

WPT4

D.T4.1.9

Transnational industrial innovation roadmap for the
Energy and Environment sector

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Table of content

1	INTRODUCTION	1
2	a ROAD TO TRANSNATIONAL INDUSTRIAL INNOVATION ROADMAP	2
3	transnational industrial innovation roadmap	2
3.1	Trends.....	2
3.2	Priority Innovation Actions.....	2
3.3	Conclusions and recommendations	3
	Annex: Transnational Industrial Innovation Roadmap.....	4



1 INTRODUCTION

CHAIN REACTIONS project addresses the challenge for industrial regions not benefitting from innovation activities from large leading corporations to increase regional capacity to absorb new knowledge and turn it into competitiveness edge and business value.

New products and services, as well as new industrial sectors are not always the result of breakthrough innovation; they can be the result of value chain innovation, e.g. the transformation of 'traditional' value chains into new ones - emerging industries - through cross-border and cross-sectoral collaboration. The analysis of those emerging value chains shows that beyond their specificities, they have in common some key drivers: Key Enabling Technologies, Resource efficiency, Digital transformation and Service innovation. For many businesses, integrating durably the complexity of value chain innovation processes represents a challenge hampering sustained growth.

There is a strong need to help SMEs to overcome capacity shortages for innovation and integration into transnational value chains. The project aims at empowering regional ecosystems with the knowledge and tools to help businesses overcome those barriers and generate sustained growth through value chain innovation. CHAIN REACTIONS project builds thereby on modern approaches considering value chains and their complex developments rather than linear technology transfer approaches. The focus is on key sectors: advanced manufacturing, ICT and electronics, energy and environment, health and bioeconomy.

The objective of WPT4 is to create truly transnational open spaces for collaboration (e.g. value chain based) for RIS3 implementation. Ensure the sustainability of the project outputs beyond the project.

The following activities shall be performed:

1. Building on the regional IGAs (WPT2), the models and instruments (WPT1) tested in pilots (WPT3), the PPS will set-up transnational networks of relevant innovations stakeholders in each of the selected industrial sectors, which will perform jointly a foresight exercise (workshops) and develop the previous results into industrial innovation roadmaps, i.e. trends and expected innovations over time (5-10 years) for each of the selected industrial sectors. The roadmaps shall include necessary developments (in general) to make the expected innovation happen. Lead: STP, all PPs
2. Each industrial roadmap will be then further developed into transnational industrial innovation agendas, i.e. concrete innovation activities to be performed in the project regions and transnationally in order to realize the necessary development identified in the roadmaps and ensure industrial leadership in the selected industrial sectors. Those agendas shall be coherent with S3 in the project regions and provide the basis for potential future joint activities and transnational investments. Lead: STP, all PPs
3. Finally, PPs will define in parallel to the roadmaps transregional exploitation plans for the time beyond the project, aiming at providing guidance with respect to:
 - The use of the knowledge collected and developed during the project lifetime;
 - The implementation of innovation activities as identified by the members of the transnational networks; Establishment of durable transnational open spaces for collaboration in the selected industrial sectors.



2 A ROAD TO TRANSNATIONAL INDUSTRIAL INNOVATION ROADMAP

Following the regional IGAs' actions of the support and implementation of transnational pilots aiming at supporting value chain innovation (WPT3) and establishment of transnational networks of innovations stakeholders as the kick-off activity to develop transregional innovation networks and agendas (WPT4) in selected industrial sectors (WPT4), the main activity of the sectoral partner duo is to contribute to the project output O.T4.1 Thematic industrial innovation roadmaps (TIIR).

For the purposes of TIIR development of the Energy and Environment sector two (2) transnational industrial innovation roadmap workshops were implemented, with the main objective to collect relevant inputs for elaboration of TIIR and later on the transnational industrial innovation agenda for the target sector, in order to perform a foresight exercise and identify relevant sectoral trends and to present the possible evolution paths of the considered value chains and innovations within the target sector over a period of 5-10 years.

3 TRANSNATIONAL INDUSTRIAL INNOVATION ROADMAP

3.1 Trends

In the energy and environment sector the trends within both regions can be summarized in three major categories:

- E-mobility,
- Digitalisation,
- Energy efficiency.

More specifically, this would be including the innovations such as hydrogen fuel cells to improve the e-mobility and artificial intelligence to optimise the digitalisation and improve efficiency. Additionally, societal innovation is already taking place with changes taking place to reduce the impact of traffic by enhancing and upgrading the e-mobility.

3.2 Priority Innovation Actions

There are many differences between both regions, both in terms of the number of innovative SMEs and in the size of networks connecting specific SMEs. However, it is exactly this difference between larger structures with more knowledge and experience, but also strict focus of individual SME as part of such structures on one hand, and small but flexible SMEs covering various aspects within the broader field that can easily adapt to cooperate with various partners on the other hand, that offers the added value of the partner due between the regions. Also, the cooperation with local authorities opens new possibilities for knowledge transfer, thus the following innovation actions were proposed:

PP	Suggested innovation action	Description	Timeframe



			From	To
2	Proposed activity 1	New city regulative, forbidding fossil fuel delivery vehicles in city centre	9/2022	9/2024
2	Proposed activity 2	Monitoring energy use in public transport e-vehicles, for the purpose of optimisation	9/2022	9/2025
2	Proposed activity 3	Introduction of online self-weighing trash containers, for optimization of their emptying	9/2022	9/2026
10	Proposed activity 4	Development and improvement of technologies for the production of fuel cells	04/2021	03/2024
10	Proposed activity 5	Developing new system components for fuel cells	04/2021	03/2024
10	Proposed activity 6	New technologies for the on-site generation of hydrogen	04/2021	03/2024

3.3 Conclusions and recommendations

Both regions are facing specifics, as Regensburg is among better developed and progressive regions working on the advanced innovations and introduction of new technologies, while Styria region is still



establishing a more suitable environment for technologies, while having some highly technologically advanced companies that are active within international partnerships.

Annex: Transnational Industrial Innovation Roadmap

Re- gion	Suggested inno- vation action	Description	Timeframe	
			From	To
Styria	New city regula- tive, forbidding fossil fuel delivery vehicles in city centre	eMobility is seen as a way to reduce the fossil fuel related pollution in the city. In the city centre, with limited vehicle accessibility, the main point of pollution are delivery vehicles (postal service, private delivery, supply of restaurants and shops, pick-up for food delivery). By changing city ordinance, the removal of fossil fuel based vehicles would further boost eMobility.	09/2022	09/2024
Styria	Monitoring en- ergy use in public transport e-vehi- cles, for the pur- pose of optimisa- tion	Public transport is an area that needs optimisation in Maribor (new bus routes, new end stations). With more e-vehicles in the bus fleet, there is an important component of modification of routes according to energy efficiency, which can be achieved through monitoring the energy use along various routes and modifying them in a way to still connect the points of entry of the previous route, but drive along the less demanding terrain to reduce energy spending.	09/2022	09/2025
Styria	Introduction of online self-weigh- ing trash contain- ers, for optimiza- tion of their emp- tying	The system of collecting trash has not really changed since the late 1980s, when the separation of waste was introduced in Maribor. The trash is still emptied according to the fixed dates, for a fixed price (based on the pre-set number of emptying). By providing sensory equipment on the containers, the emptying could be determined in real time according to the speed of filling up the container. This would reduce the number of unnecessary emptying (if the container is not full yet) and reduce the number of the trash truck patrolling the city.	09/2022	09/2026
Re- gens- burg	Developing new system compo- nents for fuel cells	A package of different measures and use cases must be bundled to enable a successful energy transition, based on hydrogen. Hydrogen has a high potential to become a storage medium for sustainably generated electricity and to become the substitute for currently used fuel.	04/2021	03/2024



CHAIN REACTIONS

Re-gens-burg	Ddevelopment and improvement of technologies for the production of fuel cells	A package of different measures and use cases must be bundled to enable a successful energy transition, based on hydrogen. In order for hydrogen to become an alternative fuel source in mobility, new fuel cells need to be produced.	04/2021	03/2024
Re-gens-burg	New technologies for the on-site generation of hydrogen	A package of different measures and use cases must be bundled to enable a successful energy transition, based on hydrogen. In order to it the decisive role that it can potentially have, further development in the research, production and application of hydrogen solutions is required.	04/2021	03/2024