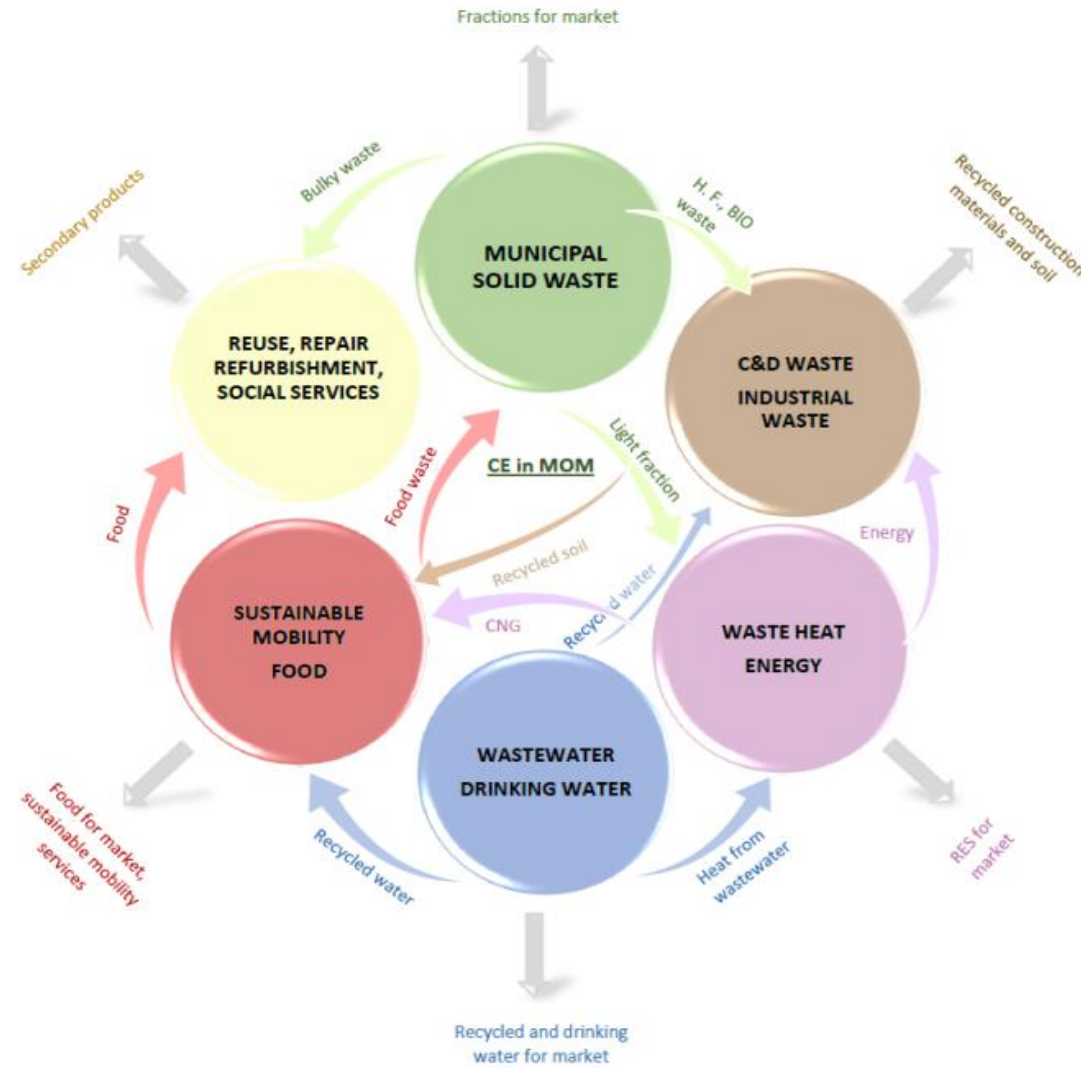
Mariborski vodovod, public company, d.d.

Marprom, public company for urban transport, d.o.o.

established the Wcycle Institute Maribor; and today under the umbrella of the Institute the companies are preparing 18 projects for implementation in the field of circular economy on the basis of approved process design, with the aim to realize them until the end of 2022.

# Determining the FUA Value Chains

Simulation of potential resources flows and their intended use as secondary raw materials within mom and the urban area.



### **GREENCYCLE at a glance**

Total cost: 1,946,272.00 EUR, Project start date: 01/11/2016

- ❖ Strategic framework for circular economy
- ❖ Toolbox for circular economy deployment
- ❖ Establishment of transnational circular economy marketplace – cooperation platform
- ❖ Testing the pilots

### **City of Maribor (Mestna Občina Maribor)**

Total Cost : € 3,747,650.00; Project start: 01.12.2017

The URBAN SOIL 4 FOOD will test a model of urban soil-based economy circle in order to increase local food self-sufficiency and to minimize the city's environmental footprint. The aim is to use cities' internal waste – particularly excavated materials from construction sector – as input material to produce recycled, standardized and certified soil for meeting cities' needs, and notably to be reintroduced to the ground in order to improve soil quality and increase food production. A pilot system for urban soil production including wastes from different sectors will be tested, and urban community gardens will be developed using the standardized soil produced.



## E-Co-Housing - Co-creating a Regenerative Housing Project Together with the Community

Total Cost: € 5,635,068.75 Project start: 01.11.2018

The main objective of E-Co-Housing is the creation of a regenerative and collaborative social housing community that is co-created by residents to house approximately 100 people in a social community. Considering prevention of urban sprawl, the site of the project is currently not in use. The building will be a multi-story prefabricated modular construction that reflect a cross-section of housing needs in Zugló, Budapest. Low construction costs will enhance affordability and the regenerative use of land and recyclable materials, respecting Circular Economy principles, will contribute to climate resilience and a greener urban environment.



## CWC - City Water Circles

Total Cost: € 2,698,001.40 € Project start: 01.04.2019

The CWC project aims to help municipalities to reform outdated urban water infrastructure systems via applying a circular economy approach, which offers many economic and environmental benefits. This will be achieved by the project by promoting a water saving culture, including the use of non-conventional water resources and by taking the lead in adopting urban rainwater harvesting and utilisation as well as greywater recovery measures on city level. The partners will also co-develop with local stakeholders a set of innovative methods and tools usable all around central Europe.

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