

GREENCYCLE

Introducing circular economy system to Alpine Space
to achieve low-carbon targets

SO2.1 – Establish transnationally integrated low carbon policy instruments



WPT3 Toolbox

D.T3.3.3 Sustainability impact assessment

7th of June 2019 by project partner AURA-EE

Program priority: Priority 2 – Low Carbon Alpine Space

Work package: T3 - Development of implementation toolbox for circular economy

Activity: A.T3.3 Final evaluation report & fine-tuning of toolboxes

Deliverable: D.T3.3.3 Sustainability impact assessment



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The focus of WP3 is the development of a circular economy toolbox and testing the toolbox in real environments with so called “pilots”. Pilots are city-specific circular economy (CE) initiatives and derive from the real needs, focusing on the cross-sectoral cooperation to improve CE processes. Therefore, the 5 municipalities involved in the project have implemented and tested their own pilot according to their strategy and with help of the developed toolbox. Pilots have been tested for a 6 months period (S1 2018).

The goal of this document is to present the impact of these pilots on sustainable development (reducing energy consumption, reducing material intensity, material recovery, eco-innovation, economy, green jobs, health, society etc...).

1 Ecological impacts

Vienne Condrieu (FR)

The pilot which has been launched in Vienne Condrieu Agglomeration (VCA), replacing fossil fuel by bioNGV will necessarily lead to the reduction of fossil fuel consumption, and thus will reduce the greenhouse gas emissions. Furthermore, Gas mobility makes it possible to reduce atmospheric pollutants very strongly.

Maribor (SI)

Because of the early stages of the implementation of the Wcycle model, it is difficult to point out ecological impacts for the moment. But after implementing projects such as sorting plant, production of urban soil, urban return water circle of recycle water, ecological impacts of the project will be visible. New processing and service capacities for the management of output sources are planned as priority areas for urban degraded areas, with the aim of their regulation and revitalization, which is very important especially for the areas within the city, which have been neglected or ecologically maltreated in the previous years.

Freiburg (GE)

Soil from the city area will be put into interim storage for later usage in the new urban district and will be re-used. This will have a positive impact on resource management. Regarding climate protection, storing the excavated soil locally reduces heavy truck traffic to other areas. More generally, taking the stored soil for construction reduces heavy truck traffic from different regions.

Trento (IT)

The positive aspects of the pilot, in terms of environment, is waste prevention, waste recycling, reducing food waste and reducing transports, thus greenhouse gas emissions. On the other and, the project will lead to increased transportation (eg. to improve separate collection and to confer waste to a new facility) and increased material flow.

Vorau (AT)

The pilot actions of the Impulszentrum Vorau will bring several ecological advantages, through the minimization of the resources used or their substitution by other technologies or methods. The foreseen actions are using E-cars instead of diesel engines cars, convert the building to a paperless office, increase energy efficiency actions, optimize house technic configurations and influence users' behaviour thanks to specific training.

2 Social impacts

Vienne Condrieu (FR)

The transformation of sewage mud into an energy product has a strong impact from a social point of view. It is a way to change mentalities and to make possible the spreading of circular economy into other projects.

Maribor (SI)

Since the Wcycle project has only begun with its implementation through different legislative (appointment of Wcycle Institute Maribor as a city manager for circular economy, finalization of the processes to confirm the Strategy for the transformation of Maribor to circular economy at the city level) and practical processes (the start of the operation of the sorting plant for the preparation of secondary raw materials, establishment of urban gardens using the urban soil, using secondary raw materials for construction within the city etc.), it is not possible yet to define major social impacts, such as the emergence of new business models and other expected influences. However, through proactive communication of all above mentioned projects, the Wcycle project has brought Maribor's urban society to get to know and acknowledge the existence of circular economy. This term became more familiar throughout Maribor's citizens, which will after a certain amount of time bring the desirable change into the urban life.

It is expected that the ecological impact of the sorting plant is the reduction of landfill materials, by enabling better material recycling and secondary use.

Production of urban soil from locally available organic material, is expected to reduce the quantities of waste destined to landfill. It will also enrich the degraded soil of the urban area with new nutrient dense matter that supports flourishing of urban flora, fauna and related ecosystems. Furthermore, the locally produced soil will not need to be imported from other areas, resulting in lowering of freight transport emissions.

Urban water cycle intends to reuse water that is already circulating in the urban water system and with this avoid using fresh drinking water where not necessary. This will lower the cities impact on fresh water intake and water quality and enable greater resilience of the water system of the area. This is increasingly important in the times of ever greater climate uncertainty, which can adversely impact the fresh water supply.

Freiburg (GE)

Freiburg is a very attractive growing city (one of Germany's so-called "swarming cities"). Housing is needed and prices on the rental and real estate market are exorbitant for citizens and citizens-to-be. A newly developed urban district for 6 000 housing units is being planned to fulfill the needs. The soil management for this area helps this housing project.

Trento (IT)

Positive aspects of Trento's pilot is about social integration and increased critical consumption amongst citizens.

Vorau (AT)

Changed behaviour starts in building users' mind. Therefore, regular awareness-raising activities are an important prerequisite for a successful implementation of energy efficiency and sustainable development policies. For example, changing to a paperless office requires some user training and introductions to new hardware. However, this change will reduce office waste to a minimum and it is possible that there will be no paper at some point. This hassle of changeover will pay off in the long run and outweigh the social benefits.

3 Economic impacts

Vienne Condrieu (FR)

With gross revenues of more than € 300,000 a year, the investments made in the 1st pilot will improve the ROI of the project. In addition, the implementation of a local circular economy loop should enable companies to reduce their operating costs. The reduction amount has not been estimated yet.

Maribor (SI)

One year after introducing the Wcycle model into the city of Maribor is not enough to bring significant economic and other impacts.

In the economy area, it is expected that the transition from linear to circular economy within the urban area will bring new green jobs, new business models and new sustainable business opportunities. However, first visible impacts in this economic area on a smaller scale are already visible: Wcycle Institute Maribor was established and already officially employs two persons. They collaborate with personnel of institute's founder's companies and with many other businesses from a broader urban area. Collaboration with different local and Slovenian partners in the stages of project preparation and implementation, has proved to be successful, especially in the area of creating new jobs (1 new job at the Project office in the Municipality of Maribor, 2 new at Wcycle Institute, new jobs as project managers at several companies, which are partners in the gained projects etc.) or consolidating already existing jobs and giving them an added value and security.

However, to achieve individual goals, as already mentioned, we will need to implement certain individual projects, which will demand technological and human resources. Since they are innovative (such as, for example setting up the factory for production of composites of secondary raw materials), we do not know, if their outcome will be fully successful and economically sustainable. This could lead to some backlash for Maribor's citizens and public administration. If any negative impacts will start to emerge, we will act accordingly, but at these early stages, we cannot predict, how. Changing business model of City is bringing some negative reactions from some companies which are currently involved in linear economy model, especially in the waste sector. This change may not benefit to everyone. That's why they are encouraged to get involve as stakeholders in the process, so that they can adopt to new situations that are being created through this change.

Freiburg (GE)

The soil management with an interim storage is expected to save expenses twice:

1. Excavated soil will not need to be transported long-distance for final deposit but can be stored locally. Final deposit fees of soil are high. The interim storage is expected to cost fewer fees; otherwise the construction companies will not use it.
2. The need for soil in the new urban district for roads, rain water dams, railway tracks and housing fundamentals will be enormous. Without the interim storage it would have to be purchased elsewhere and prices would rise due to the enormous demand in Freiburg. The estimated costs are enormous.

Trento (IT)

Positive economic aspect is the reduction of landfilling costs. Negative economic aspects are the resulting reduction of consumption and damages on conventional activities.

Vorau (AT)

Energy efficiency improvements bring a direct economic benefit. A reduced energy consumption means that energy costs are saved. For example, in the field of mobility, the tax relief for electric cars in Austria, combined to the possibility to use the excess of photovoltaic power for charging e-cars are some triggers of cost reduction. Furthermore, user training leads to further savings in terms of energy, waste and water. However, care must be taken that the rebound effect does not occur, otherwise the improvements could be reduced by behavioural changes.

4 Conclusion

Pilots' impact, due to the short time frame of testing (6 months), cannot be assessed for the moment. Circular economy projects that have been initiated in GREENCYCLE are long-term initiatives that will pay-off in the coming years. In terms of objectives, their impact is expected to be very positive at environmental, social and economic sides. This is why it is important, as from the beginning and during the whole lifetime of the projects, to collect and analyse data which could be relevant to assess their impact. That could be done by the Marketplace which is implemented in WPT4.