

**Interreg
Europe**



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INERTWASTE

TRANSNATIONAL LEARNING DOCUMENT #2



**Societal, technology
and market challenges
for sustainable
management of inert
waste from industrial and
construction processes**

**22-23 May 2024
Maribor (SI)**

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1. Introduction – INERTWASTE and the Transnational Learning Journeys

The Interreg Europe INERTWASTE project aims to valorise inert and inorganic waste from industrial and construction processes, promoting resource efficiency, reducing raw material extraction, and minimising environmental impacts. It is focused on improving environmental policies through the exchange of regional experiences and solutions. INERTWASTE exchange and mutual learning process is based on the methodology of the 'Transnational Learning Journeys' (TLJs). This methodology is adapted to the specific context of INERTWASTE management policies, which requires the direct involvement of public and private actors in the development and implementation of local and regional policy improvements.

Transnational Learning Journeys bring together partners and stakeholders from different countries to share challenges, opportunities and good practices on one specific theme with the aim of improving partners' regional policy instruments. A TLJ includes Regional Peer-review Workshops; Sustainability Jam Session with policy makers and industry representatives; study visits.

The INERTWASTE TLJs are:

- 2023 - Navarra Region (ES) - Regulatory frameworks for sustainable inert waste management;
- 2024 - Podravje Region (SI) - Societal, technology and market challenges for sustainable management of inert waste from industrial and construction processes;
- 2024 - Region SUD (FR) - How to promote and support the integration of the circular economy in construction contracts for a better management of construction waste? The role of the waste prevention and management planning authority
- 2025 – Region Zealand (DK) - Local public authority and policies as driver for green transition in industrial and construction sector and future skills and knowledge

This document belongs to the series of TLJ Learning Documents which aim to provide an overview of the activities carried out during the TLJs. It summarizes the practices discovered, the discussions held, the lessons learnt, and elaborates some inputs to be further explored by the project. It proposes some elements to be considered for improving the quality and effectiveness of the next TLJ.

The present document is focused on the second Transnational Learning Journey that took place in May 2024 in the region of Podravje (Slovenia).

2. The Transnational Learning Journey #2

2.1. Overview

What are the societal, technological and market challenges arising from the management of inert and/or inorganic waste? How to overcome them? For their second Transnational Learning Journey, on 22-23 May in Maribor, INERTWASTE partners and their stakeholders brainstormed on these questions. For that, they exchanged ideas and experiences through different sessions: good practices, interactive workshop, study visit, and many informal discussions.

This second Transnational Learning Journey also focused on the policy instrument and territorial challenges of the regional host, the Regional Development Agency of Podravje – Maribor. The host, partners and stakeholders exchanged not only on how to update the Strategy for the Transition to Circular Economy in the Municipality of Maribor, but also on how to successfully upscale it to the regional level.

2.2. Agenda

DAY 1 (Wednesday 22 May)	
9:00 – 9:05	Opening and welcome by a representative of the Region of Podravje
9:05 – 9:10	Project INERTWASTE in a nutshell, <i>Gobierno de Navarra</i>
9:10 – 9:15	Presentation of the project video
PEER WORKSHOP part I.: International Good Practice study cases	
9:15 – 9:30	GP presentation study case #1: Using various artificial soil mixtures to restore dry grasslands in quarries; <i>Gagneraud – SCLM (FR)</i>
9:30 – 9:45	GP presentation study case #2: Recycling several inert flows in a deconstruction/construction project; <i>NEO Eco (FR)</i>
9:45 – 10:00	GP presentation study case #3: Transforming waste into technosoils for mining area restoration; <i>Magna (ES)</i>
10:00 – 10:15	GP presentation study case #4: DK2020: Climate Action Planning of Danish Municipalities; <i>Municipality of Guldborgsund (DK)</i>
10:15 – 10:30	GP presentation study case #5: Digitalisation of Existing Buildings and Materials; <i>Milva (DK)</i>
<i>Coffee Break (interviews with stakeholders and partners)</i>	

DAY 1 (Wednesday 22 May)	
PEER WORKSHOP part II.: Good Practice study cases from Podravje	
11:00 – 11:15	GP presentation study case #6: Overview of the circular approach to management of city resources in Maribor; <i>Public Service Holding Company Maribor</i>
11:15 – 11:30	GP presentation study case #7: Presentation of Strategic Research and Innovation Partnership – Networks for the transition into circular economy; <i>Chamber of Commerce and Industry of Štajerska</i>
11:30 – 11:45	GP presentation study case #8: Use and immobilization of waste and secondary raw materials, <i>Slovenian National Building and Civil Engineering Institute</i>
11:45 – 12:00	GP presentation study case #9: RESYNTEX, <i>Institute of Environmental Protection and Sensors</i>
12:00 – 12:15	GP presentation study case #10: Project DICE (Digital health in Circular Economy); <i>Regional Development Agency for Podravje – Maribor</i>
12:15 – 12:30	Presentation of revitalisation demo site: Kreativni park Drava – building 2 (walking tour), <i>Regional Development Agency for Podravje – Maribor</i>
Group picture & Lunch break (<i>interviews with stakeholders and partners</i>)	
14:00 – 15:45	Sustainability Jam Session (Anne-Louise Lopez Bøttger-Rasmussen; <i>Guldborgsund Municipality</i>): <ul style="list-style-type: none"> • Overview of regional challenges • Fishbone analysis • Stakeholder active participation – 5Y analysis workgroups • Presentation of possible solutions
15:45 – 16:00	Wrap up session (conclusions of day one)
18:30	Optional – walking tour of Maribor
19:30	Networking dinner

DAY 2 (Thursday 23 May)	
9:00 – 10:30	Project management session (only for project partners)
<i>Bus transfer</i>	
10:45 – 12:15	CINDERELA: Demonstrating the efficient use of construction and industrial waste – demo site Dogoše; <i>Nigrad</i>
12:15 – 12:45	Stakeholder networking (<i>interviews with stakeholders and partners</i>)
<i>Lunch break</i>	
PEER WORKSHOP part III.: Regional SWOT analysis	
14:00 – 16:00	Peer Workshop <ul style="list-style-type: none"> • SWOT analysis for Podravje region, identification of potential improvements to Podravje policy instruments, • Moderated discussion on presented GP study cases.
16:00 – 16:30	Next steps and closure

3. The host: Podravje Region

The region of Podravje covers the area of 2.170 km² (10,7% of Slovenian territory) and has a population density of 151 (145% of the national average). It is the fifth largest and the second most populated region, representing 15,55% of Slovenian population.

It consists of 41 municipalities, which are independent local level self-governing bodies, with their general tasks and obligations defined in the Local Self-Government Act.

Podravje is one of 12 Slovenian statistical regions established by the Promotion of Balanced Regional Development Act from 2011, with the higher regional authority being the Council of Podravje Region.

The Podravje Region
 Country: Slovenia
 Capital City of the Region: Maribor
 Population: 327.577 people



Regions of Slovenia

Within INERTWASTE project the Municipal Strategy for Circular Economy of Maribor will be upscaled to the regional level, a process which the Regional Development Agency has

already started with the preparation of the Regional Strategy for transition to Circular Bioeconomy, which was supported by the Council of Podravje Region in December 2023. Since 2022 Podravje is also one of the 12 EU CCRI pilot regions, and in this context an action plan to the beforementioned strategy is being prepared, that will result in new projects financed through the regional funding.

3.1. National (legal) context

Slovenia is highly centralised therefore its national policies and legal frameworks are taken up by the regions.

The Slovenian Development Strategy 2030¹ represents the state's core development framework as set out in the Chapter 2 of the strategy - Vision of Slovenia, and a review of the current situation and global trends and challenges. It has been prepared after Slovenia's existing strategic development framework, which was set out in the Slovenian Development Strategy 2005–2013.

3.2. Regional policies

The Regional Development Programme (RDP)² of the Podravje Region is the main strategic development document at regional level, defining the development orientations in the economic, social, environmental and spatial areas of the region.

RDP 2021 – 2027 recognises waste as one of the most neglected areas of environmental protection in the region among others and defines five development goals to address the challenges in different areas. Actions under the goal for low carbon and greener region will promote sustainable resource management, increase the share of renewable energy sources and energy efficiency, reduce waste of all kinds and promote its reuse and recovery, etc.

Within the region of Podravje, the first city level strategy for circular economy was prepared back in 2018 by the Municipality of Maribor. It features its own innovative model as a system for the management of all resources available in the Municipality of Maribor and in the wider urban environment.

¹ <https://www.gov.si/assets/ministrstva/MKRR/Strategija-razvoja-Slovenije-2030/Slovenian-Development-Strategy-2030.pdf>

² https://rra-podravje.si/assets/docs/RRP-Podravje-2021-2027-julij-2022_2022-07-06-120301_mlbe.pdf

During the implementation of the INERTWASTE project, a new strategy has been adopted by the region, making Podravje the first Slovenian region with a strategy for circular bioeconomy that also focuses on managing inert waste.

3.3. Experience in inert waste

In the past, the region had several initiatives in the field of inert waste, however no systematic solution was achieved. The experience from such initiatives (e.g. Cinderela, Food4Soil, etc.) and city policy of Maribor have been crucial for inclusion of inert waste in the prepared strategic document: Regional Strategy for transition to Circular Bioeconomy³.

3.4. Behind the TLJ

Regional Development Agency Podravje - Maribor




Regional Development Agency for Podravje - Maribor is the monitoring body for implementation of RDP and supports the development of 41 municipalities and the business ecosystem in the Podravje region. Due to the very important function it performs, it is crucial that it represents the best service to the municipalities in the field of regional development, project support, extraction of European funds, integration, attracting investors, tourism development, smart specialization and support for the entrepreneurial environment.

4. Peer workshop: Good Practices

4.1. Using various artificial soil mixtures to restore dry grasslands in quarries (Gagneraud – SCLM)

In a quarry in south-east France, different substrate mixtures were tested to restore rare sub-steppe grasslands that existed before quarrying, using inert waste and former agricultural soils from stripping prior to quarrying.


³ https://rra-podravje.si/assets/docs/CCRI_Regional-strategy_Circular-Bioeconomy-Podravje-2023-2030_eng.pdf

 [View the presentation](#)

Gagneraud is a quarrying and inert waste recycling company. Gagneraud group's other activities are construction and civil engineering.

4.2. Recycling several inert flows in a deconstruction / construction project (NEO Eco)

In the context of several reconstruction projects (i.e school complex) carried out for the region, NeoEco adopted several solutions to reuse already existing inert components, such as electric equipment, fencing and doors, sports equipment and tiles. Moreover, some of the concrete from the old building was recycled through a mobile crushing solution and the output was re-employed directly onsite.

 [View the presentation](#)

NEO Eco is an expertise and consultancy firm specialising in the circular economy, in particular construction and town and country planning

4.3. Transforming waste into technosoils for mining area restoration (Magna)

Through the creation of technosoils from inert waste generated by MAGNA's manufacturing process, the restoration of the Eugi mine in northern Spain effectively tackles issues related to inert waste accumulation and soil scarcity. This sustainable practice transforms waste into a valuable resource, demonstrating its efficacy for landscape restoration in mining areas.


 [View the presentation](#)

Magna is a private company dedicated to the extraction, manufacturing and marketing of magnesite and its derivatives. It provides solutions and materials based on magnesium oxide (MGO) for the steel, agricultural and environmental industries.

4.4. DK2020: Climate Action Planning of Danish Municipalities (Municipality of Guldborgsund)

Guldborgsund presented its 2020 Climate law and the journey that led to the successful delivery of the action plan, which is now followed by 98 other danish municipalities. The

process began with the definition of a reduction path and specific goals for the municipality, followed by the creation of a political steering group divided per theme to discuss and back these. When it comes to inert waste, the roadmap aims to bring the CO2 emission standards in building regulations in line with the climate goals, by reducing CO2 equivalents below 5.8 kg per square meter per year by 2025.

 [View the presentation](#)

Guldborgsund Municipality is a local authority in southern part of Denmark with 60.000 inhabitants and an administration with 5.500 staffs. The municipality is in charge of most citizens-oriented services like daycare, schools, social- and health care, elder care and labour market subsidies. Local transport, physical planning, incl. town planning and public utility facilities are also core tasks. The municipality has strong development agendas in all fields of operation.

4.5. Digitalisation of Existing Buildings and Materials (Milva)

Milva has developed a software solution that maps, categorises and documents the building mass of existing buildings. The tool also generates automatic calculation of the CO2 savings when recycling. It allows for the creation of comprehensive inventory of materials to be reused while renovating, transforming or demolishing a building. This data can ultimately make reusable resources visible and thus prevent valuable materials to become waste. Moreover, it helps builders to comply with current environmental legislation.

 [View the presentation](#)

Milva is the foundation for proper and responsible handling of existing building materials. And creates the basis for a more circular approach to construction, where we help the client realize the building's full potential.

4.6. The circular approach to management of city resources in Maribor (Public Service Holding Company Maribor)

Public Service Holding Company Maribor has connected various public services dealing with waste, wastewater, construction, energy, and other resources in a wider area of the city, covering several municipalities. They are responsible also for collection and validation of various types of waste within Maribor. The main aim of the holding is to

create synergies between all the companies involved towards better environmental performance.

 [View the presentation](#)

Public Service Holding Company Maribor is a holding of public companies of the City of Maribor, including construction and waste management.

4.7. Strategic Research and Innovation Partnership – Networks for the transition into circular economy (Chamber of Commerce and Industry of Štajerska)

Chamber of Commerce and Industry of Štajerska is the oldest of the nominated good practices for the Strategic Research and Innovation Partnership for Circular Economy, which is the nationally supported programme dealing with the lack of clusters in Slovenia. The partnership aims at increasing the efficiency and competitiveness of Slovenian economy in the transition to a circular economy through several activities and support services.

 [View the presentation](#)

Chamber of Commerce and Industry of Štajerska is a regional chamber representing industry, holder of SRIP (strategic, research innovation partnership) for circular economy.

4.8. Use and immobilization of waste and secondary raw materials (Slovenian National Building and Civil Engineering Institute)

The Institute ZAG presented the case of use of waste materials as secondary raw materials for buildings in the context of the two European funded projects, LIFE IP Restart and Rebuilt.

 [View the presentation](#)

The Institute ZAG is a construction research institute active in the fields of construction safety, development of new materials, environmental technologies and more.

4.9. RESYNTEX (Institute of Environmental Protection and Sensors)

Project ReSyntex is a successfully concluded project for the processing of textile waste into secondary raw materials for the chemical industry. Following the demo phase carried out in Maribor, the project has reached the full industrial implementation phase, allowing for the project results to be implemented in commercial use.

 [View the presentation](#)

The Institute of Environmental Protection and Sensors is a research institute in the field of environment protection, sensors, nano materials and textiles.

4.10. Project DICE (Regional Development Agency for Podravje – Maribor)

Project DICE is an EU funded project dealing with waste from the digital healthcare industry, aiming to foster the widespread reuse of products and recovery of valuable components and raw materials. The presentation also listed some of the challenges faced in dealing with end users of products and their disposal/reuse.

 [View the presentation](#)

Regional Development Agency for Podravje – Maribor is the nationally accredited regional development agency responsible for regional strategic planning.

4.11. Presentation of revitalisation demo site: Kreativni park Drava – building 2 (Regional Development Agency for Podravje – Maribor)

The presentation of the Kreativni park Drava showed the concrete plans for the revitalization of a degraded historic building with innovative construction methods, which have been developed and explained by ZAG during the presentation on the use of waste materials as secondary raw materials.

4.12. CINDERELA: Demonstrating the efficient use of construction and industrial waste – demo site (Nigrad)

Within the Cinderela project construction waste was used for building the demo centre visited by the Inertwaste project partners during the TLJ. The facility owned and managed

by the company Nigrad collects and recycles inert waste from public works (road construction and sewerage infrastructure in the city of Maribor and neighboring municipalities) for reuse in other construction works there.

The whole procedure from collecting waste to its validation and reuse were presented.

 [More about the project](#)

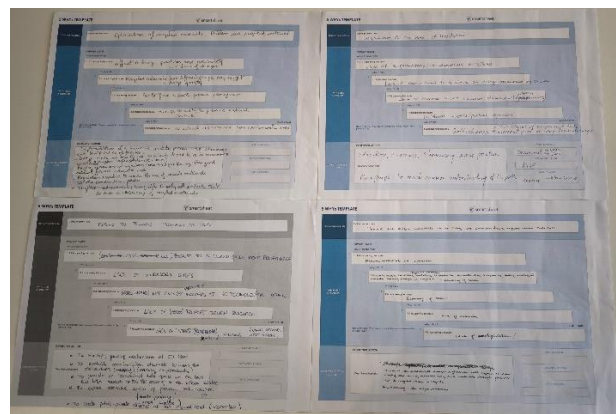
Nigrad is the public company for utility and construction in the broader area of the city of Maribor.

5. Sustainability Jam Session

Under the guidance of Guldborgsund Municipality, partners and invited stakeholders identified key challenges (financial, technological, societal, regulatory/legal) and delved deeper into their root causes using the 5 whys method. Following this methodology, participants drilled down to the root cause of the challenge by asking “ Why?” five times. The second step of the method is to follow the counter-measure, once it became apparent, to prevent the issue from recurring.

Key challenge	Root cause(s)
Financial	Difficult to find right economic model Lack of incentives
Technological	Difficulty of finding land Optimization of the recycled materials Implementation of digital tools to facilitate the management
Societal	“ Not in my backyard” attitude Lack of awareness Lack of communication between companies and research centres Easier to follow “Business as usual”
Regulatory / Legislative	Too slow in changing Lack of legislation Difficulty to apply laws

Promotion of “good practices” in regulation
 Better control to prove the traceability
 Administrations thinking in silos
 Breaking the law becomes a parameter in competition



6. Peer workshop: regional SWOT analysis



The regional SWOT analysis focused on the policy instrument and territorial challenges of the regional host, the Regional Development Agency of Podravje – Maribor. Discussions followed two directions: how to update the Strategy for the Transition to Circular Economy in the Municipality of Maribor and how to successfully upscale it to the regional level. Navarra, Region Sud and Guldborgsund brainstormed in groups and provided useful feedback to Mateja Bitenc, Project Manager at the Municipality of Maribor. These included potential solutions to overcome the challenges identified by the Slovenian actors such as aligning 41 municipalities and ensuring their political commitment but also avoiding or mitigating the financial impacts on the population. Some good practices presented the day before already gave some ideas for possible solutions (like the DK2020 strategy to engage all municipalities) and were completed by other suggestions like the creation of a regional public entity to manage the construction and demolition waste or the application of a flat rate to all municipalities to avoid financial impacts.

Upscaling of the city strategy to regional level	
Challenges	Suggested solutions
Aligning 41 municipalities	<ul style="list-style-type: none"> • Added value of concertation and workshop with awareness raising • Build on the DK2020 experience • Creation of a regional public entity to manage the CDW

	<ul style="list-style-type: none"> Joint to the entity, a regulation should be approved to declare public interest the management of CDW
Avoid/mitigate financial impacts on population	Apply a flat rate to all municipalities to avoid impacts
Lack of awareness	
Reach some targets e.g. 70% of reuse	
Upgrading of the strategy	
Challenges	Solutions
Aligning 41 municipalities and ensuring political commitment	<ul style="list-style-type: none"> Sign with the municipality a contract including prevention, strategy as well as action plan and defining the cost and means Organise a budget plan with subsidies Financing some projects that are focused on achieving targeted strategy Revision of the regional waste plan
Avoid/mitigate financial impacts on population	<ul style="list-style-type: none"> Extended Producer Responsibility: ecotax on raw materials and construction equipment for financing a free take-back of waste Develop some tax for companies who produce industrial waste to avoid some financial impact on the population



7. Study visit

The study visit included two stops: the revitalisation of Building 2 of Kreativni park Drava and the demonstration site Dogošë for re-use of construction and industrial waste.

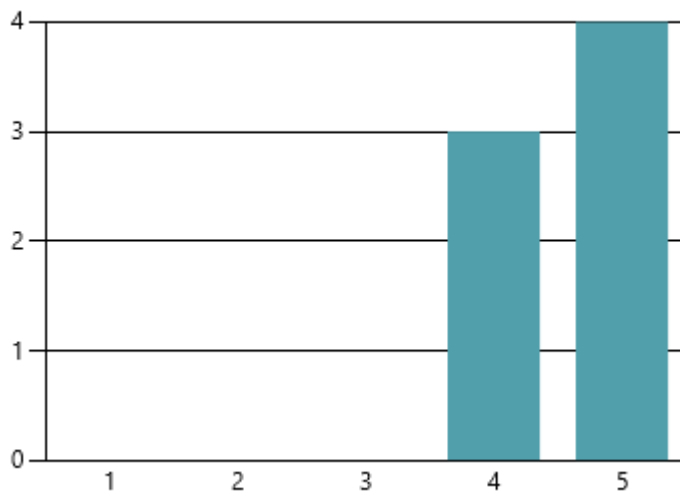
Dogošë is Nigrad's collection and recycling facility. Here, inert waste from public works (road construction and sewerage infrastructure in the city of Maribor and neighbouring municipalities) is collected and recycled for reuse in other construction works. This facility was built as a demonstration site and funded by the EU Horizon project Cinderella.





8. Lessons learnt

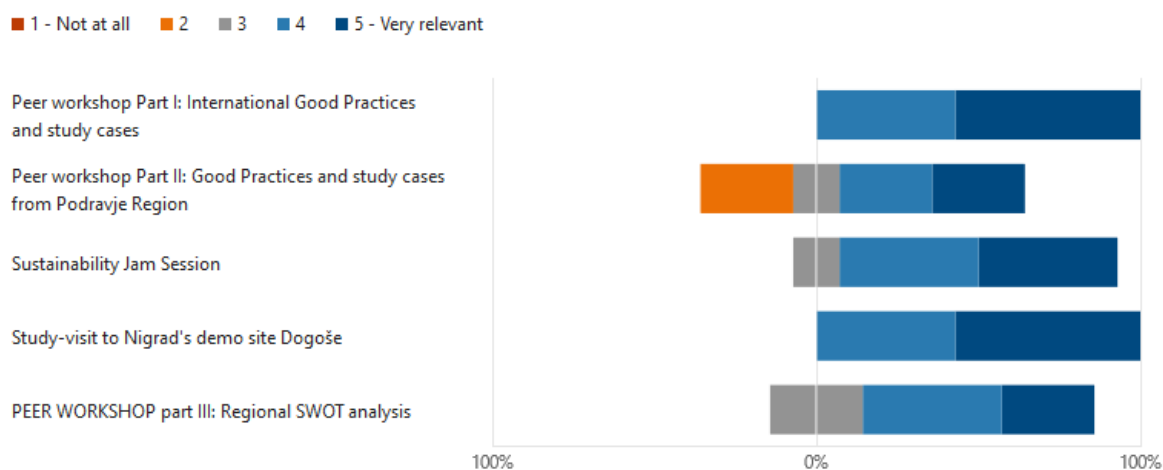
The second TLJ of INERTWASTE greatly met participants' expectations, with an average rating of 4.57/5.



From an organisational point of view, the only drawback mentioned by participants is the equipment of the second meeting room (bad acoustic and no wifi). Otherwise, the length

was perfect. Stakeholders could not only make relevant contacts but also had opportunity to express their ideas and opinions. Nonetheless, partners are still thinking about the best way to involve stakeholders so that they are all actively engaged and local ones stay for a longer time despite other obligations. The interactivity and quality of the Sustainability Jam Session has been praised, and it can thus be said that partners found a good organisational model for the TLJ.

Regarding the content, participants especially valued the international good practices and study cases as well as the study visit to Nigrad's demo site. Partners found valuable insight in the situation of other regions, took some ideas and will need more interaction with partners and stakeholders to improve policies.



Stakeholders who replied to the evaluation survey feel that they increased their knowledge or capacities after the event. They are planning to contact other participants and further investigate some practices presented. All in all, they would recommend attending the event.

Regarding partners, 4 out of 5 increased their knowledge or capacities after the TLJ. Presentations made during the event caught their attention, in particular DK2020 climate action plan and initiatives about end of waste condition. One partner is also interested by the application of European projects, as demonstrated by Nigrad, and the circular economy methods that have been put in place and are working well.

A take-away from the different practices is that the path for using secondary raw materials is open, collaboration between public and private sector is essential to break legal barriers and market trend. Thus, it is necessary at first that administrations push

recycling of materials (through regulation, incentives, etc.) until it becomes profitable and thus adopted in every-day practices.

Another lesson learnt is that there is hope for the future since there are many inspiring practices and good relations across and among nations (and even high potential to create new professional collaborations within a region). Local authorities are facing similar challenges in different countries and so it is possible to find answers together through sharing experiences and working together to reach the same goal.

One question has so far remained without answer (maybe for the next TLJ?): why some key local actors are not willing to take ownership over the changes they endorse.

9. Conclusion

Once again, during this Transnational Learning Journey the INERTWASTE partners and their stakeholders proved their appetite for collaboration and their willingness to support each other, suggesting ways to overcome the barriers based on their own regional experience.



Participants discussed about the difficulty to find right economic models or adequate support (financial challenges), how to optimise recycled materials and find land (technological challenges), or some specific societal challenges like the lack of awareness, the lack of communication between companies and research centers and the “not in my backyard” attitude. After this TLJ, participants have a better understanding of the root

causes behind these challenges. This should help participants to find adequate solutions to valorise inert and/or inorganic waste despite various challenges.

They can also take inspiration from the various good practices from partner regions presented. These included an example from Navarra (Spain), where inert waste generated by a mining company is mixed with organic materials, creating technosoils to restore mines and improve soil properties. Similarly, in France a mix of clay soil and inert waste mixtures has been used to restore protected dry grasslands and quarries. Other practices presented came from Denmark: a digital solution to renovate, transform and demolish buildings and the definition of a CO₂ reduction path and adoption of climate law by 98 municipalities. In Slovenia, a public service holding involving several companies active in the waste, energy and water sector, was set up to create synergies between their operations to enhance circular economy.

Symbol of this exchange of experience and mutual support, the host of the TLJ received tips and ideas from all the participants to overcome the challenges that might hamper its goal of upgrading and upscaling the Strategy for the Transition to Circular Economy in the Municipality of Maribor.

To finish on a warming note, here are how participants define this TLJ in one word:

Lovely!
Exciting
Willingness
Progress together
Successful
Enriching
Inspiring