CIRCULAR ECONOMY HUBS IMPLEMENTED D.T1.3.2

CIRCULAR ECONOMY HUBS IMPLEMENTED: CITY OF VARAŽDIN

Version 1
09 2020

D.T1.3.2: CIRCULAR ECONOMY HUBS IMPLEMENTED: City of Varaždin

A.T1.3 Concept for the implementation of a circular economy hub/accelerator

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Reviewed by:	**Partner Nr. 5 – APE FVG**
Version date:	**17.09.2020**
Version. Revision	**1.0**
Circulation	**Restricted to Project Partners**

Document History

Date	Version	Description of Change
17.09.2020	v. 1.0	Document issued by PP3

1. Introduction

After completing the deliverables related to

- the creation of the working groups (D.T1.1.2 and D.T1.2.2),
- the two strategy workshops (D.T1.2.11)
- the drafting of the joint circular economy strategy (D.T1.2.7)

And in compliance with the final objective of the project to favour the transition towards a more sustainable and innovative economy, the deliverable D.T1.3.2 stands as a necessary step for the creation of a HUB for the circular economy in the territory of Varaždin.

In concrete terms, this deliverable offers a first basis for the implementation of this facilitator office.

2. Hub concept

The concept of the HUB must be based on the two main drivers within the circular economy (CE) model. First one is the support for sustainable development goals set by the government bodies (EU, national and local). Second driver is the support for regions' economic development. From its overall perspective HUB will include policymakers, citizens, academy, and education system, and to some extent entrepreneurs to develop ideas and best practices for increasing our quality of life and providing a path to a sustainable future.

Sustainable development goals and circular economy practice require increased investments which are sometimes beyond the capacities of the industry, especially the SME companies. Investment is mostly driven by the need to comply with environmental standards, which requires extensive R&D and usage of high-tech solutions.

New standards related to green practices and sustainable development will decrease, in the short-term, competitiveness of the industry. On the other hand, it will provide an opportunity since new technology solutions must be created, and new production processes and science research will be required. This can lead to creation of new products, solutions, services, and new business models, strengthening in this way the local economy and increasing its competitiveness.

For the circular economy initiative to succeed it is necessary to align these two action areas and create synergies between the public sector, its goals and policies, and the private sector represented by the industry who must regain its competitiveness on the global market.

HUB will explore the overall concept of the circular economy and its practices with a special focus on two S3 areas: energy & environment and agro & bioeconomy.

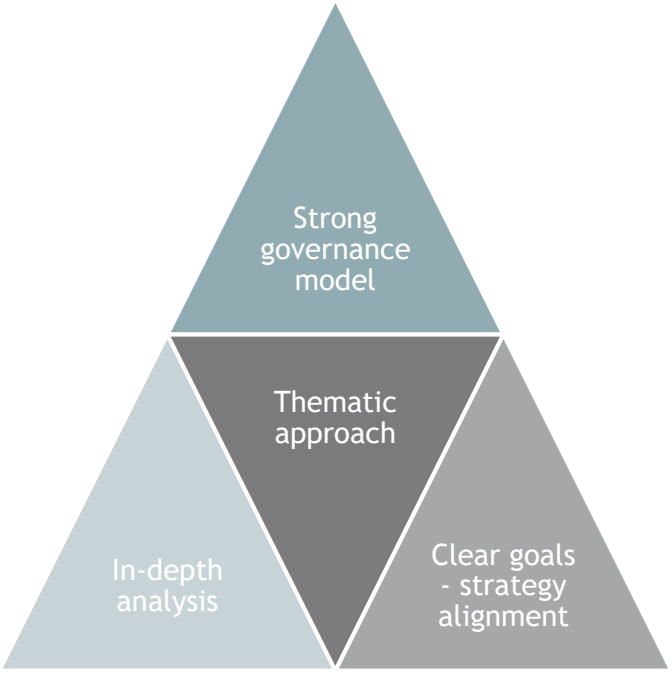
The CE pilot implementation in Varaždin within this project covers both S3 areas since it involves a local food manufacturer with biogas cogeneration facility and a market (as a local waste producer) run by a local public company which also owns a hazelnut plantation. The

results of the project will be exploited within the HUB to showcase a full cycle within CE which includes several economic and industrial areas.

Implementing the circular economy is a long-term task that will be done in stages. In the same way HUB must go through evolutionary stages, increasing with every stage its involvement and level of support for the implementation of circular economy best practices, solutions, and infrastructure.

Few guiding principles must underline the HUBs work and development:

- Clear set of goals determined by the strategy of circular economy
- Activities must be based on an in-depth analysis of the ecosystem
- Minimum of two working groups (public and industry leaders)
- Strong governance model

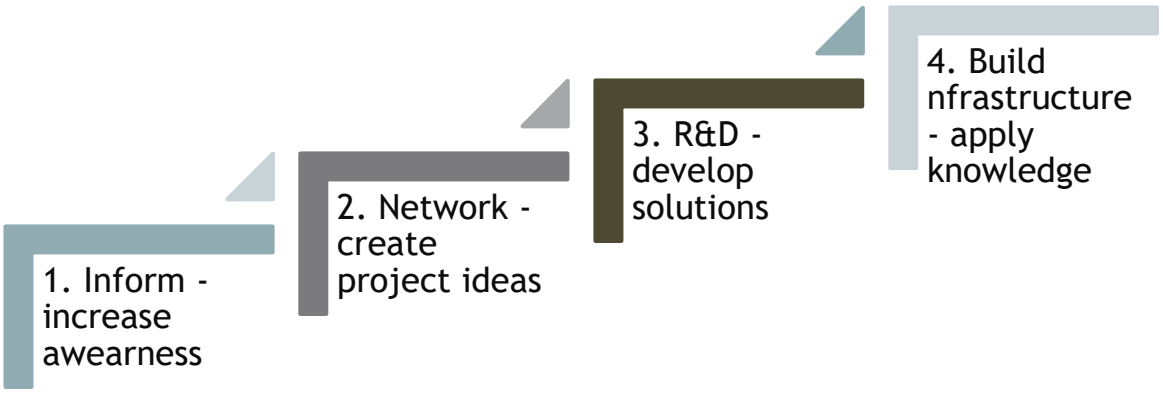


The concept of the HUB will need to support development of services beneficiary for its members, but its work must be based on non-commercial basis, i.e. all generated revenue must be invested in further development.

These guiding principles must enable the HUB to align its development with the region's development capacity (industry and the local government). By maintaining multiple working groups HUB can provide adequate support and guidance for the needs of the industry and for the needs of the public. By implementing a strong governance model HUB will be able to

create synergies and develop support for the common agenda of implementing the circular economy model.

As we have noted, the concept of the HUB will evolve as the HUB transitions from one stage to the other. Depending on the involvement and commitment of the stakeholders' HUB will go through these four stages:



1. Providing industry and community outreach.

In this stage HUB will conduct mainly policy research, educational, and promotional activities and raise awareness. Focus is on industry and community outreach. Depending on the available resources and funding this can be done through workshops, public showcases, promotional and educational campaigns but also by creating a showcase facility where various technologies are implemented. These facilities provide visitors a chance to see in first-hand sustainable and circular practices in a real environment. During this stage, the HUB will also conduct an in-depth analysis of the ecosystem and policies.

2. Providing ecosystem development.

In this stage HUB is becoming more focused on business networking and knowledge sharing. The goal is to facilitate the implementation of best practices, development of a waste market, and the establishment of cooperation between stakeholders and other entities. In this stage, the HUB will intensify preparation of projects and initiatives that will support the implementation of circular economy principles and goals and enable it to advance to stages three and four.

3. Technology development stage

In this stage HUB is beginning to offer coworking space and labs to facilitate creation of new technologies, products, and solutions. In this stage cooperation between academia and private sector intensifies.

4. Testing and production facilities

This stage is the most important one in two ways. First, it will provide infrastructure for putting in practice all the technologies and solutions developed within the HUB or being available on the market. Secondly, it will be the stage where circular economy will go from experiment to practice. It will embed the circular economy practices (technologies and solutions) in the whole ecosystem.

2.1 Legal form

HUBs legal form will very much depend on the future analysis of the region's potential to develop and implement circular economy concepts and techniques. It can be envisioned that the structure of shareholders will be dynamic. Several options are available from NGO, GIE (Groupement d'interet economique), or cooperatives. The later would be the most appropriate form since cooperatives do not have any restrictions on the type of activities they can perform. The procedure for shareholders to join or leave the cooperative is simple which will ease the barrier for potential stakeholders to participate.

Cooperatives have a formal shareholder structure where all major decisions are made through the general assembly. The general assembly appoints the manager of the cooperative which is responsible for the operations and execution of key objectives of the HUB. The cooperative legal form can also bring some challenges on the strategic level, but they can be alleviated with adequate governance mechanisms.

2.2 Structure

HUBs structure will need to change and adapt to the development pace of the region.

Two main aspects of HUBs engagement will be to support and increase the competitiveness of industry, the other one would be to develop policies and solutions that would benefit the public interest.

Within the first stage and for the most period of the second stage HUBs structure can be simple because it will have few employees and few clear sets of activities and goals. Activities would be financed by the government and they would be focused on creating a plan for the

operationalization of the strategy for circular economy, creation of awareness about the circular economy and preparation of the analytical frame that will help in determining future directions and actions.

In the second stage especially at the point when the private sector will become more engaged in building the ecosystem, and in defining future projects, the structure would need to change and become more complex.

It is advisable to create a minimum of four working groups (government, public companies/utilities, NGO and industry focused group) or programs within the hub, each with its own management structure. Selected members of both groups would form a joint governing group. This type of approach would be necessary important in order to enable each of the groups to focus on topics which are most important for them while having an opportunity to find synergies and work on common goals.

For the stage two of HUBs evolution it would be advisable that HUB has a physical office. Evolving the HUB to its third and fourth stage will not require significant changes to the structure but will in the facilities and assets it will manage which can lead to increase the number of employees and formation of separate back office and operations department.

When deciding on the structure of the HUB and especially if the HUB will have a form of cooperative it is important to put in place a very precise and well-defined governing model.

The HUB can be managed in two ways. First one is to have a minimal number and type of founders and shareholders. The challenge with this type of structure is that it does not encourages diversity and often is limited to public members. This model often lacks investment from the private sector as well as its commitment. The other way is to have an open shareholder structure with as many participants. This model tends to lack cohesion and can be difficult to manage due to very diverse type of shareholders with very different interests, capacity, and maturity level. It is advisable that a strong governance model is defined prior to the establishment of the HUB or at least prior to its evolution to the second stage when the shareholder structure will become more diverse. This will bring advantages to both management models.

Important areas within the governance model to focus on are:

- Immutable strategic goals. This means that shareholders cannot change the basic principles of HUBs operation and its goals set out in the strategic documents.
- Flexible decision-making within the working groups.
- Clear guidelines on the rights and obligations of each member
- Rules on the value creation, assets management, and its usage by all shareholders

Currently there are 16 stakeholder members committed to the project which are mainly public companies, academia, and local government. One member is from the SME segment. A larger list of potential stakeholders, which mainly includes entrepreneurs, was made during workshops and other project activities.

Preliminary research shows that from 24 companies 7 are already using some form of CE practices.

CE strategy developed within this project is built on the quadruple-helix model with these strategic goals.

- Modernization of a municipal waste management system
- Efficient water management
- Efficient construction material management
- Energy management
- Circular procurement of materials
- Investing in entrepreneurship

Strategic goals imply that HUB will cover different themes which will relate to different types of stakeholders, with an overlap in jurisdiction and interest. This diversity will greatly influence the internal structure of the HUB and its governance model.

2.3 How to finance the hub

Following the evolution of the HUB through its four stages the finance model will change accordingly.

Initial financing of the HUB must come from the regional and local authorities involved. The actual source of the funding can be from their local budgets and EU funds.

The second stage of HUBs development which includes more involvement of industry players will adopt characteristics of a cluster organization, and would need to source part of its budget from membership fees and services for its members.

The third stage of HUBs development will involve the creation of an infrastructure for developing technologies and processes related to the circular economy. This will mean more cooperation with academia and institutes where financing would mostly be on a program/project basis. Funding can, in this case, be dominantly from EU funds, specifically the LIFE, the HORIZON and RIS3 as well the new EU recovery fund plan.

The fourth stage of HUBs development is more related to providing an infrastructure for enabling the circular economy in the region. This effort will probably be part of creating or upgrading existing economic development zones and will be part of the overall economic strategy of the region, city or municipality. These kinds of activities are funded from the local government budgets supported with EU funding for specific project activities and outcomes.

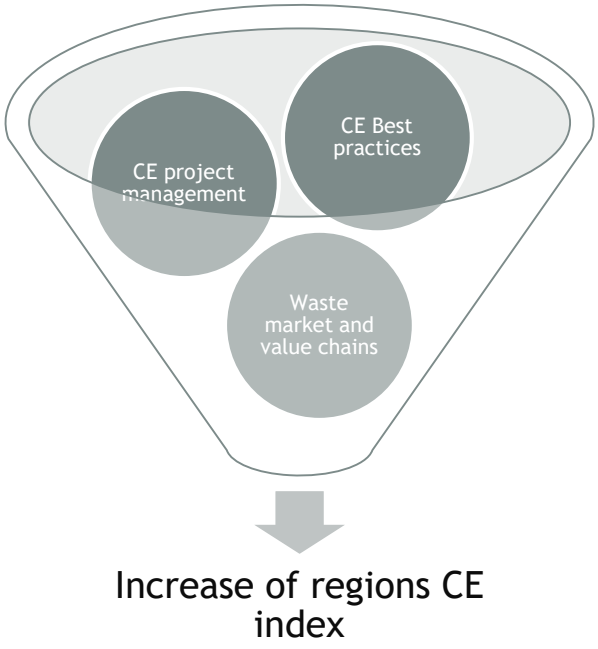
It would be a good practice to implement a 70-30 to 30-70 rule which means that the local government would finance certain activities by 70% but would have only 30% of influence. This will encourage the private sector to invest in projects of common interest and lead increase knowledge sharing.

2.4 Services

HUBs services need to include various types of support for increasing the sustainability of the region and most importantly to maintain the competitiveness of the industry while implementing circular economy practices.

HUB's services will revolve around these three main tasks:

- Introduction of best practices for implementing circular economy concept
- Development and research of new technologies, solutions and production processes
- Establishment of market for waste, tools and waste processing equipment and services



For the first stage of HUBs operation these services would need to be offered:

- Information portal about circular economy
- Knowledge base on best practices
- Circular economy maturity assessment
- Ecosystem building

Second stage of HUBs development will involve more shareholders. This will lead to the introduction of new services:

- Business networking, brokerage
- Strategy Development
- Advanced knowledge base

- Industry and waste path analysis
- Online waste market
- Project management (EU funds and programs)
- Policy development

Third stage will be more R&D oriented and will introduce additional services:

- Co-working space
- Incubation/acceleration support
- Education and skills development
- Access to Funding and Investor Readiness Services
- Collaborative Research and development of industrial synergies
- Pre-competitive series production
- Concept validation and prototyping
- Testing and validation
- Design services focused on circular economy goals

Fourth stage will focus on building the infrastructure and providing it as a service:

- Industrial zones with infrastructure
- Renewable source or energy
- Modular production facilities
- Waste management services

3.Short term perspective

Short term prospects would represent establishment a critical understanding of the circular economy concept among all 4-helix members and achievement of adequate entrepreneurial and industry engagement. This will correspond to the first and second stages of HUBs evolution.

Prospects within the short-term perspective would need to be accomplished within 12 months. Additional 6 months can be given for creating projects and preparation for the third stage of HUBs evolution. This timeline would need to correspond to the main project timeline and its major outputs.

Several projects related activities are important for the HUBs development during the pilot, mostly related to the O.T2.5. For the first stage these outputs are important:

- Starter kit
- Policy review (EU and national)
- Knowledge base with good practices
- Methods for promoting implementation of CE:
    - Formalised methods and tools
    - Self-assessment
    - Training modules-video
    - CE Maturity index (for local government and industry)

Second stage will greatly depend on additional project outputs:

- Training of HUBs staff, especially for CE project management (Transnational learning platform O.T3.2)
- CE Pilot implementation results from the O.T3.1
- Establishment of the on-line waste market platform
- Transnational market and value chain
- Advanced knowledgebase

Following the execution of these project activities and their operationalization within the HUB it is expected that during the short-term perspective there will be a significant increase in number of industry participants. This will create a matured ecosystem with a potential for developing new technologies, products, solutions, business models and preparation of mid, and large-scale projects.

4.Mid-term perspective

The midterm perspective of the HUB would be to advance to the third and fourth stage of HUBs development or in minimal to complete the third stage with a strong vision, design, and action plan and project base on how to implement the fourth stage.

The third stage will focus on extensive R&D, project execution, and management of incentives for implementing circular economy practices. Within the 2-3 years period these efforts will need to create a critical mass of circular economy practitioners from the economy.

The fourth stage will be a large-scale project of upgrading the industrial and business infrastructure. It is necessary that the HUB devotes a large part of its resources during the Mid-term perspective in the design and preparation of related projects.