

November 2018

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The Urban Lab of Europe !

The URBAN SOIL 4 FOOD Project Journal N°1

Project led by the City of Maribor



**CIRCULAR
ECONOMY**



The URBAN SOIL 4 FOOD Project

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. In parallel, food distribution will be structured around the creation of an urban food chain and local urban food labels, and an Agri Living Lab will be set up where different experiments relating to social innovation, urban environment and agriculture will take place.

Partnership:

- **City of Maribor**
- Institute for Innovation and Entrepreneurship
- E-institute for comprehensive development solutions
- AKTIVIRAJ SE Development of social projects and promotion of active life association
- Snaga
- Wcycle Institute Maribor
- Deltaplan
- Slovenian National Building and Civil Engineering Institute (ZAG)

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Based on interviews with stakeholders in 09.2018.

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1. Executive summary

The first journal of the Urban Soil 4 Food project in Maribor recounts the activities carried out within the first phase of the project as well as providing an overview of the role and tasks the different local partners have carried out as well as the learnings they can share with others wanting to embark on a similar journey.

The Urban Soil 4 Food project in Maribor aims at using the city's waste to produce and valorise new products and food using an innovative process to produce urban soil, with the aim to increase local food self-sufficiency and minimise the environmental footprint of the city.

To reach such goal, within the first months of the project the local partnership has been preparing the ground to establish the pilot project areas, preparing the background conditions for the project to be experimented and visible to the public starting from spring.

“Circular economy in Maribor is the opportunity to relaunch the industrial capacities of the city within an environmentally sustainable path.”

Andrej Fištravec, Mayor of Maribor

The key activities carried out up until now have been around three areas:

- awareness activities allowing stakeholders and target groups to be acquainted with the

project activities and start getting familiar with some of its concepts, also visible through pilot actions as the vertical gardens established before summer.

- Development of a laboratory system for the production of soil from waste, which has been tested by ZAG by experimenting various soil mixtures with different ratios of compost, bio-charcoal and excavated soil.
- Set up of the community gardens by identifying the pilot area, developing the plan and starting the community involvement to define the activities to be carried out in spring.
- Setup of the public procurement process for the technology of the innovative pilot plant.

All local partners have been greatly involved in the development of the different items experiencing great cooperation and resilience to adapt the plan to the needs and challenges encountered along the project setup.

The upcoming activities in 2019 will be the official start of the urban soil, with the final technological optimisation to be carried out on each soil type, the community gardens being operational, motivating the public towards organic gardening, and the local food chain will be established and operational, with a cooperation between local producers and local consumers.

¹ McDonough, W., Braungar, M., 2003, Cradle to Cradle: Remaking the Way We Make Things, Vintage Books, London

² Ellen MacArthur Foundation, 2012, Towards the Circular Economy: an economic and business rationale for an accelerated transition. Available online: <https://www.ellenmacarthurfoundation.org/assets/downloads/publications/Ellen-MacArthur-Foundation-Towards-the-Circular-Economy-vol.1.pdf>

³ 2nd December 2015, Circular Economy Package: http://ec.europa.eu/environment/circular-economy/index_en.htm

⁴ EU Urban Agenda, 2017, Partnership on Circular Economy, Circular Economy Orientation paper, available online: https://ec.europa.eu/futurium/sites/futurium/files/circular_economy_orientation_paper.pdf

2. Circular Economy

2.1. Approaches and Policies in Europe and Slovenia

Under the current conditions, for European cities to be the motors of our economy they need to consume a great amount of resources and produce waste which the ecosystem struggles to reabsorb. Under such considerations the Circular Economy movement has started advocating for a new paradigm that interprets waste as a resource to be reinserted into the production cycle¹. With the raising awareness of the economic, environmental and social limits of the current production system, the concept of circular economy has gained momentum worldwide and in Europe.

“Looking beyond the current take-make-dispose extractive industrial model, a circular economy aims to redefine growth, focusing on positive society-wide benefits. It entails gradually decoupling economic activity from the consumption of finite resources, and designing waste out of the system. Underpinned by a transition to renewable energy sources, the circular model builds economic, natural, and social capital. It is based on three principles: design out waste and pollution; keep products and materials in use; regenerate natural systems.”²

For this reason, the European Union has over the past years been greatly advocating for cities to be

taking a lead role in developing circular models to manage economically, environmentally and socially the pressing challenges in our cities. Back in 2015 the European Commission adopted the Circular Economy Package³ to develop a sustainable, low carbon, resource efficient and competitive economy. As a result, there is also a Partnership of the EU Urban Agenda working on Circular Economy⁴ to improve its funding, knowledge and policies. The partnership on circular economy will potentially look into the whole circle, starting with the extraction of raw material, design, production, transportation, consumption and finally the waste recycling with residues for final disposal.



Image 1: Circular Economy Diagram. Source © Eutopian

At Slovenian level, following the Circular Economy Package a series of national laws were approved: the

¹ Strategy for the transition to circular economy in the Municipality of Maribor: https://ec.europa.eu/futurium/en/system/files/ged/2018.10.23_maribors_strategy_on_circular_economy.pdf

² Greencycle project: www.alpine-space.eu/projects/greencycle/en/home

Smart Specialisation Strategy was adopted in July 2015, then the Framework program for the transition to a green economy in October 2015 and finally the Waste management program and waste prevention program of the Republic of Slovenia in June 2016.

At local level, in Maribor the Waste management strategy in Maribor was adopted in March 2015, the Sustainable Urban Strategy of the Municipality of Maribor in February 2016 and the

Strategy for the transition to circular economy in the Municipality of Maribor⁵ in 2018.

The development of legislation around circular economy is essential to create a framework in which public sector together with private, but also civic and research, can embed their actions. Despite still being far from a full circularity of our resource, the Maribor experience proves a direction in which city authorities can lead the way in this transition.

2.2. Circular Economy in Maribor

The city of Maribor is a front runner in experimenting circular economy solutions to operate local resource management, starting for the organisation of the municipal utility companies. Within the city strategy, a pioneering role is taken by the Urban Soil 4 Food project, that aims at establishing innovative soil based economy circles that will increase local food self-sufficiency and minimise the environmental footprint. Yet this is not only to be seen as an environmentally sustainable solution but also as an opportunity to launch new economies that will create local employment.

Maribor has an industrial past which has left a heritage of entrepreneurial attitude in its inhabitants, which also explains the presence of many international companies having settled their production premises. At the same time, the region is also well-known for the production of its high quality wine, yet the overall agricultural production is rather limited, making the city heavily dependant on imported goods. Recognising the limits of the current situation, the city aims at reaching food sovereignty by greatly investing towards the production of local food, through the education towards cultivation

and healthy eating, as well as the support of innovative waste management mechanisms to generate soil out of municipal biological waste. To achieve this a local ecosystem of stakeholders has been jointly cooperating over a number of years and has teamed up within the Urban Soil 4 Food project to pilot new joint solutions.

“Circular Economy is a strategic project of the city that started four years ago, that aims at controlling material flows through the city – energy, water and raw materials. We want to control and use the resources in the most effective way according to circular economy principles. We established this model around utility companies within the city, looking at the EU level legislation and strategies as a basis for our local strategies for this transition – which is not finalised yet. We are using one of the already approved projects – Greencycle⁶ in the alpine space - to develop strategy for the city to transit to circular economy. It is an ongoing process, the strategy will be prepared and finished for the City Council by 2018, and this will be the third strategy on the topic of circular economy in the city. We looked at what

⁷ Wcycle Institute: www.wcycle-maribor.si

⁸ Interview with Igor Kos was carried out on 5.11.2017

we wanted and what we didn't want. We don't want another landfill, because we already shut down ours and we can't use that area for at least another 10-15 years, depending on how things develop. We don't want incineration of waste, although we don't mind having some bio-waste burnt, we don't want to burn all of our trash, like some cities do. What changes in our new system is the interaction between the utility companies, so these material flows will go from one to the other – as a waste for a company might be a resource for another. To be able to do that we looked at the organisational model of the city and found out that there are some missing links. One of them is recycling: I currently work in the Wcycle⁷ recycling institute that has been recently founded, and it functions as a platform where all the local actors come together and talk about their projects, developing them jointly. There is not one company now developing something without talking to another company – which was the trend in past years. Now there is a common ground, a common table for discussion where companies can meet, talk and trade. There is also a project about up-cycling, dealing with the technology needed for the implementation of other projects. If there are doubts about what technology can be used for a process, they can also develop it. This is an innovative approach that should effectively start during this year, as until this moment we are still using existing technologies.”

Interview with Igor Kos, Wcycle Institute⁸

The experience in Maribor is based on the fact that the city does not wish to have a landfill and at the same time does not want to dispose of waste through incineration. For this reason, the city has elaborated a process of recovery of all

types of waste resulting from utility companies, industries, farms as well as citizens. This allows to recover material by recycling, generating energy and producing new composites. A key role is played by municipal utility companies that carry out public services and that have recently started cooperating to sharing, repair, reuse and self-supply, as illustrated by diagram 1. Finally, the localisation of such services and activities in waste land in an opportunity to regenerate areas.

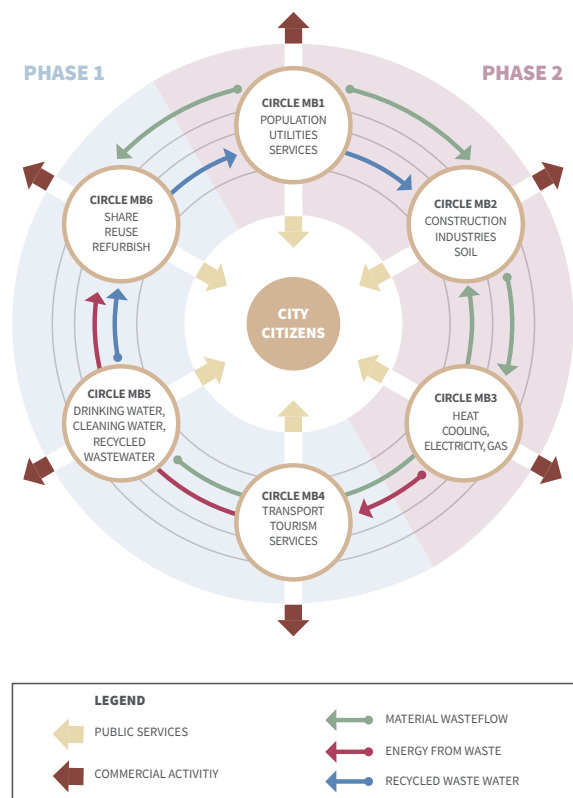


Image 2: Wcycle Institute functioning. Source © Eutroplan based on Wcycle

“The recycling and the up-cycling institutes were established by utility companies, not by the city, but with its permission. It was an unanimous vote in the Council, so there is a political will behind it. What we actually did was scanning what was going on in the city. We had inputs of materials that were coming out of utility companies just out of their regular daily work. We looked at the

outputs – what materials we want to have after they have been processed through our system. These processes were then defined, and this is the basis for the project development. For example, in the case of municipal waste we will be able to return up to 85% of the collected municipal waste because of the automated sortation plant. The rest, heavy fraction and dangerous waste, which consists of about 15% of the whole waste will be dealt with through different processes. When it comes to construction waste, we see what we want to do, and we really want to use these materials as fillers and composting materials for works to be done in the city, basically we want to reuse what we dug out, but in different forms or different combinations. And even though we will use materials coming from outside the city, at the same time we will try to use as much material as possible coming from the city.”

Interview with Igor Kos, Wcycle Institute

As the diagram 2 illustrates, the input and output cycles allow to innovate process operated by municipal companies. Under such a system, waste

of one company can be a resource for another, forcing them to cooperate. To smoothen such process the Wcycle Institute was established by bringing on board all representatives of municipal companies and the municipality itself to steer decisions within the circular economy model.

In terms of innovation, the Urban Soil 4 Food operates on two main aspects: technological innovation connected to the pilot plant and process innovation connected to the collaboration of the various municipal companies using other’s waste. The education and participatory approaches connected to the urban gardens and the platform that will be developed are key to ensure that the innovation will be shared broadly with local inhabitants, farmers, consumers, companies and many others. The project introduces urban food chains and uses open innovation processes to establish business support for innovative circular economy startups in the urban area. Knowledge circle provides project with internationally standardised soil and with training, seminars and study visits for stakeholders.

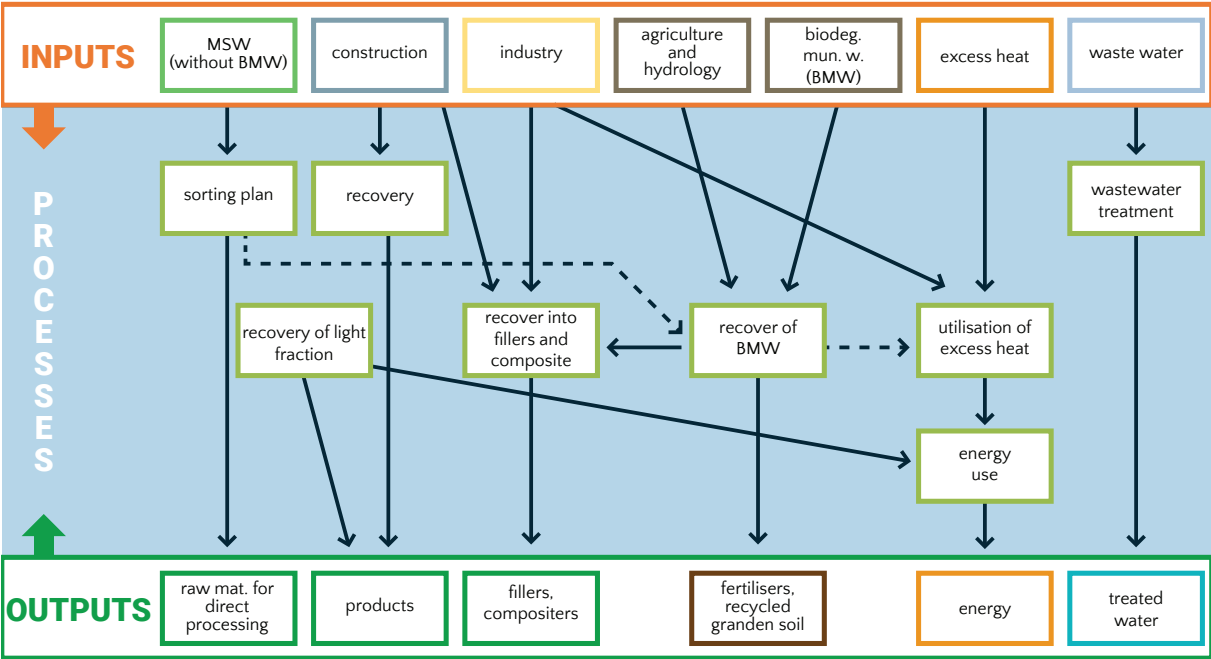


Image 3: Diagram of inputs and outputs in the City of Maribor. Source © Eutropian based on Wcycle.

3. Urban Soil 4 Food

3.1. Project concept

“Urban Soil4Food is module of the bigger picture the city is working towards. It will use excavated earth from the service works in the city, mixed with biowaste being composted, mixed together but in a certified way so that it will be possible to know exactly what it is composed of. We will use it for urban gardening of the parks in the city and for maintenance works. Citizens will be able to grow food on this soil, we will try to collect the surplus and to use it for schools and kindergartens in the city. This is circular: the food being locally produced and used is the key core of this project. Finally, legislation has to be adapted to circular economy in order to be able to grow. We set high goals and we are not backing down from them. We are very motivated and happy that all utility providers will participate in this strategy. Now CEOs are part of the project, and there are less and less problems regarding implementation issues. If we work together, mathematics looks a bit different: 1+1 is not two, it can be more.”

Interview with Igor Kos, Wcycle Institute

Urban Soil 4 Food is composed by three main goals: change the material flow, reach food sovereignty and increase societal awareness.

The first goal is to achieve a change of the material flows from the currently unused ones which are going to the landfill to these being recycled and

reused within the cities. By reducing the amount of waste in landfills, especially organic waste which is 2.400 tons/year and mineral waste which is 2.000 tons/year, it will be possible to produce different types of soil, up to 3,000 tons/year which can be used for urban agriculture, parks, roadworks or construction, as well as to produce energy to be used for the needs of operation of soil production. Particularly relevant in this respects is the production of certified soil that will go to the market.

Food sovereignty will be reached by establishing 7.398 m² of new urban gardens for public use, based on the already existing practice throughout the city. Furthermore, the project aims at developing a local food label, which will be used by at least 50 farmers in the area. The label will be an important means to establish the local food chain between local farmers and local consumers, which are estimated to be at least 10.000 per year.

The third goal is to establish a societal change in awareness on circular economy. In fact, the community gardens are expected to bring circular economy closer to the people, as well as workshops will increase people’s involvement and interest to open innovation and the involvement of at least 15 SMEs to work in the field of circular economy.

3.2. State of play

During the inception of the project, a great effort was made by partners to create the local cohesion and the network necessary to effectively establish the ambitious goals of the project. From a factual point of view, four key activities have been carried out, as fundamental to the further development in the upcoming years.

Firstly, the Kick-off has served as an opportunity to create local public awareness on the project through press news that allowed stakeholders and target groups to get acquainted with the project. In fact, already in spring a series of workshops were carried out by Aktiviraj se in order to advise the interested public about permaculture, how to maintain a garden without digging and about efficient urban gardening.

Secondly, partners have been involved in the set up of the community garden by identifying the pilot area, developing the plan and starting the community involvement to define the activities to be carried out in spring. To raise awareness, a vertical garden was created as a learning example for the establishment of more gardens that we have envisaged in the project. Currently the stakeholders are involved in the development of the gardens, the orchard and the educational space.

Thirdly, up until now partners have been involved in the development of a laboratory system for the production of soil, carried out by ZAG. Snaga has provided different soil mixtures (mixtures with different ratios of compost, bio-charcoal and excavated soil) as well as their individual components which were tested by ZAG according to Slovenian standards (e.g. adequacy of compost, etc.). Clear results

on which mixtures are to be used for urban soil production to achieve optimal results have been gathered and made ready for further uptake and demonstration of the project.

Finally, a more technical but essential element has been carried out, this being the setup of the public procurement process for the technology of the innovative pilot plant, carried out by Snaga in close cooperation with all local stakeholders in order to gather as much input on requirements.



*Image 4: Vertical garden in Maribor.
Source © Urban Soil 4 Food*

All local partners have been greatly involved in the development of the different items experiencing great cooperation and resilience to adapt the plan to the needs and challenges encountered along the project setup. The upcoming activities in 2019 will be the official start of the urban soil, with the final technological optimisation to be carried out on each soil type, the community gardens being operational, motivating the public towards organic gardening, and the local food chain will be established and operational, with a cooperation between local producers and local consumers.

3.3. Stakeholders' roles

The URBAN SOIL 4 FOOD consortium is composed following the quadruple helix principle that sees the presence of stakeholders from the Public, Private, Research and NGO sectors. Stakeholders are:

- City of Maribor
- Institute for Innovation and Entrepreneurship - NGO
- E-institute for comprehensive development solutions - NGO
- AKTIVIRAJ SE Development of social projects and promotion of active life association - NGO
- Snaga - Infrastructure and Public Service Providers
- Wcycle Institute Maribor - Infrastructure and Public Service Providers

- Deltaplan - service and consulting company
- Slovenian National Building and Civil Engineering Institute (ZAG)

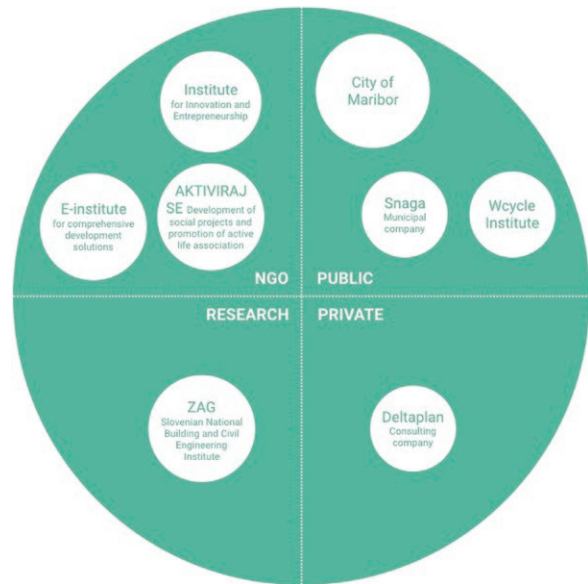


Image 5: Quadruple helix diagram in the Urban Soil 4 Food partnership.

Source © Eutroplan based on Urban Soil 4 Food application

The **City of Maribor** is in charge of the coordination of the project with a strong commitment from the Mayor and from departments.

In this stage a very important role has been played by the **Slovenian National Building and Civil Engineering Institute (ZAG)**, who is responsible for the evaluation and certification of the urban soil prepared within the project. At this stage it has carried out a series of experiments on salad growth as well as on green walls and green roofs using different types of soil, evaluating the growth of the plants and the water absorption. At a latest stage ZAG will be the responsible authority to standardise and internationally certify recycled urban soil), for which they are currently looking into standards and carrying out a survey in order to ensure that the certification is complying to all Slovenian and EU standards. Based on the certification, the municipal company Snaga will develop a protocol to develop the soil.



Image 6: Urban Soil 4 Food green wall at ZAG premises.

Source © Eutropian

The Institute of Innovation and Entrepreneurship deals with rural development, agriculture and tourism. They are based in Maribor and deal with agricultural companies in the region since 20 years. Within this project they will be responsible for the development of a platform b2b on local food and information from public sector (primary and secondary schools, gastronomy, hotels). Within the project they will contribute to the development of a food chain but especially towards a sustainable supply demand platform. Currently they have started preparing the interviews to stakeholders, 100 of which will be carried out within October and December.

Based on the initial conversations with local farmers what is emerging is that:

- Up to now only 20-25% of food supply is currently local, therefore the goal is to raise it, starting from the public demand and then ranging towards the private home consumption too.
- According to what currently local farmers can produce, the local consumption could reach the 40-45% but they don't know how to sell their products.
- for the moment there isn't a clear overview of the current offer and demand. Therefore another tasks being carried out for now is to map all the local farmers, as the currently list doesn't provide an extensive overview of what they produce.
- The profile of local farmers is that they are small, operating on plots of land between 2-8ha, and mainly producing biologically, which are very small and require additional support to get on the market.



Image 7: Aktiviraj se stakeholders on urban garden site
Source © Eutropian

The **Aktiviraj se** (Activate Yourself) NGO exists since eight years and manages gardens since five years with the goal to activate young or long terms unemployed people. They are also a social enterprise managing a reuse centre, a second hand and rehabilitation/up-cycling centre that creates their biggest income.

The garden they currently run covers 800 m² with ten volunteers organising workshops on biodynamic agriculture and similar educational activities. Within the framework of this project they are responsible for the urban garden and its planning. There will be a new affordable housing complex in front of main entrance of the urban garden in two years' time, which will allow to attract part of the new users. The plan is being also defined with the input of the nearby urban garden setup during the EU Capital Culture of 2012, from whom they gathered information on previous experience. For example, in terms of the size of plots, it emerged that the

best option is 30-50m² each, which would create approximately 60 gardens, aside of the orchard, the community space, for which the plan will be ready by end of 2018.

The **WCYCLE Institute** is bringing together all the municipal utility companies and uses waste of one as resource for another. In its present form it has been existing since 1,5 years and has been very active in EU projects which help the development of new concepts and then the creation of ongoing activities. In the near future, the aim is to sell services to private sector despite only public capital can be involved.

Deltaplan is a private consultancy company specialised in sustainable solutions, which is particularly involved in the development of WP 7 on knowledge and WP 4 on material circles and will cooperate closely with ZAG on the soil recipes and legal permits, tasks for 2018 and 2019.

Snaga is the waste management company of the City of Maribor with 100 years tradition and currently focusing on circular economy. This project is a chance to recycle biological waste so that it stays in the city and therefore Snaga plays a fundamental role in the implementation.

“The scope is not to lose any waste!”

To get most out of different kind of urban bio-waste we would need three technologies to: 1) make food 2) grow grass and 3) for construction/remediation systems.

Today the City of Maribor already collect 21% of biological waste, what is 13.000 tons of bio waste per year, mainly coming from separate collection of bio waste, then from city parks in the form of grass, trimmings and wood. Snaga currently spends 1 million euro to sell its biological waste.

The reduction of costs would be especially related to the reduction of the transport and the different management as waste would not require storage.

4. Learnings and perspectives

4.1 Overview of the Challenges

“Awareness and cooperation among key actors – businesses, consumers, NGOs and government – are needed for cities to make the circular future a reality through systematic distribution, communication and the promotion of circular practices. There are four main types of barriers: financial, institutional, social and technical.”⁹

MAPPING URBAN SOIL 4 FOOD AGAINST THE ESTABLISHED UIA CHALLENGES

Challenge	Level	Observations
1. Leadership for implementation	Low	The project is well coordinated by the City of Maribor and up until this initial phase all partners have been able to cooperate. Obviously, being the consortium rather large, special attention will always have to be paid.
2. Public procurement	Low	For the moment the public tender for the technology to be implemented within the project has not created any challenges. Snaga is currently working on the public procurement for all the parts of the innovative pilot plant for the Urban soil 4 food project. A possible difficulty might be connected to the public procurement for food in the region to be provided to public canteens but examples are available around Europe to solve this possible problem.
3. Integrated cross-departmental working	Low	For the moment being the different departments and in-house companies appear to be cooperating well even thanks to the involvement to the WCYCLE institute which is composed by the different companies.
4. Adopting a participative approach	Medium	The effective participation will not be a problem for the community gardens, but in the case of the pilot plant this is something that public struggles to relate with and local communities usually don't want close to home. Therefore even though the project is carrying out a participative approach this will not necessarily lead to positive co-creation solutions, but rather open up the friction with local inhabitants, in order to find a more appropriate solution.
5. Monitoring and evaluation	Medium	Because there are many innovative elements within the project that still don't have a monitoring system, as in the case of the soil production or the pilot plant, special attention will have to be paid by technical partners to create a suitable mechanism.

⁹ Quote from World Economic Forum, 2018, White Paper on Circular Economy in cities, available online: www3.weforum.org/docs/White_paper_Circular_Economy_in_Cities_report_2018.pdf

Challenge	Level	Observations
6. Financial Sustainability	Medium	Certain elements, especially related to the waste management will most likely not have difficulties in developing a financial model, but this is not the case for softer measures, such as the trainings within the community gardens, that need to create a more autonomous model.
7. Communicating with target beneficiaries	Medium	Circular Economy is an emerging topic that the wide public is not necessarily familiar with yet, reason why public events are not necessarily attractive to many people. More effective appears to be the creation of events and debates around the practical implementation, as in the case of the community gardens.
8. Upscaling	High	The project is strongly embedded within the Maribor context and long experience, which would not be easily replicated in other contexts. For this reason the connection of the Maribor experience with the Action planning of the EU Urban Agenda Partnership on Circular Economy can be extremely beneficial.

From the discussions with the local stakeholders it emerged how there is a full awareness of the risks within the project and countermeasures are being already taken in order to implement solutions in due time.

4.2. Stakeholders' learnings

The Urban Soil 4 Food partners have built up over the past months a cohesive cooperation system, which has allowed them to establish a resilient mechanism to overcome challenges and adapt to local needs according to regular small changes in the work plan. Such a system of trust is greatly based on the fact that most local partners had already worked together in previous project, therefore proving their reliability and professionalism.

In these respects a major role is played by the City of Maribor, that has ensured a strong political commitment of the Mayor himself as well as a constant backup of the administration in terms of project management and administrative support to the project development.

For ZAG up to now the main challenge faced was that the Laboratories have predominantly had experience with stone, aggregates and recycled materials, therefore having to expand within this project their know-how to soils. For the project needs, experts will strengthen and upgrade their knowledge regarding soil testing, and soil certification and standardisation. This will allow ZAG to broaden their areas of expertise and become more competent on the market.

The main expectations from ZAG within this project are to set up new projects and get more companies asking for certifications in the new field of soil science, related to the URBAN SOIL 4 FOOD themes. Currently, nowhere in the world there is a certification on soil, because this is

a living organism, so the biggest challenge is whether it will be possible to certify the soil.

The Institute of Innovation and Entrepreneurship has learnt up to now that *“Time is the most valuable currency of farmers”*, therefore in order to have some of their time it is necessary to go on site and carry out interviews whilst they are working. Another learning is that there is a generational change in the perception of rural work, as younger farmers are looking not only in agriculture but more broadly in rural businesses, but need support in the analysis of the supply-demand. In this sense, there is a LEADER project in the area but due to administrative problems it provides little financial support.

On the side of consumers they don't know where to buy and how much, especially when looking at the perspective of schools, catering and hotels, because they need fix amounts. Individuals instead are more flexible according to the availability.

Aktiviraj se already started involving some of the nearby inhabitants in the community garden setup and have received requests from people wanting a plot, therefore there is a high demand and they don't expect having problems

in getting people. The goal is not about providing self-sufficiency but about improving education around healthy eating and biological cultivation. In 6 months' time there will be the first orchard with traditional old fruits and one part of the community gardens will be prepared for being used during spring. The foreseen upcoming challenges could be:

- How to get people involved in the educational part, which could be overcome by making a rule that tenants of the gardens have to attend 80% of the workshops.
- Schedule might be tight because of all the things to be done within the project, much of which is interlinked with activities from other partners.
- Infrastructure in the garden, as water and electricity are currently missing on site, which might take a long time and there are different understandings in the group on how to solve the matter.
- Overall there is a big dilemma for the future after the project ends, which is the business plan of the gardens.



Image 8: Urban garden workshops. Source © Urban Soil 4 Food

At the very start Wcycle greatly contributed to the overall coordination of the project, until the current project manager was hired by the City, allowing the organisation to reinvest fully its resources on the project activities. Wcycle's member Igor Kos is leader of the work group 2 for the gardens, therefore being closely involved in the operational parts of its development.

Wcycle is greatly involved in the coordination of many of the activities, currently the urban community gardens in particular. In the upcoming development of the project it will be involved in two working groups, the knowledge and the food ones.

Deltaplan has been greatly involved in providing technical back-up to the project. A key learning has been to start whenever possible the preparation of tasks even prior to the expected schedule in order to overcome potential challenges. For this reason they have already identified as challenges the development of documentation for environmental permits and consents, which are fundamental, the involvement of local

communities in the pilot plant, which is much less attractive to the public than community gardens, and the co-creation of the pilot plant erection, which might be difficult in more general terms. For this reason they have learnt that it is essential to strengthen capacities of public utility companies, as the circular economy entrepreneurial approach is extremely new for them, and that SMEs need to be involved in the implementation phase.

Snaga play a key role in the technical development of the project, especially in terms of waste management and recycling. For this reason they started considering relevant project elements such as the upscaling of the project after the end of the UIA, which is why they started working on it. A key learning for them has been that even though the timeline is defined as a linear process, there are often ups and downs that partners need to be able to adapt to. Finally, during the technology study with the conversations with the stakeholders the technology characteristics have been adjusted to reach better solutions.

4.3. Next steps

“I hope it will be a fully circular city in the near future! This program is basically solving our problems and challenges, and we think that doing something “regular” would not get us to the goals that we are setting out, so we have to find other ways and we see that the circular economy models and principles, that have been implemented in the city, are working. We just need to increase the education, the knowledge and we need to get people on board. We hope we will be able to strengthen the local economy through this process, so that we will be able to improve the economic status of the city and its quality of living. This is what we want to achieve.”

Interview with Igor Kos, Wcycle Institute

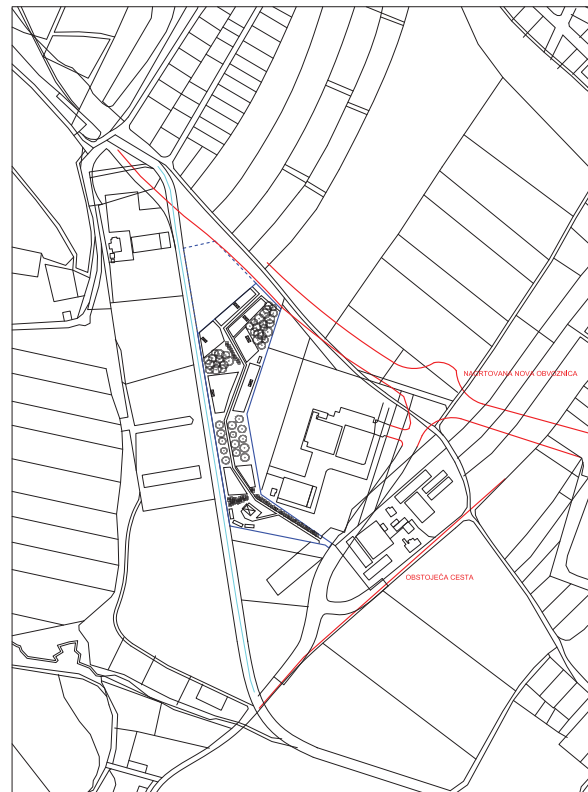


Image 9: Urban gardens project.

Source © Eutropian based on Urban Soil 4 Food project

To reach this ambition within URBAN SOIL 4 FOOD, three main components are being carried out and will be showing some concrete results already in the upcoming months: the soil production and the urban gardens.

The **soil production** has been under development over the past months and results have already shown the best composition in terms of water absorption and nutrients for plants, which was experimented with a number of plants in the ZAG laboratories. Official results will be published in the coming months.

More than 7.000m² of **urban gardens** will be created within the Urban Soil 4 Food pilot project. With local partners already involved in the planning of the garden with its orchard and educational activities, members of the

community will be able to work on the allotments already in spring 2019.

The foreseen upcoming milestones are in April 2019, with the start of the production of urban soil. After its validation, a final technological optimisation will be carried out for each type of urban soil and various recipes will be created, optimising the use of the production pilot for each type of produced urban soil. In May 2019 the urban community garden network will be set up, with the establishment of four types of organic gardens, offering citizens a holistic and motivating gardening experience and a community organic orchard will be set up, where different fruit tree species will be planted. Furthermore, the local food chain will be established and operational, with a cooperation between local producers

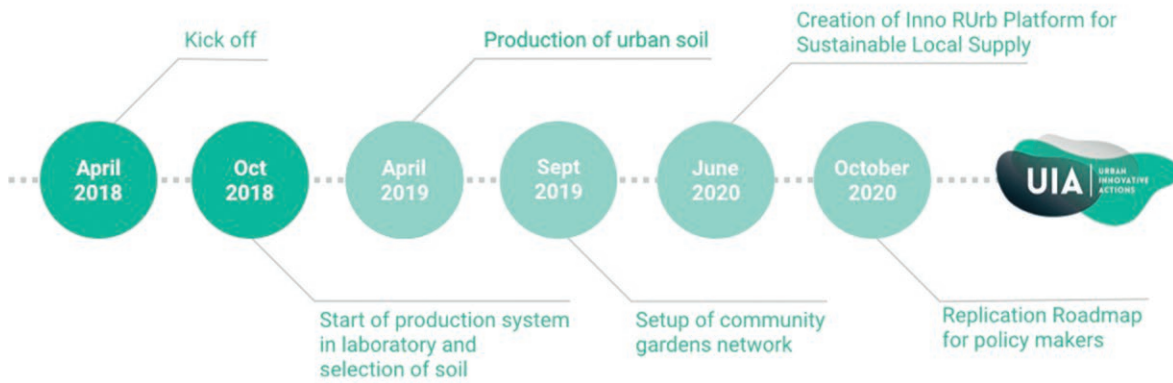


Image 10: Project steps. Source © Eutropian based on Urban Soil 4 Food application.

and local consumers that will contribute to improve local food self-sufficiency and lower the CO₂ footprint. In 2020 a series of events are foreseen, namely the creation of the Inno RUrB Platform for Sustainable Local Supply, aiming at raising awareness around health and quality of life, and the Inno RUrB smart App developed, showing the citizens the offer, quantities, availability of local production. Additionally, the Standardisation and Certification will be carried

out. Finally, in October 2020 the roadmap for policymakers on how to replicate the project in other cities will be prepared and distributed, providing a step-by-step guidebook on how to prepare and certify urban soil, how to make urban gardens and how to run co-creation processes with citizens in order to speed up circular economy.

Urban Innovative Actions (UIA) is an Initiative of the European Union that provides urban areas throughout Europe with resources to test new and unproven solutions to address urban challenges. Based on article 8 of ERDF, the Initiative has a total ERDF budget of EUR 372 million for 2014-2020.

UIA projects will produce a wealth of knowledge stemming from the implementation of the innovative solutions for sustainable urban development that are of interest for city practitioners and stakeholders across the EU. This journal is a paper written by a UIA Expert that captures and disseminates the lessons learnt from the project implementation and the good practices identified. The journals will be structured around the main challenges of implementation identified and faced at local level by UIA projects. They will be published on a regular basis on the UIA website.



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