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Author(s): Mika Nieminen, Raúl Tabarés, Ezekiela Arrizabalaga, Janika Miettinen, Nina Rilla, Juha Oksanen, Lisbet Frey, Hendrik Hansmeier, Nils Heyen, Nicholas Martin, Tamás Gyulai, Miklós Lukovics, Marianna Nagy

Contributors: Emad Yaghmaei, Ashley Krysta Smith, Petra Jung-Erceg

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1. INTRODUCTION

This deliverable presents regional work plans for the advancement and uptake of responsibility and sustainability related targets and practices in regional policies and processes in our pilot regions: Cantabria, Karlsruhe, Tampere, and Szeged-Timisoara. In this process we have translated regional actors' practical concerns into RRI related actions. The document presents what will be done to address territorial uptake of RRI in the context of ongoing or yet to be started activities in the pilot regions. For this end, we have studied our pilot regions, discussed thoroughly with regional actors, and co-created with them concrete plans for achieving systemic transformation in terms of responsibility and sustainability.

Prior to this report, we have studied in detail regional innovation and business ecosystems in each of the regions in the mapping report (D2.2.) and identified specific regional challenges and opportunities for joint action (D3.1.). Regional action plans presented in this report build on this earlier work on research partners' and stakeholders' joint understanding of the dynamics, challenges and opportunities of each regional innovation ecosystem in terms of RRI and sustainability. This understanding has made it possible to create detailed and tailor-made approaches in each of the pilot regions to approach the challenge of the uptake of RRI in a way, which is natural for each region.

The goals for this effort have been

- bridging cognitive gaps by translating RRI discourses into a language and set of practices that is accessible and meaningful to regional policy makers and stakeholders;
- fostering linkages between regional authorities and RRI-relevant stakeholder groups in their region of which they have previously been unaware, and building RRI-related competences among regional actors;
- connecting them to the more practical side of the RRI debate at the national and European levels, providing them with concrete inspiration for future strategies and actions.

There are already now many processes going on which include various de facto RRI aspects and which give this effort a more solid base. However, concurrently, while there are existing processes and the need for the uptake of sustainability and responsibility dimensions has been acknowledged, there is a need to understand how to make responsibility and sustainability aspirations concrete actions, how to integrate them into every-day life. For this reason, and for the need of tailor-making the approaches in each of the cases, our approach emphasizes co-design and co-creation with the regional actors to ensure that their concerns constitute the starting point for all the actions.

In the following, we shortly and roughly summarize the regional plans and their background. What seems to be common to most of the regions is the fact that there are already many RRI related “de facto” processes giving a promising starting point to support the further uptake of responsibility and sustainability related practices. What is also of importance is the fact that regions should learn from each other by sharing their experiences, practices and plans. This report, as well as the two prior deliverables serve this end together with the planned “cross-fertilization” events for regional partners to learn from each other and discuss their experiences. Regions are also planning bi-lateral exchanges to boost their mutual learning. The learning aspect is of special importance to the Szeged-Timisoara pilot, which is a “learning pilot”, focused on deriving useful lessons and inspirations from the more advanced pilot regions.

Cantabria:

As do the other regions, Cantabria has several “de facto RRI” characters in its regional innovation ecosystem. For instance, responsibility dimensions such as ethics and gender equality are present in several research organizations. In addition, other RRI aligned concepts such as sustainability and Corporate Social Responsibility (CSR) are popular in the region. There are also several synergies between the societal challenges proposed in the new regional RIS3 strategy and the values that are behind the RRI paradigm.

The region faces various challenges in the coming years due to rural depopulation, ageing, energy transitions, post-industrialisation, and mobility. All of these challenges will demand collaboration and coalition building that can address the responsibility and sustainability related implications of these challenges for the Cantabrian region. In addition, the new RIS3 strategy for Cantabria addresses sustainability.

In this context, Cantabria TetRRIS Lab aims to function as a meeting point for the regional innovation ecosystem actors to stimulate science-society interactions in Cantabria in the four identified opportunity domains:

- Bio-Health and post-Covid-19 society
- Blue economy and energy transitions
- Responsible Industry 4.0
- Sustainability and Responsibility

The main objective of the action is involving and engaging R&I stakeholders of Cantabria territory into four domains to discuss and identify actions needed in terms of responsibility. The logic behind this approach is to gather various stakeholders, research lines, collectives, societal concerns and expectations into specific forums and debates that can inform, assess and guide smart specialization strategies under the RRI lenses.

Tampere:

There are various de facto RRI practices in the region including especially gender equality and environmental sustainability related issues. Three are, however, also needs to further develop e.g. diversity related questions in the industry. The Plan has been developed gradually in the course of the project implementation and, it has been discussed in workshops with the regional stakeholders. Especially concretisation of pilot activities has benefitted from continuous interaction between the project team and various stakeholders active in RDI ecosystem in Tampere Region.

The pilot is divided into two spearheads, other focusing more on the regional development processes and other on manufacturing industry’s ecosystem and processes. Firstly, the RRI will be integrated into regional development processes promoting sustainability through regional development work. Secondly, sustainability is promoted through industrial RDI ecosystem through which the RRI themes will be integrated into industrial RDI practices. The general objectives of the pilot include e.g.:

- To enhance open access and public engagement on strategical level within the region, in particular the Regional Development Programme and Smart Specialisation Strategy processes.

- To foster dialogue between the traditional innovation ecosystem and the manufacturing industry's ecosystem centred around RRI- themes and the regional sustainability transition.
- To promote awareness of RRI- dimensions and sustainability by enhancing responsibility- and sustainability literacy among the regional stakeholders and SMEs through an accelerator initiative.
- To advance regional systemic thinking, public engagement, and open access through dialogue between the sectors.

Nature of the change and impact aimed at varies at the level of individual activities. Some activities strive for enhancing and/or expanding existing practices - an example being inclusion of new or previously underrepresented groups of stakeholders to preparation of the Regional Development programme in Tampere region. So far, planned individual activities include:

- Regional Development Program: Enhancement of RRI- dimensions with a dialogue between the regional actors and promoting open access and inclusivity between the traditional innovation ecosystem and the manufacturing industry's ecosystem.
- Corporate Responsibility Accelerator Hub: A pilot activity designed to answer the responsibility and sustainability needs of the manufacturing industry SME's.
- SPRINT Innovation Festival 2021: A hackathon type competition for students on ideas for future responsible and sustainable industry.
- Collaboration on mission-oriented innovation policy and inclusiveness between Tampere- and Karlsruhe regions: Exchange of views and practices on the development of regional innovation policy to boost inter- European cross learning.
- Ekothon2: A two day co-creation online event that enhances public engagement with the civil society and the grass- root-level actors of the region.

Karlsruhe:

The major goal of the planning exercise in Karlsruhe region has been to identify areas for pilot activities that the stakeholders would be motivated to participate. Various opportunities and elements exist within the Karlsruhe Technology Region, which are supporting the uptake. The region's rich cast of actors, consisting of numerous research institutions, mediating actors, companies of all sizes and policy makers, has positively influenced innovation processes in recent decades and these established networks and support structures provide a good basis where de facto RRI is a common but implicit practice. There is also high level of interest among the regional actors, which is the basis for them to push RRI issues on their own and gradually integrate them into their R, D & I practices.

These de facto RRI activities and practices in the Karlsruhe Technology Region are concentrated in the field of environmental sustainability. An important focus area is the development of new, more climate- and environmentally-friendly mobility and logistics solutions. A major strand of de facto RRI practices and activities lies in the field of public engagement/inclusion, mainly in the context of activities seeking to innovate new technologies or develop new physical and social infrastructures and associated social practices.

On this basis two rough but promising fields for pilot activities emerged, which were further explored: citizen and stakeholder engagement, on the one hand, and regulation- and risk-sensitive conduct of

living labs. Through the workshop and stakeholder dialogues, four more concrete possible pilot activities were identified that enjoy interest and support from local stakeholders. These are

- (1) the creation of a practitioner network on citizen and stakeholder engagement;
- (2) the initiation of an intensified dialogue and exchange between regional innovation and development policy makers in Karlsruhe and Tampere;
- (3) the organization of living-lab practitioner workshops and dialogues with regulators; and
- (4) the creation of a mobility advisory council (Mobilitätsbeirat).

Szeged-Timisoara:

The Szeged-Timisoara Pilot is a "learning pilot" focused on deriving useful lessons and inspirations from the more advanced pilot regions of Tampere, Karlsruhe and Cantabria to stimulate first steps towards integrating RRI into the local development and innovation processes in the area of Sustainable construction and creative industries. Darinno, regional partner in Hungary, selected two strategic projects within this region, DIH-World and TalentMagnet based on regional smart specialization strategies in Szeged-Timisoara region.

TalentMagnet addresses major societal (demographic and labour market) challenges of the Szeged region caused by the outmigration of highly educated young people, primarily from small- and medium sized towns in the Danube Region (brain drain). DIH-World aims to accelerate the uptake of advanced digital technologies by European manufacturing SMEs in all sectors and support them in building sustainable competitive advantages.

Hungarian RDI structure is focused on economic and industrial policy and is based on an internally closed, hierarchical, top-down model of governance. This has led to limited inclusion of social, cultural, moral, environmental and other values in the framework. The major factors influencing the implementation of RRI in Hungary are GDP per capita, and the post-socialist heritage. The latter includes, in turn, such factors as lack of trust, lack of cooperation willingness, importance of informal channels, and low familiarity and exposure to RRI.

For the end of planning the future actions, the project team organized separate workshops with TalentMagnet and with DIH-World. In the workshops, the stakeholders discussed the overall concept of RRI, challenges of RRI integration in the region, and how to solve these challenges. In the both cases, the starting challenge was raising RRI awareness in a post-socialist innovation environment, and therefore many of the future measures relate to increasing awareness and acceptance of the concept.

In the TalentMagnet case, for instance, the following actions are planned:

- Short presentations about RRI and TetRRIS for the TalentMagnet partnership.
- Creating RRI-related visuals (infographics, animations, leaflets) with easy-to understand key RRI-messages and advantages.
- Helping trained partners start to use RRI thinking during their work
- Asking TalentMagnet partners to distribute the importance of RRI among their stakeholders.
- Invite TalentMagnet key persons to main TetRRIS activities in order to continue cooperation and get more support

In the DIH-World, in turn, for instance, the following measures were foreseen:

- Creating RRI-related podcasts and video material with easy-to understand key RRI-messages and advantages
- DIH-World partner clusters shall distribute information materials about the RRI among their members followed by structured online discussions.
- DIH-World partner clusters shall be invited to TetRRIS activities in order to continue regional involvement in transnational cooperation
- Integrating RRI in regional innovation services by DIH Business Plan
- RRI community of professionals – supporting RRI with knowledge and experience generated by TetRRIS partners

This deliverable is a “living document”. We update it if, for instance, changes take place in the regional activities and new actions are planned. More importantly, we learn iteratively from our pilots and are able, hopefully, to adjust them in agile way. If we observe that something we are doing is not working, we should change it in mutual understanding with our regional partners. In other words, we should be able to follow two important principles of responsible innovation: be reflective and responsive on our work.

The following regional plans follow the same structure, albeit they are clearly different by content. Regions are different and there cannot be “one size fits all” policy. Therefore, all the actions aiming at the uptake of more advanced responsibility and sustainability targets and practices have been adapted to each region’s needs, their “narratives” and targets in terms of their wider policy. The documents naturally also reflect writers’ personal styles and interpretations, which we have not streamlined.

While originally, in the project plan, we anticipated that these regional “pilot handbooks” would be “no more than 30-35 pages each”, we realized during the process that a lot of the information we thought to be part of this deliverable, is actually included already in the previous ones, D3.1 and the preceding D2.2. We have not repeated all the material what is there, but usually refer to it, and give some summaries when needed. Therefore, the length of the regional plans is shorter than anticipated. There are, however, considerable variation in the regional processes, preparation details, ways to work on the responsibility related themes, and therefore also variation in the reports, because regions are, as discussed, significantly different from each other.

2. PILOT CASE PLANS

2.1. CANTABRIA

2.1.1. Introduction

Cantabria is a particular region into the Spanish geography as it gathers less than 1% of total population and total territory of Spain. But at the same time, it is a region that offers significant prospects regarding research and innovation (R&I) in sectors such as bioeconomy, health or renewable energies. In this sense, the plan that is presented here builds on the prior work conducted

in Deliverable 2.2 (Cantabria mapping report) where we conducted a mapping of the regional innovation ecosystem of Cantabria (Martin, Stahlecker, Arrizabalaga, Frey, et al., 2021), and Deliverable 3.1 (Cantabria specific challenges) where this mapping was validated by regional stakeholders (Martin, Stahlecker, Arrizabalaga, Hansmeier, et al., 2021). In Deliverable 2.2 we paid special attention to regional innovation ecosystem structure, actors, policy plans, dynamics, activities and cultures to explore “de facto” Responsible Research and Innovation (RRI) features (Randles, Larédo, Loconto, Walhout, & Lindner, 2016) . In Deliverable 3.1 TECNALIA, and in liaison with SODERCAN, we conducted a virtual workshop with several participants to validate the mapping conducted in the territory whilst identifying possible domains of action for developing RRI pilot actions, as well as identifying challenges, needs and possible participants. This work allowed to research team to start developing some domains of opportunity related with RRI that can be activated through pilot actions conducted in the territory.

These “domains of opportunity” tried to identify particular areas of intervention where different, technologies, R&I stakeholders, companies, public administrations, associations and citizens can be affected or interested about its future potentialities and challenges regarding Smart Specialization Strategies (S3) and RRI. As we have explained in D3.1 Cantabria has several strengths in R&I but is not characterized by predominant sectors which can create technological or sectorial roadmaps. Proposing these “domains of opportunity” will allow to the TetRRIs project team to gather different areas of socio-economic transformation where different stakeholders can be mobilized to address different socio-cultural and ethical challenges that the development of particular technologies under the umbrella of S3 strategies can have in the regional landscape. This approach has been conceived based upon the work delivered carried out in D2.2 and D3.1 but also from recent regional policy documents that try to envision a future roadmap for the R&I regional capacities such as Next Generation Funds (Gobierno de Cantabria, 2020) or the new S3 regional plan for the period 2021-27.

It is also important to mention that at this stage of the process and due to the situation caused by the pandemic, no clear “pilot actions” with clear roadmaps have been conceived by regional stakeholders in liaison with TECNALIA and/or SODERCAN. Difficulties for having physical interactions and meetings have also affected the work conducted in TetRRIS project and its initial plans. That is why we have opted for a more flexible approach that can guarantee inclusivity and involvement of different regional stakeholders after the end of COVID-19 restrictions and with the restarting of physical participatory activities in the project.

In this sense, the aim of this document is to refine and fine-tuning the four “domains of opportunity” previously identified and identifying already in place initiatives in the territory that can contribute to their development. To this extent, this deliverable digs into the challenges observed for the uptake of RRI and expose some RRI aligned initiatives, actors and institutions that can be mobilized and leveraged for promoting the uptake of RRI during the setting up of the Cantabria TetRRIS Lab. This lab will consist of three workshops starting in the fall of 2021 and ending in the spring of 2022 with the aim of involving R&I stakeholders into the already mentioned four domains for conceptualizing and developing pilot actions.

2.1.2. Vision for the RRI in the region

Cantabria shows several “RRI de facto” features (Randles et al., 2016) in its regional innovation ecosystem. Some RRI keys such as ethics and gender equality are **regularly present in several research organizations of the regional innovation ecosystem**. These keys are institutionalized through particular policies at play in different R&I organizations and through other specific measures/and or activities carried out in a regular basis. Moreover, **other RRI aligned concepts such as sustainability and Corporate Social Responsibility (CSR) seem to be very popular in the regional landscape** with specific programs and policies aimed to promote it into the territory. Despite it does not exist any plan yet, Cantabria is also making its first steps towards meeting the objectives of the 2030 Agenda and Sustainability Development Goals (SDGs) are usually taken into account into R&D projects developed in the region.

Of special importance seems to be the concept of social innovation in the territory which has a significant presence in policy documents such as in the Cantabria innovation strategy for the period 2016-2030 (Gobierno de Cantabria, 2016b). It has also been the subject of particular funding support programs, especially in rural areas¹. **Social innovation is understood as a broad concept in the region that has grown in importance during the last years, but still needs to be widely institutionalized**. This can be perceived as **a challenge for the uptake of RRI, but also as a driver**. RRI can be considered a social innovation oriented to R&I ecosystems (Rip, 2014). The uptake of RRI into Cantabria territory will demand significant efforts towards its contextualization, but it can also create significant potentialities for the regional innovation ecosystem (Tabarés et al., 2020; Thapa, Iakovleva, & Foss, 2019; Uyarra, Ribeiro, & Dale-Clough, 2019).

However, **other aspects of RRI seem to be downplayed in the region**. For instance, **keys such as public engagement, open access and/or science education seem to not widely popular into R&I organizations in the region**. It is important to clarify that some of the most important R&I organizations do have specific initiatives such as “open doors days” whilst they are taking part in EU coordinated activities such as the “Researcher’s night”. But it is not common to observe this kind of activities in the majority of stakeholders of the regional innovation ecosystem. **Of special importance is the RRI “Governance” key** which was addressed by several stakeholders in D2.2 as one of the main important deficits in the innovation regional ecosystem. During the last years, several policy plans have put special emphasis in improving the governance of the system (Gobierno de Cantabria, 2013, 2018) and we agree that is a particular point of interest from a RRI perspective. **Contributing to facilitate and strengthening science-society interactions in Cantabria should seek to combine issues of public engagement and governance of territorial R&I**.

Of special importance, and as it has been also argued by several interviewees that took part in the study conducted in D2.2., it seems that the most important challenges for the regional innovation

¹ See https://dgidtei.cantabria.es/ayudas/-/asset_publisher/zGYQ2fbdARZI/content/subvenciones-innovaci-c3-b3n-social?_com_liferay_asset_publisher_web_portlet_AssetPublisherPortlet_INSTANCE_zGYQ2fbdARZI_assetEntryId=11954950&_com_liferay_asset_publisher_web_portlet_AssetPublisherPortlet_INSTANCE_zGYQ2fbdARZI_redirect=https%3A%2F%2Fdgidtei.cantabria.es%2Fayudas%3Fp_p_id%3Dcom_liferay_asset_publisher_web_portlet_AssetPublisherPortlet_INSTANCE_zGYQ2fbdARZI%26p_p_lifecycle%3D0%26p_p_state%3Dnormal%26p_p_mode%3Dview%26_com_liferay_asset_publisher_web_portlet_AssetPublisherPortlet_INSTANCE_zGYQ2fbdARZI_cur%3D0%26p_r_p_resetCur%3Dfalse%26_com_liferay_asset_publisher_web_portlet_AssetPublisherPortlet_INSTANCE_zGYQ2fbdARZI_assetEntryId%3D11954950

ecosystem is the **lack of a “collaborative culture”**. Many stakeholders argued that joint initiatives to take part in R&I initiatives are not common between different stakeholders. **Other stakeholders argued that there is no dedicated open innovation strategy in the territory.** Something that it could facilitate this kind of collaborations between different actors. Many stakeholders argued that this a main cultural issue due to the geo-cultural particularities of the region (isolation, urban-rural contrasts) while others did not agree on this and they argued for more policy efforts that can revert this situation. All in all, the majority of stakeholders interviewed as well as policy representatives stressed that this **lack of synergies between R&I stakeholders** is one of the main challenges that the region faces.

This diagnosis has significant implications for the RRI vision of Cantabria as the lack of a participative culture in the regional innovation ecosystem can be a major challenge for the diffusion and adoption of RRI. In this sense, recent regional policy plans such as the new S3 strategy for the period 2021-2027 puts a significant emphasis in fostering values into regional innovation ecosystem such as participation, transparency, inclusivity, social cohesion and resilience. Values that are very aligned with the ones that are behind the RRI paradigm. More specifically, the new S3 regional strategy defines five thematic challenges. These are:

- **Innovative Cantabria**
- **Competitive and entrepreneurial Cantabria**
- **Sustainable Cantabria**
- **Cantabria with and for its talent**
- **Participative and transparent Cantabria**

In addition to these thematic challenges there are two more transversal ones that affects and influences the five thematic ones. These two transversal ones are:

- **Cantabria digital transformation**
- **Cantabria cohesion, inclusivity and resilience**

In addition to the inclusion of these regional challenges this S3 strategy also pays special attention to the role of different R&I ecosystems that are embedded into Cantabria territory. That is why it adopts a non-sectorial structure oriented to facilitate synergies between them, as well as contributing to facilitate its potentialities. These five priority ecosystems for the period 2021-2027 are:

- **Blue economy and offshore industry**
- **Health and wellness**
- **Cultural industries and sustainable tourism**
- **Bioeconomy and agri-food sector**
- **Industry 4.0**

² This document is currently under development by the General Directorate of Innovation of Cantabria Government. The current draft has gently been shared with TECNALIA team, but the document is not public yet.

As it is described in the policy document, these five priority ecosystems have been selected as a result of participatory processes follow to develop the new S3 of Cantabria, involving different public institutions that have stakes on innovation in the territory. This process has been validated by the Innovation Coordination Commission of Cantabria Government which is the maximum authority in this matter and that it is composed by different members of Cantabria Government.

As it can be observed in this new policy strategy currently under development, there are several synergies between the societal challenges proposed in the new S3 strategy and the values that are behind the RRI paradigm. In this sense, **the RRI vision projected in TetRRIS project in the region seem to be nicely aligned with what the policy making domain will try to aim during the period 2021-2027.**

However, it is important to understand that the actions and impacts provided by the project will be difficult to measure during the lifespan as these will be mostly and likely visible during the medium (3-5 years) and long term (5-10 years). We hope that TetRRIS project can have an important impact during the development of project activities in the regional landscape and can contribute to the ambitious policy agenda that tries to address some of the systemic and socio-cultural challenges that affect the regional innovation ecosystem.

In this sense, the most desired impact of the project is **to position the Cantabria TetRRIS Lab as a meeting point into the regional innovation ecosystem to stimulate a forum dedicated to the need of strengthening science-society interactions in Cantabria in the four domains of opportunity identified.** Creating and promoting debates about the need of discussing socio-cultural and ethical issues that are a matter of concern for regional R&I stakeholders should be the first step towards the diffusion, adoption and institutionalization of RRI in the regional innovation ecosystem.

Last, we envision this objective as an incremental process that will not constitute a radical process and it will be built upon past and present initiatives and experiences that have been deployed in the territory or are currently running. That is why in next sections we cite some of them and we identify some synergies that exist with the RRI paradigm

2.1.3. Drivers and challenges related to the implementation of RRI in the region

Working with these four domains of opportunity described in previous sections provides different opportunities for the regional innovation ecosystem of Cantabria. First, it provides the needed flexibility that RRI demands when is contextualized into a particular configuration of stakeholders and cultures of R&I. Second, despite its moderate size, the innovation ecosystem of Cantabria is so fragmented, and a sectorial strategy will be difficult to follow. Third, and most important, it seems clear under the diagnosis held in D2.2 that efforts for congregating R&I capacities into forums, networking activities, thematic events and participatory activities in the territory can help to mobilize and dynamize R&I capacities, skills and synergies between different stakeholders. **That is why one of the main drivers for the implementation of the RRI in the region will be the format itself proposed: the setting up of the TetRRIS Lab oriented to promote RRI into the regional innovation ecosystem.**

This format is explained in detail in the last section of this chapter but it will consist of a Social Lab (SL) composed by three workshops that will be conducted from the fall of 2021 till the spring of 2022

with the main objective of involving and engaging R&I stakeholders of Cantabria territory into four domains of opportunity identified as strategic in terms of R&I capacities, but also as highly sensitive for Cantabrian society. The logic behind this loosely approach is to not adopt a restricted sectorial approach **for leveraging different stakeholders, research lines, collectives, societal concerns and expectations into specific forums and debates that can inform, assess and guiding smart specialization strategies under the RRI lenses**. As it has been stressed by the majority of stakeholders during early stages of research in TetRRIS project, there are no significant places, forums or events that can act as meeting points for R&I actors of the regional innovation ecosystem. Therefore, the development of a SL consisting of three workshops into the region can meet this gap, and at the same time, helping to promote the diffusion and adoption of the RRI concept into the territory.

SL as a term was coined by Zaid Hassan in his book “The Social Labs Revolution: A new approach to solving our most complex challenges” (2014). But this idea is not coming out of the blue and its origins can be traced back to several decades ago, intimately associated with some pioneering ideas in innovative education (Tabarés Gutiérrez & Bierwirth, 2019). Popular ideas and approaches to reinvent education and participation such as “Learning by doing” (Dewey, 2009), constructionism (Papert & Harel, 1991), critical pedagogy (Freire, 1974) and communities of practice (Wenger, 1998) are some of the key elements that can be observed in the SL proposition. The setting up of TetRRIS Lab into the Cantabria regional innovation ecosystem will try to address this gap in participation and collaboration with a format that can be appealing and attractive for its participants, favoring the diffusion and adoption of the RRI paradigm.

The main drivers that can support the uptake of RRI are strictly aligned with the diverse presence of notions like sustainability and responsibility. As we have explained before (see previous section, D3.1 and D2.2), it is common to observe different initiatives that address values such as sustainability, responsibility, participation, transparency or gender equality among others. At the same time there are a diverse conceptualization of these values between stakeholders what it can create complexity and it can demand work oriented to conceptual clarifications and translating meaning understandings.

At the same time, **the region faces significant challenges in the coming years due to rural depopulation, ageing, energy transitions, post-industrialisation and/or mobility**. All of these challenges will demand of different collaborations, coalitions and concertation of actors that can address the different dimensions and implications of these challenges for Cantabrian society. In this sense, involving the active participation of Cantabrian society into R&I can facilitate to address the different dimensions of these societal challenges.

Last, it is also important to remark that the new S3 strategy for Cantabria that is being under development at the time that this is being written tries to address sustainability significantly. Not only with a particular thematic challenge (see previous sections), but also with different lines of action into the territory. This is also aligned with the S3 to S4 approach that has been recently pushed forward by the Joint Research Centre for promoting sustainability and mission-oriented policy into S3 policy making (McCann & Soete, 2020).

2.1.4. Solutions to challenges

The challenges that affect Cantabria's regional innovation ecosystem **are systemic and attached to the socio-cultural particularities of the region**. These challenges can't be overcome during the lifespan of an EU funded project, but the aim of this project efforts is to have an impact for fostering the diffusion and adoption of RRI in the innovation ecosystem. The setting up of the TetRRIS Lab will be the tipping point of the participatory process that we want to kick-off into the regional innovation ecosystem of Cantabria. **Concertation of actors around particular domains of interest that can involve, science, technology, economy and socio-cultural and ethical particularities can create momentum for the development and strengthening of science-society interactions in the territorial landscape of the region**. After the work conducted in WP2 and WP3, it seems that there are several signals from Cantabria society that demands these particular reconfigurations that can involve actors from academia, industry, public administration and society as a whole.

The mobilization of different actors of the regional innovation ecosystem through the TetRRIS Lab but also with other different activities that can directly stem from the lab (or not) can have a decisive impact in the diffusion and adoption of the RRI paradigm in the territory. To this extent, we also want to build on previous experiences and efforts can provide us with a deeper knowledge of how to address these challenges as well as counting with a set of stakeholders that have tried or are trying to address them through different ways. These stakeholders will participate in the lab and its different forums and events that can help to create public debates in Cantabrian society about particular trajectories of technologies, societal expectations and demands to be taken into account, tensions between society and R&I outputs, etc.

In this regard, we assume that the lack of participatory culture that has been mapped out in the regional innovation ecosystem in the project will be one of the main difficulties for pushing forward this strategy. This barrier will demand the impulse of different activities and forums that can provide opportunities for networking between the different R&I stakeholders whilst disseminating and contextualizing the RRI paradigm into different R&I communities and networks. **This is why we have adopted the approach of selecting four domains of opportunity that are aligned with the R&I strengths of the region, as well as it implies several of the societal concerns, expectations and needs that have been observed during the development of TetRRIS project till this point**. In the following, we provide a detailed description of what these domains of opportunity entail for implementing RRI into S3 regional strategy of Cantabria. These domains are also accompanied with a list of current initiatives/projects/platforms/social movements in the territory that can be of interest for the development of pilot actions under these domains. These lists of initiatives will be presented to the participants in the first workshop for illustrating different domains of opportunity with the challenges, problems and opportunities associated for strengthening science-society interactions towards the diffusion and adoption of RRI by regional stakeholders. This list of initiatives is not extensive nor detailed, but a collection of examples that gather some of the elements that are included in the domains and that reflect the R&I strengths of the region, as well as the different societal demands, expectations and concerns of the region regarding R&I.



Figure 1 First RRI domain of opportunity for Cantabria

- 1) **Bio-Health and post-Covid-19 society:** Biotechnology and health sector are one of the major strengths of Cantabria. This research domain offers significant possibilities for business development in the region creating “spillover effects” in other industries such as agri-food, waste management or textile. Cantabria has a significant trajectory in the development of biotechnologies and health-oriented innovations what it can be likely to be reinforced after the pandemic will end. In fact, it seems clear that COVID-19 has been a tipping point for Cantabrian society and its health infrastructure and services. The political bet on this sector seems to be redoubled and society seem to be favoring that investments. Under the RRI lenses, this domain includes significant elements of interest for discussing the role of socio-ethical issues in innovation as these demands an active participation of Cantabrian society. In addition, research in biotechnologies also offer to the agri-food industry new possibilities that can promote territorial cohesion and bringing onboard innovation to small family rural business which are quite popular in the region. In this sense, we envision actors such as IDIVAL, IBBTEC, UC, UNE-Atlántico and/or CITICAN that can be mobilized under this domain. Of these, IDIVAL can be probably considered as an “RRI champion” as it has clearly adopted and institutionalized the RRI paradigm into its DNA. It also promotes significant highly socio-ethical sensitive projects such as “Cohorte” (more information at table below).

Other actors such as IBBTEC has different RRI keys institutionalized such as ethics or gender equality and it has a significant calendar of events trying to promote public engagement. Therefore, we hope that these actors can be mobilized under pilot actions and diffusing the RRI paradigm across regional innovation ecosystem as they have pioneering the RRI adoption in the region and have understood its value.

Name:	<i>La Universidad en tu barrio</i> <i>The University at your neighbourhood</i>
Organization:	University of Cantabria Scientific and Innovation Culture Unit (UCC+i)
Website:	https://web.unican.es/unidades/cultura-cientifica/actividades/la-universidad-en-tu-barrio
What is the objective of the initiative in a nutshell?	

	<p>The aim is to bring science closer to all the neighbours of a specific neighbourhood in the city of Santander, using different spaces, with activities of different types and for all audiences. Enjoy science, find out what research is being carried out at the University of Cantabria and appreciate the importance of science in their daily lives by carrying out activities in an immediate environment.</p>
<p>Some examples of the past edition are:</p> <ul style="list-style-type: none"> • Workshops: What microbes grow in my neighbourhood? (IBBTEC involvement) • Gymkhana, the hidden engineering of my city 	
<p>RRI keys and dimensions:</p>	<p><i>Public engagement, science education, responsibility, openness.</i></p>

Figure 2 “La Universidad en tu barrio” information card

<p>Name:</p>	<p><i>Cohorte</i></p>
<p>Organization:</p>	<p>IDIVAL</p>
<p>Website:</p>	<p>https://cohortecantabria.com/</p>
<p>What is the objective of the initiative in a nutshell?</p>	
	<p>“Cohorte” is an ambitious initiative promoted by IDIVAL to attract 50.000 residents in Cantabria to take part in a pioneering initiative for promoting a better understanding of health and sickness relationships in Cantabria during a very long lifespan. The project aims to “follow the participants during its lifetime” for a period of 30 years. They sought to involve participants from 40 to 70 years during a 30 years period of time. At the time that this text is being written, more than 5.000</p>
<p>people have volunteered to take part.</p>	
<p>RRI keys and dimensions:</p>	<p><i>Public engagement, science education, ethics, responsibility, diversity, transparency.</i></p>

Figure 3 “Cohorte Cantabria” information card

<p>Name:</p>	<p><i>JANO</i></p>
<p>Organization:</p>	<p>SCS Salud</p>
<p>Website:</p>	<p>https://www.scsalud.es/detalle/-/journal_content/56_INSTANCE_DETALLE/16413/14070952</p>
<p>What is the objective of the initiative in a nutshell?</p>	
<p>JANO is the new virtual telephone assistant set up by the Cantabrian Health Service (SCS) to collaborate in Covid-19 regional vaccination campaign. It is a conversational assistant designed by the Directorate General for Digital Transformation and User Relations based on natural language processing (NLP) and with the capacity to make up to 200 calls</p>	

simultaneously. JANO is a sign of how artificial intelligence (AI) can help to mitigate challenges posed by the pandemic, but at the same time has raised concerns about its adequacy when dealing with older people or not familiarized with these virtual assistants. It is also a sign of the adoption of Industry 4.0 technologies.	
RRI keys and dimensions:	<i>Public engagement, ethics, diversity, inclusivity.</i>

Figure 4 JANO information card

Name:	<i>Proton Therapy Unit</i>
Organization:	Valdecilla Hospital
Website:	https://www.europapress.es/cantabria/noticia-unidad-protones-valdecilla-estara-2024-atendera-500-pacientes-ano-20210827160304.html , https://www.cantabriaeconomica.com/reportaje/valdecilla-tendra-unidad-de-protones/
What is the objective of the initiative in a nutshell?	
	Valdecilla Hospital will be the first public Spanish hospital to have a Proton Therapy Unit in 2024. This infrastructure will be soon starting its construction and it will attend around 500 patients in its first year. This advanced treatment and infrastructure will position the region in an advanced position in terms of oncology thanks to EU REACT Funds. It is also an opportunity to engage Cantabrian society in the benefits that can provide to welfare research in advanced technologies, but also to consider socio-ethical aspects of innovation that can be intimately associated with this technology.
RRI keys and dimensions:	<i>Public engagement, science education, anticipation.</i>

Figure 5 Proton Therapy Unit information card

- 2) **Blue Economy and Fair Energy Transitions:** Cantabria R&I strengths in the field of renewable energies and marine engineering are recognized at international level. The role of the sea in the history of the region is well known and the capacities developed in the region in this regard have a significant trajectory that combine diverse socio-economic and cultural factors. At the same time, the region is facing significant challenges regarding energy transitions and the development of renewable energies that stress the territorial tensions that emerges between urban and rural landscapes. This domain presents significant opportunities to engage Cantabrian society into the potentialities, challenges and threats that energy transitions can provide to the territory. A fair energy transition will demand significant interventions into the land and sea of the territory and these interventions should be publicly legitimized for not repeating the same mistakes such as in other episodes of innovation

history³. This domain contains significant actors of the regional innovation ecosystem of Cantabria such as IH or UC, but other important clusters in the region such as MARCA or Sea of Innovation and many companies specialized in this field. It is important also to stress that plans for setting up different wind turbine industrial districts in rural areas of the region have received a significant backlash from Cantabrian public opinion, what it can lead to create a negative opinion for other kinds of related technologies. We can expect that the modification of bay areas can also provoke these kinds of reactions and controversies and the role of RRI can contribute to actively involving society into R&D and favoring participatory and democratic approaches.



Figure 6 Second RRI domain of opportunity for Cantabria

Name:	<i>Bahía H2 Offshore</i>
Organization:	IH Cantabria
Website:	https://cantabriaseaofinnovation.es/bahia-h2/ , https://www.elespanol.com/invertia/disruptores-innovadores/autonomias/cantabria/20210118/bahia-h2-proyecto-producir-hidrogeno-energia-solar/552195277_0.html
What is the objective of the initiative in a nutshell?	
	<p>“Bahía H2 Offshore” is an ambitious project that aims to develop an innovative system for generating fuels in the form of hydrogen and ammonia under marine conditions, by means of floating renewable energy, integrating the technologies of PEM electrolysis and in situ transformation into ammonia (NH₃) by means of the Haber-Bosch process. The location of this initiative will occupy a space in the public domain of the Port Authority of Santander (APS), and will focus on the design, construction, installation and monitoring of a scale floating platform, a prototype of offshore production of hydrogen and green ammonia powered by floating solar platforms. The green fuel generated will be destined for ships and equipment of lines and operators</p>

³ Brazil with biofuel or Germany with nuclear energy are two examples of these “failed energy transitions”.

in the Port of Santander. The project clearly entangles different socio-ethical aspects of innovation associated to responsible energy transitions ⁴ .	
RRI keys and dimensions:	<i>Public engagement, science education, responsibility, anticipation, inclusivity</i>

Figure 7 Bahía H2 Offshore information card

Name	<i>Citizen platforms against wind turbines</i>
Organization	Diverse citizen platforms (ARCA, Cantabria No se Vende)
Websites	https://defensavallespasiegos.org/ , https://arcacantabria.org/plan-eolico-de-cantabria/ , https://www.eldiariomontanes.es/region/valles-pasiegos/plataforma-pasiega-eolicos-20210504195347-nt.html
What is the objective of the initiative in a nutshell?	
<p>The growing development of wind turbine energy parks in the region is rising a significant backlash from rural areas where are planned to be installed. Many citizens are creating associations and citizen platforms to prevent the deployment of these industrial facilities into rural areas. These efforts are also coordinated between different associations of nearby regions such as Galicia, Asturias, Castilla y León and the Basque Country.</p> <p>These territorial tensions between rural and urban areas are far from being new in the territory, but now it seems that there are stronger as issues of rural depopulation, lack of social services and connectivity (among others) are also entangled on it. This problem also has historical echoes in previous episodes of energy transitions such as in the case of biofuels in Brazil and nuclear energy in Germany.</p>	
RRI keys and dimensions	<i>Public engagement, science education, responsibility, transparency.</i>

Figure 8 Citizen platforms against wind turbines

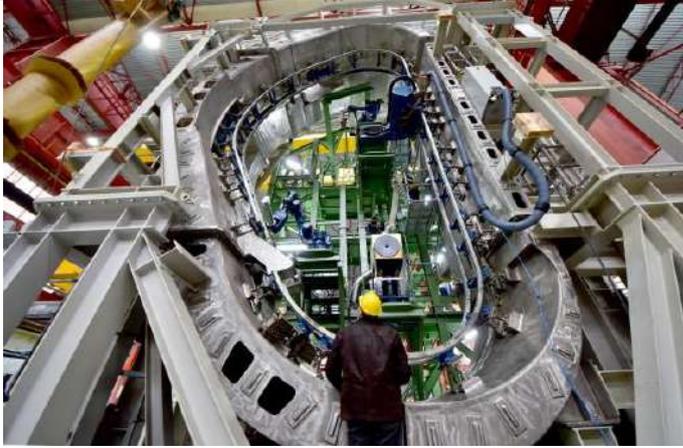
- 3) **Responsible Industry 4.0:** Cantabria region holds important strengths regarding industry, its significant weight into its Gross Domestic Product confers to this sector a paramount importance in terms of employment, economic development and territorial cohesion. However, the ongoing processes of industry digitalization poses significant challenges for Cantabrian industry. Policy making is well aware of this and significant initiatives such as the Plan “Factorías del Futuro” (Gobierno de Cantabria, 2016a) try to facilitate the digitalization, modernization and automation of regional factories (Gobierno de Cantabria, 2020). This domain can also offer several opportunities to promote collaboration and knowledge transfer between regional stakeholders, as well as involving society into the different challenges that the sector will face into coming years. Industry 4.0 creates significant needs of collaboration between actors of different sectors such as ICT and manufacturing, but also across entire established value chains, redefining and blurring the limits and scope of physical factories. Different factory needs will demand cooperation between stakeholders but also will involve active participation from social agents as the introduction of digital technologies usually

⁴ See for instance <https://www.energias-renovables.com/panorama/este-es-el-decalogo-de-las-renovables-20210521/>

redefine labor organization, conditions and rights (Gutiérrez & Ezponda, 2019). Moreover, emergent technologies such as Artificial Intelligence, Internet of Things, 3D Printing, Robotics or Cybersecurity provide of strong competitive advantages, but they also demand new profiles and reskilling and accessing to new human talent. This can create important problems for companies with limited resources. Actors such as CTC technological center, UC and TERA or CINC clusters will be important for facilitating this transition and favoring the digitalization of many factories and companies into the region.



Figure 9 Third RRI domain of opportunity for Cantabria

Name:	<i>ITER project</i>
Organization:	ENSA, Cluster CINC
Website	<p>https://www.elespanol.com/invertia/disruptores-innovadores/innovadores/empresas/20210908/mayor-experimento-fusion-nuclear-sellado-empresa-cantabra/610189330_0.html</p> <p>perspectivacdti.es/fusion-nuclear-entrevista-a-sofia-corino-responsable-del-proyecto-iter-en-ensa/</p>
What is the objective of the initiative in a nutshell?	
	<p>ENSA is an international widely renowned nuclear company in the region that has achieved great contracts during last years. One of them has been the ITER project which has been from the very beginning a great challenge for their specifications and requirements. This project has significant potentialities for strengthening science-society interactions as energy transitions poses significant challenges for society and the role of nuclear energy will be critical during next years. Cluster CINC can be also an important actor in this domain.</p>

RRI keys and dimensions	<i>Public engagement, science education, openness, transparency.</i>
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Figure 10 ITER project information card

Name:	<i>Ports 4.0</i>
Organization:	Port of Santander
Website	https://cantabrialiberal.com/santander/el-puerto-de-santander-entre-las-sedes-del-fondo-40-para-fomentar-el-uso-de-las-tecnologias-digitales.554575.html
What is the objective of the initiative in a nutshell?	
<p>The Port of Santander is part of the national initiative called Port 4.0 which aims to promote digitalization into national ports as well as transforming these infrastructures into an entrepreneurial ecosystem. Moreover, the desired expansion of the Port of Santander to the “La Pasięga” space can be also an opportunity to promote start ups and spin offs that can thrive the advancement of the Industry 4.0 into the region. We can see this as an opportunity for aligning RRI values into ongoing processes of Industry 4.0 in the region, as cooperation with different actors and the involvement of regional society in these processes will be critical.</p>	
RRI keys and dimensions	<i>Public engagement, governance,</i>

Figure 11 Ports 4.0 information card

- 4) **Territorial Sustainability and Responsibility:** Sustainability and CSR seem to be widely present in the regional innovation ecosystem of Cantabria. A singular number of initiatives related with circular economy in the territory and a common emphasis in policy plans (Gobierno de Cantabria, 2016b, 2020) can be observed in Cantabria. Synergies of RRI with sustainability are commonly spotted in the literature (Burget, Bardone, & Pedaste, 2017; Dreyer et al., 2017; Ladikas, Hahn, Hennen, Kulakov, & Scherz, 2019; van de Poel et al., 2017) and we consider that these “RRI de facto” features that are currently present in the territory can be mobilized to facilitate the diffusion and adoption of RRI.

In this sense, actors not directly involved in R&D processes such as the Chamber of Commerce of Cantabria or CEOE-CEPYME, but involved in different “innovation awareness and dynamization” can actively contribute towards the development of RRI related initiatives in the territory. Both of them have different initiatives underway and they have the capability to congregate different set of actors (business, academia, industry, CSOs). Together with SODERCAN and DGIDTEI these stakeholders can exert a great influence towards RRI diffusion and adoption in the territory. Last, these actors seem to have more visibility for lay people and better ways to connect with citizens and citizen associations and collectives than R&D regional actors. Below, we also recap about some initiatives related with this domain.

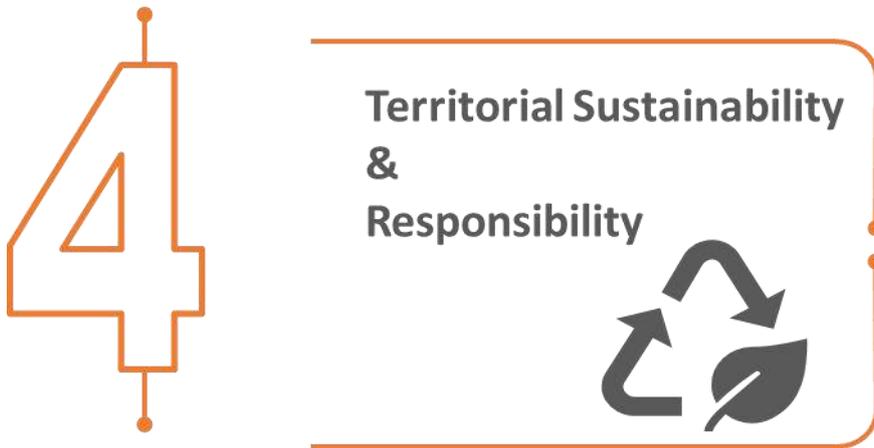


Figure 12 Fourth RRI domain of opportunity for Cantabria

Name:	<i>Pop Machina</i>
Organization:	Horizon 2020 funded project
Website:	https://pop-machina.eu/project
What is the objective of the initiative in a nutshell?	
 <p>Pop-Machina</p> <p>According to Santander Strategic Plan 2010-2020, among the main challenges the area faces are the enhancement of public transportation and multimodal transportation, improvement and specialization of technological and industrial spaces, strengthen of commercial competitiveness, creation of high added value jobs, strengthen image as city of culture, sciences and arts, coverage of increasing needs on health and social services for the elderly, increasing the connection between the university and cultural centres with the society.</p> <p>Santander has a strong compromise on circular economy being a necessary step beyond the reduction of urban waste. Although it has started several initiatives in this context, the city is looking for an innovative action aligned with its Smart City general initiative. Thus, in the pilot area of Santander, Pop-Machina aims to show how circular approaches can be infused in ongoing urban regeneration and living lab projects, to link the city's strong smart city capabilities with circular solutions for sustainable urban planning and foster new and innovative economy sectors by means of developing or creating business models based on circular economy.</p> <p>This initiative could drive notions of RRI associated to circularity, waste resource management, public engagement and sustainability into Cantabria society.</p>	
RRI keys and dimensions:	<i>Ethics, public engagement, transparency, anticipation, inclusivity, responsibility, diversity.</i>

Figure 13 “Pop-Machina” information card

Name:	<i>Cantabria Responsable</i>
Organization:	Cantabria Chamber of Commerce

Website:	https://www.cantabriaresponsable.com/
What is the objective of the initiative in a nutshell?	
 <p>responsabilidad para el desarrollo</p>	<p>“Cantabria Responsible” is program to promote CSR between Cantabria companies. Throughout the setting up of this program the aim is to boost CSR in business management, paying special attention to economic, social and environmental dimensions.</p> <p>Other programs supported by SODERCAN are also of interest for this domain as it seems that there is general awareness about responsibility in the business ecosystem of the region. These initiatives can promote RRI too, as they have working in CSR which have several synergies with RRI.</p>
RRI keys and dimensions:	<i>Ethics, public engagement, gender equality, responsibility.</i>

Figure 14 Cantabria Responsible information card

Name:	<i>Red Cambera</i>
Organization:	Red Cambera
Website:	https://redcambera.org/
What is the objective of the initiative in a nutshell?	
	<p>“Cambera Network” is an independent non-profit entity that works since 2010 in Cantabria with the aim of promoting natural environment preservation. They actively work in different projects oriented to promote citizen participation and citizen science in climate change mitigation. Synergies with other initiatives can be leveraged for the diffusion of RRI.</p>
RRI keys and dimensions:	<i>Ethics, public engagement, responsibility, inclusivity.</i>

Figure 15 Red Cambera information card

2.1.5. Road to the vision - impact path

As we have previously explained Cantabria’s pilot plan is focused on four particular domains of opportunity identified for the diffusion and adoption of RRI concept in the territory. These four domains that have been selected in D3.1 and have been refined in this deliverable are finally titled:

- **Bioeconomies, Health and post-Covid-19 Society**
- **Blue Economy and Fair Energy Transitions**

- **Responsible Industry 4.0**
- **Territorial Sustainability and Responsibility**

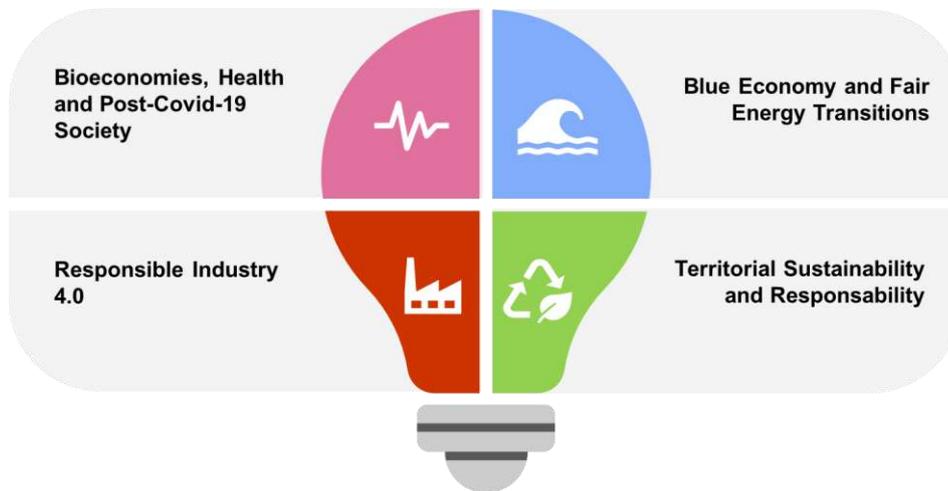


Figure 16. Four domains of opportunity for the uptake of RRI in Cantabria

The actions that will be developed during the next year will follow a SL approach that will mainly consist into three participatory workshops that will try to gather and engage different regional R&I stakeholders. As we have expressed before, the SL approach has its origins in a diverse set of innovative ideas in education (Dewey, 2009; Freire, 1974; Papert & Harel, 1991; Tabarés Gutiérrez & Bierwirth, 2019; Wenger, 1998). But it also belongs to a growing movement of recent developments in “labs outside technical facilities”. That is why “citizen labs”, “urban labs”, “policy labs”, “living labs” or “media labs” can be also associated with the SL proposition (Engels, Wentland, & Pfothenhauer, 2019; Romero-Frías & Arroyo-Machado, 2018; Romero-Frías & Robinson-García, 2017).

In words of Hassan, SLs are platforms for addressing complex social challenges that have three core characteristics (Hassan, 2014):

1. **They are social.** SLs start by bringing together diverse participants to work in a team that acts collectively. They are ideally drawn from different sectors of society, such as government, civil society, and the business community. The participation of diverse stakeholders beyond consultation, as opposed to teams of experts or technocrats, represents the social nature of SLs.
2. **They are experimental.** SLs are not one-off experiences. They’re ongoing and sustained efforts. The team doing the work takes an iterative approach to the challenges it wants to address, prototyping interventions and managing a portfolio of promising solutions. This reflects the experimental nature of SLs as opposed to the project-based nature of many social interventions.
3. **They are systemic.** The ideas and initiatives developing in SLs, released as prototypes, aspire to be systemic in nature. This means trying to come up with solutions that go beyond dealing with a part of the whole or symptoms and address the root cause of why things are not working in the first place.

Despite this methodology is an emergent one and there is not too much literature published on it, a recent paper published last year also recognizes six features that SLs have (Timmermans, Blok, Braun, Wesselink, & Nielsen, 2020):

- 1. SLs offer a space for experimentation.*
- 2. SLs are not closed off from the outside world, but intently are a part of the real world.*
- 3. SLs require active participation of a wide range of societal stakeholders that are of relevance to or have an interest in the social challenge, such as policymakers, businesses, government, and civil society.*
- 4. SLs are multi and interdisciplinary involving a wide range of expertise and backgrounds as well as approaches.*
- 5. SLs support solutions and prototypes on a systemic level.*
- 6. SLs have an iterative, agile approach.*

As we can observe, features and characteristics embedded in SLs favour continuous iteration, flexible processes and adapting to the different needs that can emerge at different stages. At the same time, learning, skilling and empowerment of SLs participants is of critical importance during the multiple iterations and learning cycles enabled by SLs (Hassan, 2014). In these workshops, actors of the regional innovation ecosystem will be mobilized to adopt this approach and values of participation. Participants will be encouraged to embrace different needs, expectations and concerns that Cantabrian society have about R&I in the territory.

Co-creation processes will be facilitated by these three workshops as well as different interactions and activities that can be demanded by participants such as trainings, dedicated events, follow-up meetings, and others. These activities will require participation of different stakeholders identified during the empirical fieldwork carried out in deliverable 2.2 as well as others that have been also identified but are yet to be reached during the rest of the lifespan of the project. It is important to stress that with the irruption of COVID-19 pandemic, significant difficulties have been introduced for gathering physical meetings across Europe. Restrictions and mitigation measures are starting to be relieved at the time that this deliverable is being written (September 2021) and the research team expect to carry on the majority of the participatory activities in a presence mode. Participatory workshops will pay special attention to:

- Developing a highly attractive value proposal for participants.
- To create incentives for stakeholders understood as motivations and expectations to participate.
- Promoting an understanding of which are the critical socio-ethical and cultural particularities for innovation that have been observed during the previous fieldwork in Work Package (WP) 2.
- Fostering a culture of co-creation.

These co-creation processes will start with an **exploration stage** that is aimed to promote engagement with selected stakeholders that have been initially identified during the previous fieldwork in WP2

(mainly through interviews), but also involving others that have been identified as relevant through a variety of means (documental analysis, relevance in social media, institutional references, etc.). The exploration stage will also take shape with a dedicated workshop with regional R&I stakeholders already scheduled on the **29th of October 2021 in Santander**.

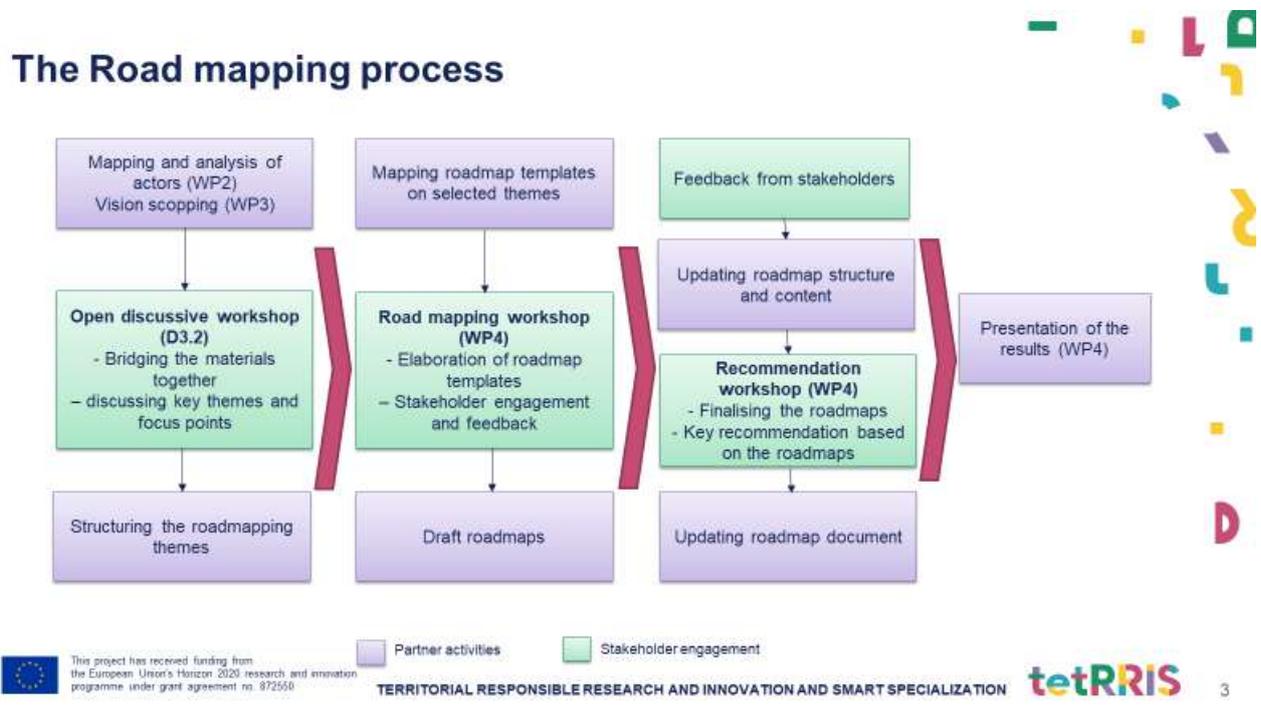


Figure 17 Cantabria TetRRIS Lab roadmap

This workshop will present the four domains of opportunity already identified to the attendants, as well as the General Directorate of Innovation of Cantabria Government will present the new S3 strategy already key under development. The main objective of this workshop is to set up the TetRRIS Lab in Cantabria and triggering the process that will be deployed till the spring of 2022. In this session, participants will be encouraged to propose ideas understanding of each other's perspectives, expectations, priorities and concerns to strengthening science-society interactions in their particular contexts and aligning them to socio-ethical aspects of innovation policy.

A **second stage** will help to work on the **definition and initiation of pilot actions** along the lines of regionally specific challenges in the identified domains. Based on the results of the first workshop, the implementation and execution of pilot actions will be kicked off through a roadmap-focus process managed in Work Package 4. This process will also be conducted through stakeholder interactions and dialogues on a three-monthly basis. Two workshops are planned for this stage that will be likely happen during the end of January 2022 and May 2022 (exact dates to be agreed). The second and third workshop will likely take place in different cities of Cantabria such as Torrelavega or Cabezón de la Sal, to contribute to extend the impact of these actions into the territory as well as to delocalize the SL process.

The SL process will contain a **horizontal evaluation stage** that will deal with the assessment of the co-creation processes (probably with a survey), trying to capture, monitor and report the different learnings, lessons and recommendations provided by participants. It will also evaluate the adequacy, suitability and performance of the co-creation tools employed during the development of the action plan. The evaluation will employ mixed methods and it will not rely on a set of particular quantitative

indicators as the impact of the project is highly difficult to be measured during the lifespan of the project and with classical indicators. In this sense, a set of qualitative indicators and quantitative indicators will be balanced to monitor participants feedback and impact that will be provided by WP4.

2.2. TAMPERE

2.2.1. Introduction

The Plan has been developed gradually in the course of the project implementation. In preparation of the project plan, the Council of Tampere Region and VTT saw it important that the pilot will contribute development of an innovation system, which while supporting renewal of traditionally strong manufacturing industry, would also be attentive to ecological, ethical and social considerations in such a way that they are systematically integrated into innovation activities in the region. In the beginning, Tampere pilot team (i.e. the Council of Tampere Region and VTT) identified a small number of ongoing or soon to be launched promising processes and initiatives from a perspective of the project objectives. The Council of Tampere Region launched a preparation of new regional plan in the early 2021, which provided a good opportunity to first introduce, and second enhance, sustainability and responsibility views in an institutional setting of a regional development. Regarding RDI and industry in the region, Smart Manufacturing Hub, a project supported through ERDF, and national SIX Smart Manufacturing initiative with strong connections to Tampere Region were considered promising activities from the project perspective.

To start the work, systemic characteristics of RDI system in the Tampere region were mapped as a part of the Deliverable 2.2. This phase also compiled information on existing RRI activities as well as acknowledgement of responsibility and sustainability issues in the regional development and industrial sector, and broader ecosystems in the region. Based on the analysis, the project team identified six RRI themes that are particularly important to the Tampere region; namely anticipation, openness, diversity (incl. gender questions), stakeholder inclusion and public engagement, transparency and communication of RDI activities, and last, reflexivity and responsiveness.

In May 2021, the findings of Deliverable 2.2. were reported back and discussed in a small workshop with regional stakeholders – many of whom were interviewed during the preparation of the Deliverable. This conversation with the stakeholders helped the project team further elaborate the RRI related issues that could be addressed as part of the pilot activities in the Tampere region, thus directly feeding into the Deliverable 3.1.

The concretisation of pilot activities has benefitted from continuous interaction between the project team and various stakeholders active in the RDI ecosystem in the Tampere Region. Through the interaction, we have discovered possibilities to advance the aims of the project in the region – these are described in detail below under 2.2.4 and 2.2.5. The pilot consists of several process type of activities, which evolve and are iterated and adapted while implemented.

2.2.2. Vision for the RRI in the region

The vision of the pilot in the region of Tampere is based on the actions promoting sustainability and integrating RRI themes in the regional innovation ecosystem, especially in the regional strategical processes including the Regional Development Programme and Smart Specialisation Strategy. As the regional development strategies continue to shift towards strengthening the sustainability transition, and as the upcoming smart specialization strategy shifts towards the concept of S4+, embedding the RRI- dimensions deeper into the regional innovation system will become more important and visible. The Tampere region pilot of tetRRIS has anticipated these upcoming changes and has aided with the transition as part of the regional development programme and smart specialization strategy processes.

The Tampere pilot has also recognised that the traditional innovation ecosystem does not exist in a vacuum and thus, cannot drive the responsible sustainability transition alone without including the region's biggest economical actors, namely, the manufacturing industry. Thus, the pilot is divided into two spearheads, other focusing more on the regional development processes and other on manufacturing industry's ecosystem and processes. However, both spearheads are supporting each other and having a strong linkage through continuous dialogue and active search of points of contact during the project's lifecycle. The pilot connects thematically and by adopted practical approach closely with the Smart Specialisation Strategy; thematic specialisation areas of the strategy include sustainable industrial renewal especially through digitalisation whereas specialisation is to be supported through inclusive innovation and open development platforms strengthening cooperative culture in the region.

Based on the two-folded nature of the pilot, also the concrete vision is a combination of two separate but complementary targets. Firstly, the RRI will be strongly integrated into regional development processes promoting sustainability through regional development work. Secondly, sustainability is promoted through industrial RDI ecosystem through which the RRI themes will be integrated into industrial RDI practices. To put this together it could be stated that the overall vision of the Tampere pilot is **“to create a cohesive, responsible and sustainable regional innovation system that works in a cooperation towards building a better future for the region”**.

The objectives of the pilot are:

- To enhance open access and public engagement on strategical level within the region, in particular the Regional Development Programme and Smart Specialisation Strategy processes. To enrich inclusivity and improve a dialogue with the manufacturing industry's ecosystem on the strategic sustainability and development.
- To foster a dialogue between the traditional innovation ecosystem and the manufacturing industry's ecosystem centred around the RRI themes and the regional sustainability transition.
- To promote awareness of RRI dimensions and sustainability by enhancing responsibility and sustainability literacy among the regional stakeholders and SMEs through a responsibility accelerator initiative.
- To advance regional systemic thinking, public engagement, and open access through a dialogue between the sectors.
- To boost systemic thinking and co-creation among regional projects and organizations.

- To engage the region's innovation ecosystem and the manufacturing industry's ecosystem with the RRI dimensions, corporate social responsibility (CSR) and Sustainable development goals (SDGs).

Table 1 below summarises the objectives of the planned pilot activities and the identified challenges they address.

Table 1. Pilot objectives and regionally important RRI themes cross-tabulated.

RRI themes important to pilot region OBJECTIVES	Anticipation	Openness	Diversity	Stakeholder inclusion and	Transparency and communication of PDI activities	Reflexivity & responsiveness
1. To enhance open access and public engagement on strategical level within the region, in particular the Regional Development Programme and S3 processes.		<input type="checkbox"/>		<input type="checkbox"/>		
2. To foster a dialogue between the traditional innovation ecosystem and the manufacturing industry's ecosystem centred around RRI themes and the regional sustainability transition.					<input type="checkbox"/>	<input type="checkbox"/>
3. To promote awareness of RRI dimensions and sustainability by enhancing responsibility and sustainability literacy among the regional stakeholders and SMEs through a responsibility accelerator initiative.					<input type="checkbox"/>	<input type="checkbox"/>
4. To advance regional systemic thinking, public engagement, and open access through a dialogue between the sectors.		<input type="checkbox"/>		<input type="checkbox"/>		
5. To boost systemic thinking and co-creation among regional projects and organizations.			<input type="checkbox"/>		<input type="checkbox"/>	
6. To engage the region's innovation ecosystem and manufacturing industry's ecosystem with the RRI dimensions, CSR and SDGs.	<input type="checkbox"/>			<input type="checkbox"/>		

Nature of the change and impact targeted through the pilot activities varies at the level of individual activities. It is recognized that to get the best possible results, the pilot actions need to be customized case by case. Some activities strive for enhancing and expanding existing practices – an example being inclusion of new or previously underrepresented groups of stakeholders to the preparation of the Regional Development programme in the Tampere region. While a launch of a sustainability accelerator initiative for SMEs is an example of an activity not tried earlier aiming to support acknowledgement of sustainability issues among manufacturing SMEs in the region. Taken together, the currently planned activities aim to significantly strengthen integration of sustainability and

responsibility perspectives and practises into the regional development work and industrial renewal taking place in the Tampere region.

2.2.3. Drivers and challenges related to the implementation of RRI in the region

In the Tampere region, the themes of sustainability and responsibility are seen to have a growing importance. It is recognized that sustainability and responsibility are crucial for the regions research, development and innovation and they should be built-in elements in the regional development operations, policymaking and strategies. Even though the RRI terminology as such is not strongly present in the regional level most RRI themes are somehow acknowledged by RDI practitioners (D3.1). Also, as might be expected, some RRI themes are more strongly present in the regional discussions while others are less emphasized. The six RRI themes identified by the project team in the previous phase which have particular importance in Tampere region include anticipation, openness, diversity (incl. gender questions), stakeholder inclusion and public engagement, transparency and communication of RDI activities, as well as reflexivity and responsiveness (D2.2).

The region of Tampere has a strong co-operation culture among multiple actors that creates a solid base in building more sustainable and responsible regional society through dialogue. The region has established various co-creation platforms and has effective co-operation processes between educational institutions and individual companies. In addition, co-creation culture is concretized by including public engagement and stakeholder inclusion activities in various public initiatives including projects in urban development. However, the challenge is still the lack of practical know-how and experience in implementing sustainability and responsibility strategies into practices of regional decision making and industry. (D3.1) The concrete pilot actions offer a good learning channel to share knowledge between different actors and to increase the level of the missing know-how.

It is seen that a mission-oriented innovation policy, a concept that has already been recognized regionally, is offering a potential basis to set sustainability as an integral part of the region's desirable future target. The pilot is designed to increase the presence of responsibility and sustainability aspects in the ongoing regional strategic discussion and processes from where it is expected to expand to the regional innovation policy. These themes will become even stronger in the upcoming smart specializations strategy, as the S4+ concept will be adapted in the Tampere region. According to the S4+ concept, the different RRI dimensions are embedded into the smart specialization strategy along with the strong sustainability focus. The tetRRIS pilot has been an integral part of anticipating these changes and transitions in the regional strategy work that has been carried out through 2021.

2.2.4. Solutions to challenges

The tetRRIS project is answering challenges through regional pilot activities that work as a learning platform for practical ways in implementing responsibility and sustainability into regional practices. To achieve the desired impact the importance of involvement, co-operation and dialogue between different stakeholder groups is seen to be the key to the success of the pilot. To increase the level of

RRI, responsibility and sustainability in the region, concrete training activities, open dialogue, information sharing as well as sharing of good and also failed practices are needed.

The ongoing pilot actions are targeted to cover different levels of regional development processes from regional strategy to inclusive stakeholder involvement and knowledge and know-how processes, e.g. on SMEs' corporate social responsibility (CSR). These needs were recognized and selected based on regional expert knowledge, the research work under tetRRIS, and through open dialogue and workshops with several stakeholders from the region. The regional expert organizations, e.g. The Council of Tampere Region, and Business Tampere, the economic development agency of the Tampere region, as well as the already existing networks and initiatives, e.g. the national SIX Sustainable Industry X initiative and regional Smart Manufacturing Hub, were involved in planning the activities, elaborating and giving support to the planned actions. The dialogue with these actors is on-going, and they are committed to engage to planned activities. This open and trusted dialogue helps to take the iterative process of implementation forward and plan new actions in case some of the activities turn out to be inviable.

The Tampere pilot can be described as a project in between projects pushing the RRI agenda forward through concrete pilot actions. To answer the recognized challenges in the region, e.g. the need for deeper knowledge on RRI, responsibility and sustainability and how it can be implemented into practices, the ongoing pilot actions are a selection of many possible actions. However, it has been important to make this selection and to start the practical work with a selection of the most potential pilot opportunities. The Tampere pilot will learn from the first set of pilot activities and the direction can also be changed further along the pilot if it is seen that some selected paths are not increasing the level of wanted impact.

It is crucial that a shared understanding of the importance of responsibility and sustainability is created and strengthened throughout the pilot activities. It is also acknowledged that the state of responsibility and sustainability knowledge between different regional actors, stakeholder groups and individuals vary a lot and because of this the pilot actions need to serve both ends to increase the desired impact on the region.

The current supportive and enthusiastic atmosphere to responsibility and sustainability in the region, and nationally, offers a great advantage to succeed with the planned pilot actions. We are currently in a beneficial situation where RRI issues are facilitated in different regional processes to which we aim, and have succeeded, to create strong links.

2.2.5. Road to the vision - impact path

The Tampere region's pilot aims to enhance and promote the awareness and literacy of the RRI dimensions within the regional innovation ecosystem. As previously stated, the RRI dimensions have been applied to the regional stakeholders and innovation ecosystems through previous projects executed mainly by regional organisations and the higher education sector. However, the aspects of responsible research and innovation remain somewhat distant to the everyday work of the regional organisations, corporations, municipalities and other regional actors.

In our view, promoting responsibility aspects throughout the region is a key to building a better future. Particularly now when the sustainability transition will evidently reshape the whole society and the

region. The sustainability transition reshapes old societal structures, partnerships and organizational traditions, and cultures and new ones will emerge. It is crucial that we make sure that these new structures, partnerships, innovations, and research initiatives take responsibility matters into consideration when they reshape our society and continue to build a better, more responsible, and sustainable future for the region. The Tampere region pilot will aim to systemically enhance the awareness and literacy of responsibility and sustainability matters and dimensions. By enhancing public engagement and openness we can ensure that different stakeholder groups will be involved in ongoing and upcoming strategical processes, while strengthening the regional smart specialisation spearheads will require us to promote further dialogue among the regional ecosystems. The Tampere region's strong industrial heritage places the sustainable renewal of industry in the centre of the regions smart specialisation strategy and a successful transformation towards this goal is seen to support the region's competitiveness in the future.

On-going actions

The Tampere region pilot has formulated five pilot actions to the forthcoming period. These actions are summarised in Figure 1.

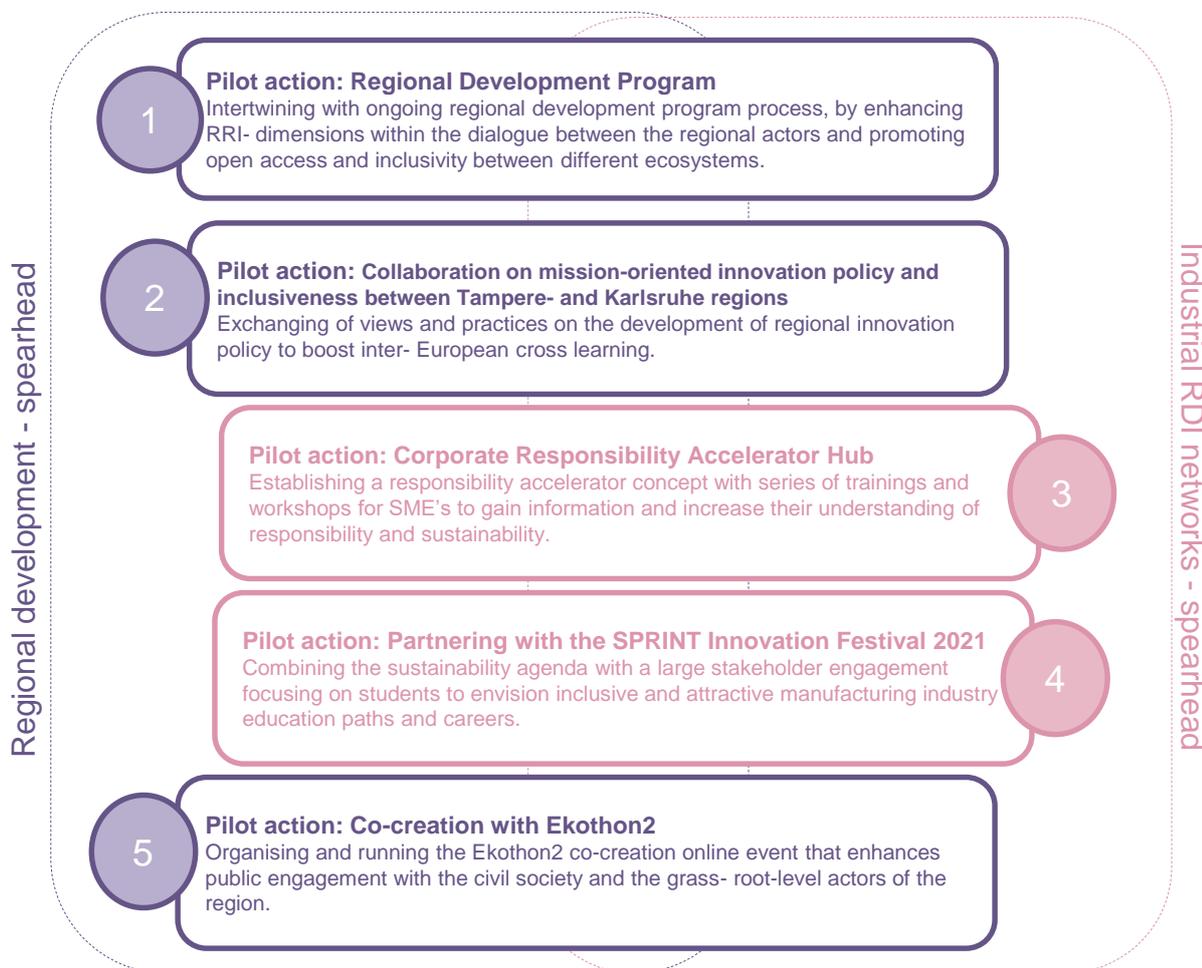


Figure 1. Tampere region pilot's planned actions for 2021-2022.

Pilot action: Regional Development Program

The Tampere region pilot of the tetRRIS project has intertwined with ongoing regional development programme process, by enhancing RRI dimensions within the dialogue between the regional actors and promoting open access and inclusivity between the traditional innovation ecosystem and the manufacturing industry's ecosystem. The tetRRIS pilot has also assured that the programme crafting process has adapted appropriate SDGs along the way. As the sustainability dimension of the regional development strategies grows more visible, it is also crucial that the SDG-based focus on the strategies remains strong after the strategies have entered into force by the end of 2021.

The regional programme acts as a kind of "road map" for all the actors in the region. The programme maps out the road to the future of the region. It marks all the important destinations along the way, and more importantly it is to assure that all the regional actors are heading the same way. The current regional development programme 'Bolder than before!' has been formed around four thematic spearheads: 'Bright', 'Integrated', 'Sustainable' and 'Accessible'. These themes are still relevant and will also form the basis for the missions of the upcoming programme.

Due to the schedule of the regional development programme, the Tampere region pilot took a head start to this pilot action. As the preparatory process of the programme begun in early spring of 2021, the pilot action had to follow in order to influence the upcoming strategy and the crafting process. Thus, the Tampere pilot has already taken steps in promoting the RRI dimensions within the regional stakeholders through the programme preparatory process.

The strategy process led by the Council of Tampere Region has so far included expert interviews, an extensive online survey, a webinar that has raised topical themes for development work, and three online workshops focused on the content an actual substance of the programme. The tetRRIS pilot team has been presented in every step of the strategy process, and it has been assured that at least one team member has been present in the strategy workshops. This has been an integral part of embedding the RRI dimensions into the regional development strategy as well as the smart specialization strategy. The teRRIS pilot team also helped to design the extensive online survey that was sent out to the whole regional innovation ecosystem organizations. The team embedded the RRI dimensions into the survey and helped to clarify the sustainability aspects of the survey. Along with the RRI dimensions, the pilot provided the regional development programme planning officer adequate information about the appropriate SDGs and how to further embed them into the programme, equally in respect to the S4+ development.

The workshops are still ongoing and thus, the wording of the missions and the smart specialization spearheads are likely to change before the strategies face the vote of the regional council. The following missions have been translated from the draft of the regional development programme.

Table 2. Missions of the Regional Development Programme Draft (translated)

Tampere region creates value through competence and knowledge	The knowledge creators of the region, namely universities, drive the renewal of livelihoods and international competitiveness. The renewal is based on utilizing innovations and increasing regional competence. Knowledge, sophistication, and know-how create value and competitiveness. The region looks to the future, and this
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	knowledge- creator capability will be strengthened with determination.
Tampere region business-sector has a positive handprint	Tampere region is transitioning to a low-emission digital economy. The region utilizes its expertise in the manufacturing industry as a pioneer in circular economy and adaptation to climate change and as a producer of solutions. Expertise in sustainability solutions and corporate responsibility brings new work and business to the region.
Tampere region cares about social well-being	The Tampere region promotes people's safety and well-being, sense of community, and the smooth running of everyday life. The vibrant city- and lively countryside are both an important part of the region, and the diversity of municipalities, local resources and self-motivated culture are treasured. Services are equally accessible to all, and the work of organizations and other free civic activities is encouraged. In Tampere region no one is left behind.
Tampere region is a forerunner in sustainable living and mobility	Functional, energy-efficient, and intelligent transport connections and services enable living conditions in different parts of the region. Good connections form a continuum of "one hour region" from cities and rural areas. Tampere region seeks sustainable growth by providing diverse and healthy environments for housing and entrepreneurship.
Tampere region is opening its arms to international talent and expertise	In the Tampere region, we boldly highlight our distinctiveness and local specialties. We attract and hold on to international talent. We cooperate as part of international networks and thus develop our own thinking. We put the 'think global, act local'-thinking to the center of regional development. The region offers authentic, exceptional tourism experiences for all those arriving in the area. Multiculturalism strengthens and renews the region.

Even though, the format and wording of the final programme and strategy will be a compromise among the region's organizations that have been part of the preparatory process, the teRRIS pilot still hopes to further influence the upcoming strategies by an ongoing dialogue with the planning officer, by participating in the workshops and the general preparatory process. The current mission-based programme draft reflects the same themes, challenges and objectives that the tetRRIS pilot has recognized to be the key to the region's competitiveness – strengthening the cross-sectoral sustainability transition, widening the stakeholder inclusion and strengthening cooperation, enhancing transparency (public engagement) and diversity and furthering the region's reflexivity (anticipation) and resiliency (responsiveness).

Taking part to the whole preparatory process provided the pilot an excellent opportunity to enhance awareness and engagement to the responsibility dimensions, enhance the openness and inclusivity of the process and ensure that the manufacturing industry's ecosystem has been engaged to the upcoming programme. The work on the upcoming regional development programme continues throughout the autumn of 2021. The final version of the programme is intended to be processed by the regional council at the end of November and enter into force at the beginning of 2022. The Tampere pilot's work will also continue after the strategies enter into force.

The upcoming smart specialization strategy is also part of the preparatory process and it is drafted along with the regional development programme. The key role of the teRRIS pilot with the upcoming smart specialization strategy has been to anticipate and follow the S3 to S4+ transition and development and further bring this concept to the Tampere region. This work also continues throughout the preparatory process and after the strategy is published.

Pilot action: Building bridges between the two pilot spearheads

To enhance public engagement, transparency, and stakeholder inclusion the Tampere region pilot organized "Our Common Responsible and Sustainable Future: Co-creating a future vision through the upcoming Regional Development programme and Smart Specialization" workshop. The workshop was centered around the upcoming Regional Development programme's mission "Tampere region business-sector has a positive handprint". The mission was chosen because the tetRRIS pilot is aimed to drive the exact regional change that is stated in the mission. Even though the wording might be different to the aims and objectives of the pilot, the desired end-result is the same. Thus, organizing a workshop that included a wider stakeholder group served both the pilot and strengthened the preparatory process of the programme. Additionally, the workshop also brought something new to the process as this was the first time that the regional development programme had been discussed with the region's business and industrial sector.

Building a sustainable and vibrant future for the region is a common goal, and the sustainability transition must be promoted, built and visioned systemically across sectoral boundaries. The anticipatory future dialogue requires multidisciplinary and multi-sectoral approaches. Thus, representatives from central government, the EU-office, regional government, the higher education sector, as well as companies and business lobby organizations were invited to the workshop.

The results of the workshop further encouraged the pilot partner of Tampere region that the pilot is on the right track and it has recognized topical and important challenges, opportunities, objectives and development initiatives.

- How to enhance transparency, inclusivity, and collaboration in the strategical process?
- How to measure the societal impacts of the strategies?
- And potentially how to use data to support and strengthen the process?

Pilot action: Corporate Responsibility Accelerator Hub

A corporate responsibility accelerator hub, a pilot activity designed to answer the forementioned needs of the manufacturing industry SME's, will be launched during the autumn 2021. The Tampere pilot got involved in the discussions between the regional SMH Smart Manufacturing Hub, national SIX Sustainable Industry X Initiative, and Business Tampere, the economic development agency of the Tampere region, to find common ground for needed activities to raise the level of responsibility and sustainability among the regional industry, including SMEs. The concept of a concrete series of workshops where SMEs could get information and increase their understanding about corporate social responsibility was formulated by the pilot as an answer to the needs brought up by the representatives of the manufacturing industry ecosystem. It was seen that the SME's lack the possibilities to get concrete help and support in developing their CSR.

A Finnish based consultancy company 4Front joined VTT in the effort to produce and test the concept of corporate responsibility accelerator hub in practice. 4Front has developed a web-based and free to use CSR self-assessment tool for companies together with FIBS, a corporate responsibility network working in Finland. The self-assessment tool will be utilized as a part of the accelerator hub as it gives a good starting point for companies to get better understanding of their status regarding corporate responsibility issues.

Now, the accelerator hub content is under an active preparation and the plan is to get feedback on the content from the representatives of regional manufacturing industry and corporate responsibility network still at the beginning of October. The accelerator hub is designed to help SME's to get started with sustainability and responsibility in their own. The accelerator hub test-round will be organized as a four half-day workshop event to five to seven selected manufacturing industry SME's from the region of Tampere. The selection of potential companies will be done in collaboration with Business Tampere and SMH and these networks will be also utilized in promoting the accelerator hub for the potential participating companies.

After the accelerator hub test-round, the pilot is looking for a feedback to further develop the concept. The shared objective is to get the accelerator hub in a form where it can continue its operations with new set of companies during 2022, potentially expanding outside Tampere region and manufacturing industry. In addition, the accelerator hub is giving a common ground for the Tampere pilot to continue discussions and plan the future activities together with the regional manufacturing industry ecosystem.

Pilot action: Partnering with the SPRINT Innovation Festival 2021

The Sprint Innovation Festival brings together higher education students, companies, municipalities, and various organizations as well as experts and researchers from different domains to solve real-world problems and invent solution for a sustainable future. The festival is the largest innovation event within the Tampere higher education community, and it offers a place for organizations to bring already recognized challenges for groups of students to be resolved. Over the course of one week,

around 500 students will solve the given challenges for various partnering organizations, working together in multidisciplinary teams. The event will encourage the students to put their theoretical know-how into practice and gives them a unique chance to grow their set of skills and knowledge. To solve the challenges, the students get support from coaches, experts and members of the organization that present the challenge.

The Tampere pilot saw an opportunity in the Sprint Innovation Festival that combines the sustainability agenda with a large stakeholder engagement focusing on students. There is a growing need to get multidisciplinary experts to work in the manufacturing industry to answer the needs of sustainable industrial renewal as well as industry continuation and competitiveness in the region. The pilot action has recognized inclusiveness, including diversity issues, as an important factor for the challenge to be resolved. In the discussions with manufacturing industry ecosystem representatives from national SIX Initiative and Business Tampere the growing challenge facing industry – how to attract young people towards studies and future careers in the field of manufacturing industry – was raised as a critical matter that could get major benefit from the Sprint where students are involved in creating innovative solutions to challenges.

Further actions were taken to contact the Sprint Innovation Festival organizers. It was also decided that the challenge would be formulated and given to the event as a collaboration activity between the tetRRIS Tampere pilot, SIX and Business Tampere. Representatives from all partnering organizations took part in planning the final challenge and the precise description of the challenge was formulated in an online workshop meeting held in August 2021. The challenge given to Sprint is “*manufacturing industry has a significant role in building wellbeing and sustainable future – how can we attract more versatile expertise and future experts for manufacturing industry?*”.

The Sprint Innovation Festival takes place in Tampere, November 15th to 19th in 2021. The pilot action will be represented by both The Council of Tampere Region and VTT who offer support for the students working with the given challenge. In addition, the regional representatives from SIX and Business Tampere will join the event to mentor the students in their work.

The Council of Tampere Region and Business Tampere are already funding a project called “Konepajakoulu 2.0” that is making a background study about the needs of regional industry, especially local work machine manufacturing, concerning the future employee and education needs in the region. The Sprint challenge, funded by the Tampere pilot, is planned to support this work combining the needs and interests of different local actors and projects. The shared goal of all partnering organizations is that the best solutions from Sprint challenge could be implemented through the future work of Konepajakoulu 2.0. The discussions of potential co-operation for 2022 will continue after the Sprint Innovation Festival.

The Tampere pilot has recognized that this pilot action has the potential to effect both the Konepajakoulu 2.0 future agenda and the national future industry strategy work drafted by the SIX initiative, bringing the RRI approach, especially inclusiveness, and sustainability and responsibility aspects more strongly to these initiatives.

Pilot action: Co-creation with Ekothon2

The Ekothon2 is a two day co-creation online event that enhances public engagement with the civil society and the grass- root-level actors of the region. The event is organized for the second time in December 2021. The first edition of the event was a success, with participants from almost hundred different regional organizations, civil society groups, and projects. Thus, the event provides the

tetRRIs project an attractive platform to further advance the awareness of the RRI dimensions in a cross-sectoral and multidisciplinary setting. The event itself promotes the regional sustainability transition on all levels of the society. This is also an opportunity to engage with other ongoing regional RRI projects and gather knowledge from the past RRI pilots.

The aim of the tetRRIS project regarding this pilot action is to gather the ongoing regional RRI projects together to create a questionnaire and RRI themed talking points for the upcoming projects. This opportunity will allow us to infiltrate these upcoming sustainability projects from the beginning with responsibility aspects and hopefully influence the projects' aims and objectives to consider the wider societal impacts that includes the RRI dimensions. The tetRRIS project will prepare the RRI themed questionnaire and talking points for the Ekothon 2 workshops in co-operation with the Co-Change and MARIE projects. Other regional RRI projects are yet to be contacted about the possible collaboration. But potential partners have been recognized (e.g. NORDWIT: Nordic Centre of Excellence on Women in Technology Driven Careers).

Planned actions

In addition to the pilot actions introduced, there has been a lot of communication and discussion between the Tampere pilot team and different regional actors without a clear pilot action formulation so far. The ideas for potential pilot actions have been raised among the Tampere pilot action team and different regional actors without a crystallized formulation yet. These discussions and ideas include a selection of potential pilot actions that need to be further considered with different stakeholders before rejecting or selecting them as concrete pilot actions.

One of the potential pilot actions is *the deepening of cooperation with Sustainable Industry X Initiative*. We would like to get more involved in identifying opportunities to integrate strong sustainability aspects into national SIX initiative's development work – e.g. offering information on sustainability impact frameworks and tools, and supporting roadmap work by evaluating future scenarios regarding sustainability regulation, trends and other challenges and opportunities regarding industry and sustainability. However, strengthening of the involvement is only possible when the SIX initiative sees the potential of the cooperation and is willing to let tetRRIS to be involved into its strategic development. Given that the ongoing pilot actions, SPRINT Innovation Festival 2021 and Corporate Responsibility Accelerator Hub, both involve SIX representatives, they can pave the way for strengthening cooperation activities. The plan is to continue open and active dialogue and build trust with the initiative, especially after we have received the first results from the ongoing pilot actions.

Other recently identified potential action relates to take part in **an 'RRI Round Table'** to strengthen collaboration among RRI experts as well as increasing synergies of ongoing and planned activities with connection to RRI issues in Tampere region. This platform has been kicked off in 2020 within H2020 Co-Change regional project partners but it halted for some time. Preliminary idea was to create a platform for regular meetups amongst the RRI-experts of the region and find synergies between projects. Given that regional RRI related projects have increased, it is time to invigorate this initiative. It is beneficial to discuss common challenges, findings, solutions and offer peer-support. The potential roundtable topics are gender and diversity that are seen important topics not only in the Tampere region pilot but have synergies with other projects and discussions. For example, NORDWIT (Nordic Centre of Excellence on Women in Technology Driven Careers) and H2020 Gender STI.

The Ekothon2 is planned to facilitate revitalisation by offering a platform to collect actors and projects together and discuss the RRI themes.

Impact and communication about the pilot actions

In order to raise awareness and make change related to sustainability and responsibility, regular communication of the pilot activities is essential. We have published, and will continue to publish, blogposts along the way to further public engagement and transparency. We put even more emphasis on simplifying the messages, especially related to Regional Development Programme, and engaging citizens into the discussions. Also, we pay attention to inclusiveness in the planned stakeholder events and make sure that we communicate our pilot action outcomes openly and clearly to different groups.

In open, transparent and active dialogue, we aim to reach the set objectives. Beneficial project outcomes translate into wider societal impacts although we acknowledge that it takes time. For example, reaching the goals of inclusivity of RRI dimensions within the regional strategic processes, namely the Regional Development Programme and Smart Specialisation Strategy are great starting points for larger sustainability transformation in the region. The Tampere region pilot aims to work as a project in between projects, and thus, enhance systemic approach and cohesiveness of the innovation system and regional actors. By actively searching and building synergies with other projects, goals to advance intersectoral dialogue, cooperation, and anticipation are attainable and create greater impact as sustainable new ways of working and acknowledging RRI, for example among manufacturing SMEs are introduced.

2.3. KARLSRUHE

2.3.1. Introduction

As has been elaborated in the previous Deliverables (2.2 and 3.1) of the TetRRIS project, the Karlsruhe Technology Region can be described as an established and dynamic regional innovation system that already enjoys a relatively high level of RRI practice on the part of local innovation actors. However, these practices represent a case of de-facto RRI. Even though the region is home to several research institutes that have played important roles in shaping the European discourse on RRI, this terminology has so far hardly penetrated the region's wider research, development and innovation (R, D & I) communities.

With regard to the substantive dimensions of RRI (see Deliverable 2.1 of the TetRRIS project), the de facto RRI activities and practices in the Karlsruhe Technology Region are concentrated in particular in the field of environmental sustainability. An important focus area here is the development of new, more climate- and environmentally-friendly mobility and logistics solutions. With regard to the more processually-oriented dimensions of RRI, a major strand of de facto RRI practices and activities lies in the field of public engagement/inclusion, mainly in the context of activities seeking to innovate new technologies or develop new physical and social infrastructures and associated social practices.

In the previous analytical steps (see Deliverables 2.2 and 3.1 of the TetRRIS project), several challenges could be identified which have so far prevented the integration of (more) RRI-oriented

practices in the Karlsruhe Technology Region regarding the above-mentioned dimensions and fields. These challenges are closely related to several needs of actors in the regional innovation system that could possibly be addressed by pilot activities within the TetRRIS project.

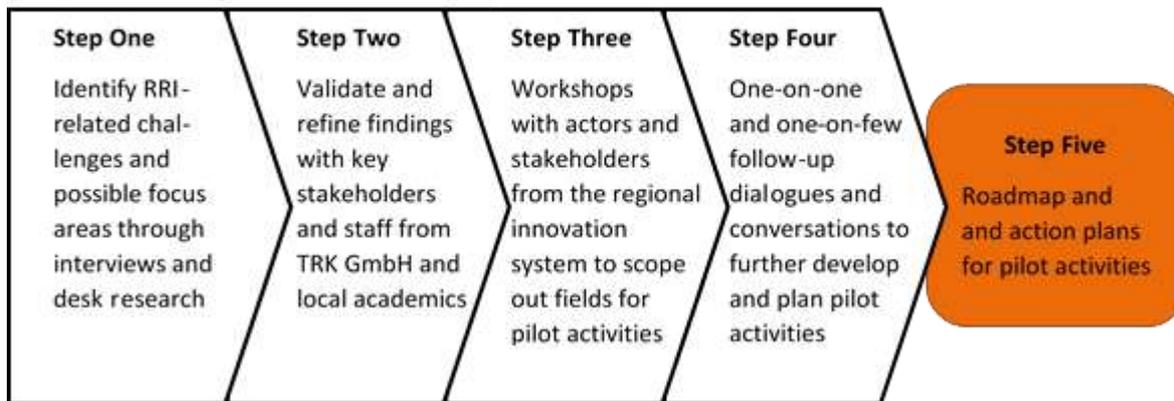
This chapter presents a plan of concrete pilot activities to be pursued in the Karlsruhe Technology Region as the TetRRIS project progresses. These pilot activities have been identified and specified in a participatory process including interviews and workshops with actors and academic experts of the region. The key underlying idea of this process was to identify needs and challenges facing the actors in the Karlsruhe Technology Region, where stronger practice of RRI could make a tangible difference to the actors and their endeavors – enabling them to better accomplish their R, D & I goals, while strengthening the (de facto) practice of RRI in the region. This approach was chosen in order to ensure buy-in from local stakeholders. After all, the ultimate goal of the exercise was to identify areas for pilot activities *that the stakeholders would be motivated to participate in*, that could help foster RRI in the region.

The process that led to the plan presented in this chapter can be summarized as follows. In the course of mapping the regions' systemic characteristics and existing RRI activities (see Deliverable 2.2 of the TetRRIS project), we examined a series of regional innovation projects by undertaking desk research on individual projects and by conducting structured background interviews with project officers, researchers, company executives and local-government officials. Subsequently, we undertook a number of meetings and discussions with staff and key stakeholders from the TechnologieRegion Karlsruhe GmbH (TRK GmbH; the key intermediary organisation of the regional innovation system) and outside academic experts to discuss and validate the findings of the foregoing mapping. As a result, two rough but promising fields for pilot activities emerged, which we felt deserved further exploration: *citizen and stakeholder engagement*, on the one hand, and *regulation- and risk-sensitive conduct of living labs* (Reallabore)⁵, on the other. Together with the TRK GmbH, we then organized scoping workshops (held online in June 2021) with roughly 20 stakeholders from the regional innovation system, to further explore the two fields of possible pilot activities. In two sessions, one for citizen and stakeholder engagement and one for living labs, we gathered and discussed practical experiences, concrete needs of actors in the particular field as well as ideas on how to address these needs and how to potentially create value for as many actors as possible. These preliminary ideas were then further elaborated, discussed and specified with some of the workshop participants in several subsequent one-on-one/one-on-few dialogues, finally resulting in the pilot activities plan presented below.

This chapter is organized as follows. The next section (section 2) outlines the TetRRIS vision for a strengthened RRI practice in the Karlsruhe region and lays out the vision development process in more detail. Section 3 summarizes the key drivers and challenges that a further implementation of RRI in the region faces, while section 4 provides general ideas to overcome such challenges. Finally, section 5 presents our concrete ideas and pilot activities plan, as derived from the general ideas, to set out on the road to the vision.

⁵ Living labs (*Reallabore* in German) aim to test specific practices or new technologies ‘in real life’, but under controlled conditions. The infrastructures are mostly laboratory structures in the form of homes, offices or production buildings. However, these can also extend to several locations within small-scale areas (e.g. city quarters, test centres or designated streets and traffic lanes). The laboratory character also results from the fact that personnel and material infrastructures, a specific knowledge base and actors with various (educational) backgrounds support the experiments.

Figure 1: The TetRRIS Process



2.3.2. Towards a vision for RRI in the region: the TetRRIS process in the local pilot

With the founding of the TRK GmbH in mid-2017, an important step was taken in the advancement of the Karlsruhe Technology Region. A private company by legal structure, the TRK GmbH functions as a strategic network with numerous shareholders from business, science and the public sector. Its aim is to strengthen and support the economic, scientific, innovation and technology development in the region through intensive cooperation between the partners. To this end, a *Regional Development Strategy* for the Karlsruhe Technology Region was elaborated, outlining the desired development and innovation activities in the coming years, through to 2030. The strategy focuses on mobility, energy and digitalisation, on softer factors such as increasing cohesion and quality of life, as well as on location development in the areas of business and skilled labour (TRK & Fraunhofer ISI 2019).

As already mentioned in the beginning, the implicit integration of RRI concepts and dimension into R, D & I practices is already an integral part of the regional innovation system, although the actors, stakeholders and innovation practitioners in the Karlsruhe Technology Region hardly use the RRI terminology in a direct way. The high degree of such de-facto RRI is evident both in substantive dimensions (e.g. addressing grand societal challenges such as climate change and an ageing society), and processual dimensions (e.g. targeting ethical, gender and public engagement aspects). Thus, there is a wide variety of RRI dimensions and topics that are accepted and implemented by diverse actors groups in the regional R, D & I activities.

Given the advanced but implicit character of RRI in the region, the above-mentioned Regional Development Strategy is rather silent about concrete visions concerning RRI elements. To investigate the status quo and importance of the various RRI elements in the region, we therefore conducted background interviews with local actors from science, business and politics. While issues of science education, openness, ethics as well as gender and diversity appear to be major factors within the region's innovation activities, anticipation/reflexivity and public engagement seem to be constrained by tight funding schemes and limited exchange of knowledge and experiences (see Deliverable 2.2 of the TetRRIS project). The two topics mentioned in the introduction, citizen and stakeholder engagement or public participation as well as regulatory challenges of living labs, were named by the respondents as particularly worthy of further study and development. Especially the exchange between civilians and economic actors seems underdeveloped, although the innovation system as a whole is seen as vital. Building on the strong relationship between business and science, the vision

of many actors, also in the sense of a broadened understanding of (regional) innovation systems (Warnke et al. 2016), is to involve new groups of actors and to test new processes and products in a real-world environment within adaptive regulatory frameworks.

To further discuss the fit and relevance of these visions around public participation and regulation/living labs, ideas were exchanged and discussed with regional stakeholders in the scoping workshops held online in June 2021. The added value of public involvement is seen above all in the fact that it increases local legitimacy. Accordingly, (infrastructure) measures of higher levels, e.g. the federal state or the national level, within the region tend to be rejected and are less effective if the local population is not adequately involved (see also Deliverable 3.1 of the TetRRIS project). Communication processes and early involvement of all affected actors therefore seem to be indispensable. Closely related to participation of the civil society is the implementation of regulatory instruments to test and pilot new technologies that might affect people's daily life. These testbeds, often called living labs, have been funded by the state of Baden-Württemberg and federal ministries for several years and are already being implemented in the Karlsruhe Technology Region. Yet, there is a lack of uniform understanding and unclear objectives concerned with living labs, so that there is a need for general visions to assure benefits for the regional innovation system.

In the scoping workshops, the needs and implementation ideas were discussed for both topics. In the case of public participation, the invited stakeholders referred to the need for an equal exchange between all stakeholders, sustainable and institutionalised participation processes, the communication of expertise and best practices as well as the provision of advisory and mediation services. In the context of regulatory instruments, the importance of speeding up approval processes, simplifying regulations, using experimentation clauses, providing infrastructure (also beyond the test phase) for different groups of actors and evaluating data was emphasised.

In the aftermath of the workshops, it emerged that the public participation issue seems to be of greater relevance, also because it is more directly related to RRI and is seen as most promising by the stakeholders. Especially in times of increasing grand societal challenges, the involvement of the population and (private and public) stakeholders is crucial to ensure the capacity for innovation and at the same time to place evolved solutions on a broader basis of legitimacy. However, the topic of regulation and living labs is explicitly considered and discussed, as it is directly linked to the more open understanding of innovation and involvement of diverse actor groups.

Two main formats were envisaged for the development of exchange formats between science, business, politics, intermediaries and civil society. On the one hand, a *practitioner network for public participation* that is able to bundle activities, develop guidelines and invite external experts on specific topics of citizen and stakeholder engagement. On the other hand, an *advisory council* is intended to facilitate more systematic public input into the regional innovation projects and agendas. The empowerment and systematic inclusion of public stakeholders is of major importance to integrate a different, more open innovation culture in the various R, D & I activities in the region.

So far, however, there are only few structures in the Karlsruhe Technology Region in which practitioners from companies, administration and research can exchange information on the concrete implementation of public participation processes and pass on their experiences. This gap was repeatedly brought up in our discussions with stakeholders and experts in the region. Structures in which genuinely open discussion of experiences, successes, problems and failures is possible and feedback from peers can be obtained are considered very valuable.

If the above mentioned measures and ideas were implemented, further advances in the innovation system and the practice of RRI at institutional, organisational and cultural levels would be expected. Especially a changed innovation culture, which would show itself in the (early) involvement of the public, civil society and stakeholders, requires adapted processes and communication measures. This is particularly relevant for large infrastructure projects or other innovation activities that have an impact on the Karlsruhe innovation system or relate to the major societal challenges in the areas of mobility, energy and digitalisation. Intra-industry and other innovation activities remain largely unaffected by the opening up of innovation processes.

The same applies to the testing of new technologies through regulatory adaptation and the provision of experimental spaces (living labs). Since this requires in particular administrative adjustments, legislative changes or exemptions, the changes would probably be far-reaching. The main obstacles here are, however, the different institutional logics, i.e. the more research and experimental character of the innovating organisations on the one hand and the rule- and structure-based way of working of political decision-makers and administrations on the other. Therefore, the expected changes are rather incremental and limited in time, as each case has to be examined and decided separately. Nevertheless, *regulation- and risk-sensitive measures* together with *citizen and stakeholder engagement* represent approaches that can sustainably strengthen the already very mature innovation system and, in the sense of a common vision between the participating actors, bring about significant impacts that are worth promoting politically.

2.3.3. Drivers and challenges related to the implementation of RRI in the region

To support the uptake of RRI, various opportunities and elements exist within the Karlsruhe Technology Region. First and foremost, the region's rich cast of actors, consisting of numerous research institutions, mediating actors, companies of all sizes and policy makers, has positively influenced innovation in recent decades (see Deliverable 2.1 of the TetRRIS project). Established networks and support structures provide a good basis, so that RRI issues are already common practice – albeit rather implicitly. Since local legitimacy contributes to the visibility and acceleration of innovation projects, the practitioners are actively pushing issues of public engagement. Hence, communication processes around R, D & I projects with public impact have started to be established.

Of these projects, many with an R, D & I orientation, socio-technical aspects and relation to infrastructure are particularly noteworthy and can be considered as potential drivers for RRI. The diverse projects are suitable in that they often focus on more climate-friendly and energy-efficient alternatives and demonstrate possible solutions. Following on from this, RRI topics can be explored in greater depth. The interviews, background discussions and the scoping workshops showed that there is a *high level of interest* among the regional actors, which is the basis for them to push RRI issues on their own and gradually integrate them into their R, D & I practices.

As an established and consolidated innovation system, the Karlsruhe Technology Region is characterised, however, by a wide variety of technological, institutional and sectoral structures that might impede RRI practices. Major challenges in the further strengthening and implementation of RRI issues are seen in the distribution of power and multi-level administrative resources, inadaptability of funding structures as well as the lack of capacity and expertise beyond the more technological oriented innovation aspects (see also Deliverable 2.2 of the TetRRIS project).

In addition to the external challenges, the region's internal constraints are essentially a lack of capacity to implement RRI activities. Although these are of high interest, there is a *lack of specific exchange and learning processes*. The actors involved, especially those who were dealing with RRI for the first time, therefore always start from scratch and the knowledge management around the implementation remains to be improved. With regard to the regulation issue, the challenges lie in the *non-uniform understanding* and the objectives of living labs, the *nonexistence of regulatory structures* to deal with potential risks of the tested technologies and practices as well as obtaining legal approvals in existing laws (see Deliverable 3.1 of the TetRRIS project).

Based on their practical experience, the workshop participants additionally reported the following challenges and obstacles related to public engagement and regulation:

- A rather selective and implicit involvement of civil society and limited genuine citizen and stakeholder participation due to a rather "traditional" understanding of innovation
- Limited knowledge about demanding public participation processes and best practices
- Lack of clarity about the design of public participation formats and possible funding options
- Unclear implementation of the results of public participation processes, especially against the background of emerging conflicts
- Limited use of existing living lab infrastructures and lack of support in the implementation/adaptation phase
- Complex regulations and approval processes
- Lengthy administrative procedures due to complex interaction between authorities at different spatial levels

Overall, the Karlsruhe innovation system shows itself to be very rich and functional (see Deliverable 2.1 of the TetRRIS project). The processes and procedures as well as actor networks have grown over many years and contribute positively to innovation activities. At the same time, new developments such as the increasing integration of RRI topics require established structures to be adaptable. It is positive that all actors are aware of the increasing importance of RRI elements and are already implementing them. Nevertheless, the expansion of actor networks to include a stronger integration of the public, civil society actors and stakeholders as well as changed regulatory framework conditions is a long-term process that is only gradually being practiced at all levels. However, there are a number of possible solutions that can be used to highlight and accelerate the importance of change in the direction of RRI.

2.3.4. Solutions to challenges

Regarding the above mentioned challenges, it seems obvious that there is a need to develop structures to facilitate the codification, exchange and build-up of knowledge surrounding public participation. This could also include the development of formal guidelines based on successful, past practices as well as the development – and sustainable establishment – of additional formats of knowledge exchange and related educational formats. Moreover, there seems to be a need to better develop local

support structures to enable and facilitate experimentation, with the aim to develop a common understanding on the local relevance and potential of living labs, a facilitation of activities to increase the public acceptance of test areas in the public domain, and also activities aimed at identifying new ways of leveraging regional level legislative authority to enable, facilitate and add momentum to orchestrated experimentation activities in living labs.

With respect to *public participation*, the following general options of action were identified and described in Deliverable 3.1 of the TetRRIS project:

- *Developing guidelines based on successful, past practices.* As mentioned above, there are many actors in the innovation system of the Karlsruhe Technology Region with long-standing experiences and much expertise with regard to public participation. This often tacit knowledge could be carried together, systematized and could build the basis for some guidelines for a good participation practice.
- *Developing and establishing additional formats of knowledge exchange.* Many actors (or individual persons) have made own experiences in public participation and, assumingly, identified lessons learnt, but up to date, hardly shared them broadly. Learning about those experiences and lessons learnt other stakeholders may have gained during their activities might be very valuable for all actors interested in that topic even if each of them relates to a specific context and time. Possible formats to facilitate such an exchange of “stories”, lessons learnt, failures or good practices could be, for instance, a series of (public or invitation-only) workshops, “fireside chats” or other social event formats allowing for repeated exchange. Such exchanges could also involve outside experts and/or be opened to innovation actors from other areas in Germany or Europe.
- *Developing and establishing educational formats.* Beyond the knowledge exchange, it is also important to build-up new expertise which is not (yet) available within the innovation system, but seems to gain in significance. New challenges for the conduct of public engagement may arise in the future with regard to the increasingly digitalized context, such as social media driven polemics, “shit storms”, fake news or rumour. Another example concerns the increasingly more complex consideration of diversity dimensions (beyond just gender, being it educational, socio-economic or migratory background) and the related question of representativeness. Here, it might be helpful to consult and invite external experts, and to organize seminars, lectures or other educational formats.

With respect to *regulation and living labs*, the following general options of action were identified and described in Deliverable 3.1 of the TetRRIS project:

- *Development of a common understanding of living labs:* Since the concept of living labs is rather fuzzy and not clearly delineated, it is important to gain a common understanding about potential goals among the actors and stakeholders in the region. For this reason, it might be useful to bring actors from science, politics and administration, business as well as interested parties from civil society together, to clarify ideas, findings and possible ambiguities. Precisely because of the novelty of the approach, a common understanding is essential for the implementation and success of developing technologies beyond the usual innovation funding.
- *Facilitate support structures and increase acceptance:* Since living labs encompass all innovation phases – from research and development to prototype development and the field phase – user acceptance can be improved at an early stage and thus the implementation of the

developed products can be accelerated. Furthermore, the openness increases creativity and innovation intensity on the one hand, and actively creates networking opportunities and support structures on the other. A rather open-ended discussion about potential risk and benefits might help to increase the overall innovation performance of the Karlsruhe Technology Region. This also requires a partly departure from classical planning processes, in which the results are usually already set out in detail, towards a culture of trial and error.

Given these general options of action, the feedback of various stakeholders of the region, the framework conditions (in terms of resources and time) set by the TetRRIS project, and the internal discussions of the TetRRIS project team, we prioritized and selected four rather concrete pilot activities to be conducted in the further course of the TetRRIS project. They are described and justified in the following section.

2.3.5. Road to the vision

As laid out above, *citizen and stakeholder engagement* as well as the *regulation- and risk-sensitive conduct of living labs* were defined as promising fields for pilot activities that answered to the needs of the actors in the regional innovation system while helping to strengthen and foster RRI practice in the region. Through the workshop and stakeholder dialogues, four more concrete possible pilot activities were identified that enjoy some interest and support from local stakeholders. These are

- (1) the creation of a *practitioner network on citizen and stakeholder engagement*;
- (2) the initiation of an *intensified dialogue and exchange between regional innovation and development policy makers in Karlsruhe and Tampere*;
- (3) the organization of *living-lab practitioner workshops and dialogues with regulators*; and
- (4) the creation of a *mobility advisory council (Mobilitätsbeirat)*.

Furthermore, the TetRRIS project was approached and has begun dialogue with a local NGO about possible joint activities in the field of stakeholder (SME) engagement for climate/sustainability action.

These pilot activities are described further below. For the moment, the focus has been placed on the practitioner network and on initiating dialogue between Karlsruhe and Tampere. These were chosen as initial priorities for several reasons. Firstly, they both enjoyed particularly high support from stakeholders, and are particularly closely aligned with the TetRRIS vision of strengthening public participation (engagement) practices in the region. Secondly, and as a practical matter, it was considered inadvisable to initiate too many pilot activities at once, both to avoid overburdening stakeholders (“participation fatigue”) and to avoid “brand dilution” for TetRRIS if too many pilot activities, whose logical connection may not be immediately obvious to stakeholders are launched at once. Accordingly, the intention is to begin the “Pilot Activities”-stage of the TetRRIS project by building up the practitioner network and subsequently initiating stronger dialogue between Karlsruhe and Tampere, and thereafter (mostly in 2022) consider initiating additional pilot activities (dependent also on staff capacity). At the same time, the intention is to remain sensitive and open to changing requirements and interests in the community of actors in the regional innovation system. After all, it is quite conceivable that over the course of 2022 and 2023 new needs and interests for pilot activities

with high RRI relevancy will emerge, as the local innovation and development projects and initiatives in the Karlsruhe Technology Region themselves evolve.

Practitioner network on citizen and stakeholder engagement. As discussed above, the Karlsruhe Technology Region has a long tradition of emphasising citizen (and stakeholder) participation in various contexts, and participation is also required by law in certain contexts (e.g. infrastructure construction). However, while a lot of participatory (engagement) activity thus takes place, there are few dedicated structures and institutions specifically for practitioners, who actually conduct participation processes or use them in their innovation projects, to exchange experiences, discuss problems and advise each other. In particular, in our discussions with the local innovation actors it became clear that a “safe space”, where these conversations could take place in a trustworthy, confidential environment, allowing actors to be open especially about failures, problems and challenges and get constructive feedback from their peers, could be of high value. The network is intended to fill this gap. The peer-learning, reflexion, opportunity for structured discussions and invited talks and presentations that it – it is hoped – will enable, will actively strengthen the practice of the public engagement “RRI Key” (the “inclusion” dimension in the Stilgoe et al. scheme, see Deliverable 2.1 of the TetRRIS project) in the region, and help contribute to other “Keys” by fostering reflexive approaches.

The network is initially aimed at local practitioners from private companies, consultancies who offer participation-facilitation and communications services, innovation project managers from the (applied-) research institutions of the region and public administration. Because a fundamental aim of the network is to enable open conversations in a trusted environment, the idea is to initially keep the network relatively small (e.g. no more than perhaps 20 persons), though network growth *beyond* the Karlsruhe Technology Region (involving practitioners from other areas of Germany and even from other European Pilot Regions in TetRRIS) is, slightly paradoxically, also seen by at least some of the local actors as a way of promoting trustworthiness: after all, it can sometimes be easier to be very open with other peer professionals from a different country or region than with local colleagues.

The precise activities, formats and issue areas that the network should focus on should be further defined by the network members. In the conversations so far, the following issue complexes emerged as particularly relevant:

- Constructive discussion of experiences made (failures/best practices seem to enjoy great interest)
- Acceptance related to infrastructure and construction projects
- Acceptance of new technologies (e.g. autonomous vehicles, drones/robots, geothermal energy, overhead truck lines)
- Co-creation processes, e.g. how to successfully engage citizens and stakeholders and generate input/active participation from them
- Practical challenges, e.g. addressing/involving different milieus (especially less scientifically-theoretically oriented groups)

At present, it seems most useful to explore and address these (or other) issues through structured workshops of, for instance, 1,5 to 2,5 hours duration and involving some combination of (one or more) impulse presentations by network members or invited speakers and a structured (moderated) discussion. However, other formats are also possible. These may include, for example, loose

(unstructured) discussion groups, best/worst-practice pitches, and the development of an internal expert directory (who knows what / where to get bilateral help or input). The regular cycle could be one event/meeting every 2 to 4 months, e.g. with regular alternation between different formats/activities.

The network is being built by TetRRIS project staff together with a small group of actors from the regional innovation system. At present, the focus is on building up the network through scoping and recruitment dialogues with other local actors whom staff and group members have identified as potential network members. Moreover, a “concept paper” setting out the aims and ideas of the network has been written. The aim is to have a (semi-) formal “founding meeting” in the autumn of 2021, with all the initial identified network members, followed by a first workshop-style event in the winter. One of the local actors has already declared his willingness to contribute an impulse presentation for the first event and lead event planning together with TetRRIS project staff.

The key measure for the success of the network will ultimately be the extent to which it is able to put on a steady stream of network events/activities that are of value to network members. The risk is of course that network activities prove of insufficient value to members to motivate continued participation (e.g. by not sufficiently addressing their interests, not delivering useful inputs and ideas, etc.). A further risk is that activities become too numerous, overburdening members (“participation fatigue”). In order to mitigate these risks, TetRRIS staff need to maintain productive dialogues with members that are sensitive to their needs, and try to involve members as much as possible in defining and deciding network activities, with TetRRIS staff taking over the administrative “leg work” as much as possible while network members get to set the substantive agenda. Soliciting regular (possibly informal) feedback from members will be key to successful risk mitigation.

Intensified dialogue and exchange between regional innovation and development policy makers in Karlsruhe and Tampere. Conversations with stakeholders in Karlsruhe and Tampere have indicated interest in both regions in stronger dialogue and exchange of experiences and good practices for making and implementing regional innovation and development strategies and policies. Issue areas of particular interest on both sides are how to better involve diverse stakeholders and citizens in regional development strategies and processes, how to strengthen citizen and stakeholder identification with the region, and how to strengthen the mission-orientation and sustainability focus in the local innovation and development strategy.

Concretely, the idea for this pilot activity at present is to conduct one or several dialogue or exchange events for policy makers and professionals from both locales, most likely in a workshop or conference format, and taking place either physically in person, or virtual (with hybrid the most likely). One idea under exploration is to have closed-door (confidential / Chatham House Rules) sessions where small groups of policy makers and professionals from both regions could present and discuss their strategies, practices and challenges and give peer feedback to each other. A meeting between the Karlsruhe and Tampere teams of the TetRRIS project to further explore and scope out these possibilities is planned for October, with any events then taking place most likely in 2022.

Living-lab practitioner workshops and dialogues with regulators. As became clear through the interviews and discussions at the scoping workshop, the topic of regulation and innovation plays an important role in the Karlsruhe Technology Region. Especially for the testing of new technologies (such as air taxis and cargo drones) in real-world environments, the temporal and spatial adaptation of legal framework conditions is essential. Against this backdrop, living labs are becoming

increasingly important as test beds and experimentation spaces for innovations. At the same time, the actors still lack a uniform understanding, knowledge of legal possibilities and a region-wide strategy for the design of any experimental fields. Therefore, from the innovators' point of view, the first step is to bring together the most diverse stakeholders, especially also actors from the administration that ultimately enacts the regulations. Although the topics of citizen and stakeholder participation are given greater importance and discussed more intensively, it would be conceivable for experts from science and practice to offer an exchange of experience in the form of workshops or presentations on the topic of regulation as a first step. This serves to provide actors from the region with important insights, processes and practical experience.

Mobility advisory council. As noted above, mobility is a priority area for the Karlsruhe Technology Region, both in terms of further modernising and – especially – transforming the regional mobility systems in a more ecologically sustainable direction, and in terms of further strengthening the Karlsruhe Technology Region as a leading innovation ecosystem for new mobility technologies and solutions. However, successfully developing and deploying mobility innovations and infrastructure build-outs can be particularly dependent on appropriate engagement of citizens and other stakeholders. One way to further facilitate citizen and stakeholder input into regional mobility projects, priorities and strategies that emerged in TetRRIS dialogues with local innovation-system actors was the idea of setting up a “mobility advisory council” (*Mobilitätsbeirat*), somewhat akin to existing structures for energy sector development. The advisory council could include representatives of stakeholder groups (e.g. local businesses, research institutions, and various citizen associations and/or NGOs), and provide consultative input for the regional mobility strategy and policy prioritisation.

At this stage, the TetRRIS project remains in dialogue with key actors and institutions in the regional innovation and policy-making system to further ascertain the possibilities and options for setting up such a “mobility advisory council”, and how TetRRIS may contribute to it.

2.4. SZEGED-TIMISOARA

2.4.1. Introduction

The Szeged-Timisoara Pilot is a "learning pilot" focused on deriving useful lessons and inspirations from the more advanced pilot regions of Tampere, Karlsruhe and Cantabria to stimulate first steps towards integrating RRI into the local development and innovation processes in the area of Sustainable construction and creative industries.

Darinno (regional partner in Hungary) selected two strategic projects within this region, DIH-World and TalentMagnet based on regional smart specialization strategies in Szeged-Timisoara region. These two projects support the smart specialization strategies of the region towards more inclusive direction and implementation processes which take into account regional stakeholders and citizens.

DIH-World aims to accelerate the uptake of advanced digital technologies by European manufacturing SMEs in all sectors and support them in building sustainable competitive advantages and reaching global markets strengthening the capacities of regional DIHs, particularly in underrepresented regions across Europe. DUTIREG Nonprofit Kft and V-TEST Kft participate in

DIH-World as partners from Hungary because – in cooperation with the regional stakeholders in the Dél-Alföld region of Hungary – they establish a new Digital Innovation Hub in Szeged which shall become active player for the innovation ecosystem from 2021. DIH-World will respond to the needs of European manufacturing startups, SMEs and mid-caps - leading to the optimal combination of theoretical inputs for skill development and practical/tangible results from the experiments.

The 2nd pilot, TalentMagnet addresses major societal (demographic and labour market) challenges of the Szeged region caused by the outmigration of highly-educated young people, primarily from small- and medium sized towns in the Danube Region (brain drain).”

2.4.2. TalentMagnet pilot: Introduction

TalentMagnet is a transnational cooperation (Interreg Danube) project, running between 01/07/2020 and 31/12/2022 under the priority 4 “[a] well-governed Danube region” with the specific objective of “*improv[ing] institutional capacities to tackle major societal challenges*”.

The TalentMagnet project addresses major societal (demographic and labour market) challenges caused by the outmigration (brain drain) of highly-educated young people, primarily from small and medium sized towns in the Danube Region. The project intends to address these challenges by improved multilevel governance, targeted policy instruments and practical tools to attract and retain talent – tailored to the specific needs of small municipalities. Limited institutional capacities and lack of prior experience of public bodies, other relevant stakeholders (especially in smaller towns) in the region hinder effectively combating against outmigration of the region’s young workforce.

The main objective of TalentMagnet is to thus strengthen multilevel governance and improve institutional capacities to reduce the outmigration of these talented young workers. The main result of TalentMagnet is an established new multilevel and transnational governance model/tools/plans for talent attraction and retention, by more effective, wider and deeper transnational cooperation across the DTP.

TalentMagnet’s partnership is characterized by transnational, intersectoral and multilevel cooperation forming a Quadruple Helix model with partners in academia, business, politics/administration and civil society in a joint learning process. The ERDF/IPA/ENI partners as well as ASP come from 11 countries: Slovenia, Hungary, Romania, Slovakia, Czechia, Bulgaria, Croatia, Germany, Serbia, Bosnia and Herzegovina, Ukraine. TalentMagnet will help institutional actors and other stakeholders in the DTP to identify obstacles, and develop and implement a plan to address those. The project partnership will improve institutional capacities, design thirteen strategies, develop a toolkit, deliver thirteen pilot actions, develop policy proposals, while also establishing a new multilevel governance model.

More information about the TalentMagnet can be found on its website and Facebook:

- <http://www.interreg-danube.eu/approved-projects/talentmagnet>
- <https://www.facebook.com/TalentMagnetProject>

The cooperation between TalentMagnet and TetRRIS has been announced in forms of a Facebook post using the following graphics:



Furthermore, both projects will be introduced during the forthcoming project meetings:

- TetRRIS will be e-introduced by Emad Yaghmaei on the Nyíregyháza (Hungary) TalentMagnet meeting in September
- TalentMagnet will be e-introduced by Danilo Ceh on the Brussels (Belgium) TetRRIS meeting in October

To support TalentMagnet project in addressing RRI Keys, an online workshop was organized by TetRRIS's Hungarian partners on 13 September 2021, to investigate, discuss and analyse all the possible ways to integrate RRI framework into the workflow of the TalentMagnet project in Hungary, as well as make a plan for the execution of the pilot. Stakeholders of the project discussed the overall concept of RRI (as it is a relatively new concept in the region), challenges of RRI integration in the region, and how to solve these challenges. A short presentation on RRI and RRI methodology was given to the experts, which was followed by a round table on establishing a common understanding of RRI. The incorporation of TalentMagnets knowledge of RRI from working with other regions within the Interreg Danube project allowed for fruitful discussion on the future of RRI in Szeged.

2.4.3 Vision for RRI in the region

In Hungary, RRI objectives and approaches are seemingly at odds with the objectives and priorities of the current RDI framework in Hungary. According to Varju (2021) the Hungarian RDI structure is focused on economic and industrial policy and is based on an internally closed, hierarchical, top-down model of governance (only horizontal and bottom-up in cases where business actors can participate). At its core, the RDI framework also follows the same logic in terms of RDI funding from public resources. Unfortunately, there has been little room for societal participation, including that of researchers, to influence RDI processes. This has led to little input in what otherwise could have been the inclusion of social, cultural, moral, environmental and other values in the framework: therefore, these values are not seen neither in the priorities of the system, nor in the rules governing the conduct of institutional actors (Varju, 2021). Instead, influences come from the state whose focus are on shorter term Economic results rather than those of long-term, technological advancements for RDI policy. As a result, RRI has never been fully established, nor attempted to be implemented, by the contemporary government and administration of the country (Varju, 2021).

For Hungarian RRI researchers and other actors this has meant following a similar line of thought, focusing primarily on individual costs and gains rather than how to integrate issues such as those involving the technological future of Hungarian society into RDI policy (Varju, 2021) as well as the implementation of RRI. This mentality has been attributed to multiple factors: (i) Hungarian researchers see this as a survival strategy as they lack material affluence and therefore seek out and focus on immediate costs and benefits; (ii) they have become accustomed to a (post) socialist research environment that lowers their level of trust and cooperation.

To summarise, so long as innovation actors and researchers should struggle to live out their livelihoods, RRI cannot be fully realized in Hungary. The solution to integrate RRI into the countries R&D framework and achieve better and quicker results from researchers and innovation actors, should thus be to integrate Hungarian researcher's goals into externalities. While doing so may only elongate the focus of industrial and economic policies in R&D, integrating this way of working may allow doors to open for conversation.

2.4.4 Drivers and challenges related to the implementation of RRI in the region

As noted above, as well as in deliverable 2.2 *Mapping Report*, innovation actors and researchers are often working on projects to meet immediate costs and benefits rather than focusing on the market demand. As (governmental) financial support, including grants, tenders and EU support, is scarce in the Szeged region, innovation actors and researchers will seek out any chance to apply when resources do become available. Companies also often face a severe lack of funds, leading to a certain indiscriminateness in the application for funding. As a result, applicants will apply for funds in areas that have nothing to do with their projects, simply to receive the funds they need. The most important factors influencing the current status of the implementation to the RRI Agenda in Hungary, as also stated in Deliverable 3.1 *Brief Reports on Areas for Joint Action*, are: 1. GDP per capita; and 2. the post-socialist heritage. Participants of the workshop highlighted this second point, stating that the majority of the TalentMagnet partnership comes from post-socialist countries (e.g., Hungary, Slovenia, Slovakia, Czech Republic, Croatia, Bosnia and Herzegovina, Romania). So, when discussing RRI, the project should consider the regions post-socialist heritage, along with its socio-cultural factors, as written in the *Mapping Report*. As a recap, these include:

1. Lack of trust
2. Lack of cooperation willingness
3. Importance of informal channels
4. Low familiarity and exposure to RRI

Based on this, the starting challenge is raising RRI awareness in a post-socialist innovation environment.

2.4.5 Solutions to challenges

To identify what kinds of solutions, work in this pilot to mitigate previously described challenges, we organised a workshop with experts of TalentMagnet. The question to be answered, was “*how to involve RRI into the practice of TalentMagnet project*” effectively with those work-shoppers, who already have a deep understanding of the targeted project.

The workshop has been running with seven primary participants (mainly staff members and external experts of the project, and of course the TetRRIS team of Szeged) as follows:

Name	Role
GYULAI, Tamás	TetRRIS, president of project partner Darinno
KARÁCSON, Zsolt	TalentMagnet, project manager of WPC Leader
KOMÁDI, Mónika	TalentMagnet, external expert of WPT2 Leader
LUKOVICS, Miklós Dr.	TalentMagnet, Lead Expert of WPC Leader TetRRIS, External expert
NÁDAS, Nikoletta	University of Szeged, RRI expert
PODANI, Krisztina	TalentMagnet, project manager of WPC Leader
SZÚCS, Petra	TalentMagnet, project manager of WPC Leader

Given the above-mentioned challenges to embed RRI in the regional innovation activities through TalentMagnet pilot (i.e., lack of trust, lack of cooperation willingness, importance of informal channels, and low formality and exposure to RRI), TalentMagnet pilot aims mainly for raising awareness of RRI in the region and among the involved stakeholders of TalentMagnet. First, a short presentation was given about RRI and RRI methodology to the experts. It was followed by a round table on establishing the common understanding on RRI (examples, case studies, good practices, bad practices, etc.).

The discussion was started from the common understanding on innovation, because implementing TalentMagnet does not run any R&D&I activity in the classical terms. So, the notion of innovation had to be broadened.

Participants agreed that the ability of humankind to think about new and better ways of doing things and try them out in practice (in other words, to innovate) has always played a key role in the development of our world. Innovation is a complex phenomenon. Its history and diverse interpretations are reflected in an impressive amount of scientific knowledge about its complexity, elements, framework conditions and impacts. The output of the innovation process strongly influenced the world of the previous centuries, by the means of small changes of existing processes, goods or opening up radical ways of doing things. The fact is that innovation was the source of change and development from the early days of history and this role is still valid today. Innovation will be continued as long as we are eager to achieve development and draw benefits from it.

In the approach of the participants, the definition of innovation is based on the original Schumpeterian approach (Schumpeter, 1934), also adopted by the 2005 edition of the Oslo Manual: An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations. (OECD-Eurostat, 2005, p.46). This approach defines an organisation as innovative if they have implemented at least one product, technology, organisational or marketing innovation in an examined period.

Participants discussed unintended side-effects of innovation. Practical examples, such as autonomous vehicles and the Pokémon Go app, among others, were discussed. To raise RRI awareness within the pilot, awareness of moral values and public values, awareness of ethical issues raised by the pilot's innovations, and awareness of stakeholder views within the pilots have been discussed.

The workshop revealed that sometimes technological advances have unpredictable impacts for social life, as can be seen in the case of social networks. Social networks have transformed patterns of the social interaction among all generations. They have converted sites into news feeds about our life, to sources of diversion, connections, activities and interest. Providing an excellent, new platform, while also raising some ethical and moral questions about the threats of data protection, addiction or changed social behaviour.

Uncertainty, ignorance and negative side-effects connected to innovation have created a school of thought that feels that science, research and innovation should be responsibility-driven given its impacts on society, human beings, the environment and other externalities.

In the next phase of discussions, the workshop followed the logic of Deliverable 2.1 of TetRRIS and introduced the *responsible innovation* definition by Rene von Schomberg (2013):

A transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products (in order to allow a proper embedding of scientific and technological advances in our society).

Participants also discussed the definition of Jack Stilgoe, Richard Owen and Phil Macnaghten (Stilgoe et al., 2013):

Responsible innovation means taking care of the future through collective stewardship of science and innovation in the present.

As an invisible practical bridge and a common understanding of RRI, RRI keys (public engagement, open access, gender equality, ethics, and science education) and dimensions (anticipation, reflexivity, inclusion, responsiveness) uphold transforming the notion of RRI into the practice in Hungary.

The pilot participants recognized moral and public values, but these values have not necessarily reflected in their innovation and business plans and policies. As such, the first and foremost way forward for the TalentMagnet pilot is to mention values in innovation business plans and policies e.g., on the website of TalentMagnet. Once this is achieved, a long-term strategy for the pilot and its stakeholders could be seen to drive the moral and public values and address RRI keys and dimensions.

2.4.6 Road to the vision - impact path

To enhance the Responsible Innovation capacity, future measures in the Szeged region will highlight indirect opportunities, therefore having a moderate impact. To draw attention to R&I implementation issues, it is suggested that outreach should be conducted through public events, media appearances, conferences or education; publicising commitments of key players of the innovation space to these issues; opening up new discussions and debates; publishing new scientific results of RI in comprehensible forms; building it into the local development strategies as horizontal goals and creating local or national standards (white paper publications).

After having a strong basis of the necessary knowledge, partners started to discover how RRI can be integrated into the processes of TalentMagnet. TalentMagnet is carrying out capacity building in the pilot cities, which could be understood as organizational innovation. The road to the vision therefore includes the following activities (to be completed between M12-M30 of TetRRIS project):

1. Based on this, the starting challenge is raising RRI awareness in a post-socialist innovation environment. As stated before, the general knowledge about RRI issues in the post-socialist countries is very low, which statement is valid for the TalentMagnet partnership, too. However, their openness to be familiar with RRI issues has been tested and the result is very positive: based on a bottom-up approach TalentMagnet partnership invited TetRRIS experts for an online workshop about RRI in the close future.

Timetable: October 2021 – December 2022

Actors/organizations/networks to be involved: examples: TalentMagnet partners, city municipalities, universities, development agencies.

2. Having TalentMagnet's steering committee meetings on the importance of RRI (raising awareness on RRI in the partnership). Short presentations about RRI and TetRRIS for the TalentMagnet partnership.

Timetable: September 2021 – December 2022

Actors/organizations/networks to be involved: TalentMagnet partners

3. For those partners who have a deeper interest in RRI issues, an RRI training with TetRRIS experts will be organized. About 80% of the TalentMagnet partnership already expressed their interest about having deeper knowledge about RRI and its application to their everyday work. For this purpose, TetRRIS experts have to prepare a training material for the TalentMagnet partnership focusing on their needs and using easy-to-understand language and many clear examples.

Timetable: November 2021 – December 2021 (Developing training material) Spring 2022 (workshop)

Actors/organizations/networks to be involved: TalentMagnet partners

4. Creating RRI-related visuals (infographics, animations, leaflets) with easy-to understand key RRI-messages and advantages. This is a key activity, since visuals can help to summarize and understand the most important issues of RRI very quickly and efficiently. TetRRIS experts

will develop and edit attractive RRI-related visuals. These visuals will be very important in the next activities.

Timetable: October 2021 – December 2021

Actors/organizations/networks to be involved: TetRRIS experts

5. Helping trained partners start to use RRI thinking during their work: this activity is imagined something like a helpdesk, which helps partners to apply their RRI knowledge during their work. Partners can ask and TetRRIS experts answer the questions.

Timetable: March 2022 – December 2022.

Actors/organizations/networks to be involved: TalentMagnet partners

6. The next step would be to ask TalentMagnet partners to distribute the importance of RRI among their stakeholders. After getting the RRI knowledge and understanding its importance and applying it during their work, partners will be asked to try to distribute the importance of RRI among their stakeholders. The helpdesk will help partners to do that if needed. RRI visuals will help this work.

Timetable: March 2022 – December 2022.

Actors/organizations/networks to be involved: TalentMagnet partners and stakeholders

7. Invite TalentMagnet key persons to main TetRRIS activities in order to continue cooperation and get more support

Timetable: October 2021 – December 2022

Actors/organizations/networks to be involved: TalentMagnet key persons

8. The Open Access RRI key will be highlighted concerning the project results, because transferability is very important in the TalentMagnet project. Transferability requires that the outputs of the projects are presented in a format that is easy to use and adapt by another beneficiaries

Timetable: October 2021 – December 2022

Actors/organizations/networks to be involved: TalentMagnet partners

9. Involving RRI keys and dimensions into the deliverables, especially:

- a. **D.T2.1.2 Local Talent Clubs established:** Talent Clubs reflect the “customer focus” which need public engagement from the RRI keys. The clubs facilitate the direct involvement of the most important target group of the project: young talents. Talent Clubs are communities of local talents (those who live and work in the city, and also those who are from the city but study elsewhere in higher education), with the purpose of (i) facilitating a constant dialogue with, as well as (ii) gradually nurturing an attachment to place of, talented young people. The local talent club enables the local authority and the other stakeholders to better understand the very specific needs of the local talent and to address those needs in an agile way. When establishing Local Talent

Clubs, partners might take into consideration the gender and ethics RRI key, such as the open access, because it will be open for everyone.

Timetable: December 2021.

Actors/organizations/networks to be involved: TalentMagnet partners and stakeholders:

- b. **D.T2.1.5 Urban hackathons implemented:** We will also develop an innovative new tool that engages talented young people to get involved in addressing pressing local challenges and identify possible solutions – thus further strengthening their links and attachment to the city, while also helping the stakeholders to better understand their specific needs and expectations. This new tool is „URBAN HACKATHON” – the methodology of intense interactive events that involve local professionals from public and private sector - and young people to jointly solve problems in various thematic areas (for instance environment, climate-resilience, social inclusion, mobility, or even talent attraction and retention itself, etc.). The methodology will be developed by the knowledge providers, in consultation with the city partners. To test the methodology, each partner will run one pilot hackathon in their cities during the project. When organizing urban hackathons, partners might take into consideration the gender and ethics RRI key, such as the open access, because it will be open for everyone.

Timetable: June 2022

Actors/organizations/networks to be involved: TalentMagnet partners and stakeholders

2.4.7 DIH-World Project Pilot: Introduction

DIH-World is a project that brings together digital innovation hubs from EU member states with the objective of exchanging knowledge and sharing best practices in digitalisation support to companies.

The Hungarian member of DIH-World consortium is DUTIREG which is a nonprofit company for regional economic development. One activity area of DUTIREG is the coordination of Science, Technology and Education Platform for Photonics (STEPP) which is the "laser cluster" in Hungary. Consequently, the Digital Innovation Hub function in Szeged - which shall be implemented as one of the deliverables of DIH-World project - shall be focused on photonics and on the related economic sectors.

Photonics can be considered as a regional smart specialisation because the "Extreme Light Infrastructure - Attosecond Light Pulse Source" (ELI-ALPS) has been constructed in Szeged as a key European research facility and it can also act as a node for related economic activities. Cooperation with regional clusters can contribute effectively to the development of the innovation ecosystem in Szeged and the professional support by the TetRRIS project shall be integrated in this framework. The agenda of the workshop has been developed with these considerations in mind.

On 16 September 2021, an online workshop was organized by TetRRIS's Hungarian partners to investigate, discuss and analyse all the possible ways to integrate RRI framework to the development of the innovation in Hungary, specifically in the West Region. Similar to the TalentMagnet pilot

workshop, the workshop stakeholders together with the leaders discussed RRI as a new concept, addressed the drivers and challenges of implementing RRI into the region, and looked to create solutions for their region, of which they identified three main solution areas. What made the workshop unique was its focus on cross-border cooperation and approach to innovation, and looked to experiences with other, related EU projects for best practices and insights.

2.4.8 Vision for RRI in the Region

As mentioned before, RRI is not only a new concept in the Hungarian region of Szeged, but also in the entire country. However, following an open call for the expression of interest, the European Commission selected, out of 44 applications, six model demonstrator regions which shall demonstrate “new or better ways of designing and implementing modern cluster policies”. These regions received a free-of-charge advisory support from the European Cluster Observatory in designing and implementing regional cluster policies that take “maximum advantage of the transformative power of innovation towards shaping new value chains, sectors, and emerging industries.”

As part of its activities, the European Cluster Observatory showcases modern cluster policy practices through advisory support services to these selected model demonstrator regions. The regions received customised support, information and advice from a group of experts. Thereby the selected regions were to take advantage of advisory support services, offered by the European Cluster Observatory with the aim of benefitting from the cluster concept. The regions were enabled by the campaign to better contribute to and to support the renewal of their industries and the promotion of entrepreneurship and SME growth as a regional player. The activity also included assistance for the regions in designing modern cluster policies to take maximum advantage of the transformative power of innovation towards shaping industrial value chains, promising industrial sectors and emerging industries.

The *Romanian West Region* (West Region) was selected as one of the six model demonstrators’ regions to be supported by the European Cluster Observatory in the implementation of a new cluster-based policy. The intended policy aims at maximising “the impact of clustering on the region's economy-my” by setting up a living lab, in order to tackle societal key challenges such as active and healthy ageing and efficient use of resources.

With its Regional Development Plan (RDP) 2014-2020, the West Region has established a regional planning process. It has been undertaken based on a series of analyses of the regional context, and based on stakeholder engagement. The new development plan sets forth the region's vision and policy proposals to raise the quality of life of the citizens to a standard similar to non-capital regions in Central Europe by 2020.

The Regional Development Plan has its focus on:

- The enhancement of the role of research and innovation. The region should intervene in the configuration and organisation of the regional RDI system, emphasising the need for creating better links between academic research and the business environment, for a better transfer of RDI results to the private sector;

- A clearer focus on SMEs and direct investments as well as support for high-growth enterprises in the region in smart specialisation sectors;
- The improvement of the productivity level of the regional private enterprises, accompanied by directing investments towards skills, innovation in the private sector, improving the competitiveness of enterprises, and orienting the regional economy towards services;
- The identification of new tourist niches and improving the formulation of touristic offers in the region;
- The diminution of regional development disparities;
- The improvement of the regional development capacities.

2.4.9 Drivers and challenges related to the implementation of RRI in the region

With its activities, the West Region was the first region in the country to develop a regional innovation Strategy (RIS) for the period from 2005 to 2008. This RIS, based on a large regional partnership, has been updated for the period from 2009 to 2013 and generates some pilot projects, e. g. Tehimpuls, Automotivest or the Regional ICT as results, which are, after a successful phase of constitution, currently in a rather passive state. A smart specialisation strategy (S3) has been developed in 2013. With this analysis the West Region attempted for the first time to focus its own efforts on these defined regional strengths, which seems to be the most promising for further development. The analysis was based on an in-depth competitiveness and smart specialisation assessment of services and goods producers and aimed at identifying policy measures, interventions and smart specialisation niches that could help nurture their growth potential.

The West Region, as a model region, sees itself confronted with the challenge, to fully address and to maximise the impact of the thematic objectives identified in the S3 process and to translate the process into a manageable procedure involving all relevant regional players: industry, S&T, intermediary sector as well as regional authorities. In the implementation of this approach, clusters will be explicitly used as a decisive tool to mobilise and engage both S&T institutions and enterprises, working together with public administration (namely local administration).

The 2009 – 2013 Regional Innovation Strategy (RIS) of the West Region was a follow-up of the 2004-2008 RIS, updated in line with RDI changes in Europe and regional projects already implemented. The general aim of the 2009 – 2013 RIS was to speed up the regional economic development by integrating innovation and knowledge into public policies and the current activity of enterprises, in order to increase their global competitiveness.

In the framework of a model region, West Region can (and will), due to restricted resources, only fathom exemplarily prepare for some selected cases to prove the opportunities, difficulties and obstacles, the regional strengths and weaknesses, development paths and no-go's etc. The model region – keeping the pre-conditions of the set of intentions and expectations in mind – will also be confronted with the challenge of exploring spill-over effects of some key enabling technologies to foster emerging industries that will create highly-qualified jobs and reinforce the competitiveness of the region. Due to their transversal nature and systemic relevance, the most relevant KET in West

Region is ICT and can be seen as crucial area/cluster activity to reach smart specialisation goals but interlinked with other industrial pillars in the region.

The West Region, as a model region, sees itself confronted with the following main challenge: to fully address and to maximise the impact of the five thematic objectives identified in the S3 process and to translate the process into a manageable procedure involving all relevant regional players: industry, S&T, intermediary sector as well as regional authorities. In the implementation of this approach, clusters will be explicitly used as a decisive tool to mobilise and engage both S&T institutions and enter-prises, working together with public administration (namely local administration).

2.4.10 Solutions to challenges

To identify what kinds of solutions, work in DIH-World pilot to mitigate previously described challenges, the stakeholders, who had already shown interest in DIH-World project and therefore were committed to contributing to the development of an innovation ecosystem in Szeged, have been invited to a workshop. Consequently, more questions than just “*how to involve RRI into the practice of DIH-World project*” could be answered as the participants of the workshop already had a deep understanding of the targeted project. On the other hand, RRI was a new concept for the stakeholders: therefore, expecting detailed contribution during such an introductory type of workshop would have been unrealistic.

The workshop ran with ten primary participants (mainly local stakeholders and external experts of the project, and the TetRRIS team of Szeged) as follows:

Name	Role
GYULAI, Tamás	TetRRIS, president of project partner Darinno
BALOGH, Éva	DIH-World, project coordinator in Szeged
MARÓTI, Péter	manager of STEPP Cluster
LUKOVICS, Miklós Dr.	TetRRIS, External expert
GONDA, András	manager of ArchEnerg Cluster
GYENIZSE, Pál	member of Szeged Software Cluster
VOLFORD, László	manager of ÉPÍTŐ-KIT Cluster
MOGYORÓSI, Péter	regional director of Innovation Association of Hungary
NAGY, Marianna	TetRRIS expert

By introducing research and innovation actors in the Szeged region, Mr. Mogyorósi, the regional director of the Innovation Association of Hungary (Magyar Innovációs Szövetség, MISZ) started the workshop and the expert group has a better common understanding of innovation players in the

region. The next speaker was Mr. Gyulai who gave an explanation of the RRI concept with valuable contribution by Mr. Lukovics and highlighted the most important elements of RRI actions. He also acted as the moderator of the workshop; keeping the focus of discussions on RRI issues.

Thereafter, the next speaker was Mr. Gyenizse who emphasised the importance of open innovation in the software sector. The ICT Cluster in Szeged has already been focusing on open software which offers free access to tools that can be especially beneficial to end-users. He was of the opinion that the value chain that the ICT Cluster implemented in Szeged should be viewed as a good example where open innovation goes beyond simply open science.

He gave a detailed description of their efforts to join the national consortium for European Digital Innovation Hub. This action would be based on open innovation but, unfortunately, the evaluation process was extremely long and the actual implementation is still pending. Nevertheless, the ICT Cluster is committed to co-creation within the innovation ecosystem together with companies and other partners, as well.

Mr. Gonda also stressed the importance of public engagement because ArchEnerg Cluster has taken an active role in the National Association of Innovative Clusters (Innovatív Klaszterek Országos Szövetsége, IKOSZ) which brings together several clusters in Hungary. IKOSZ promotes cooperation not only between cluster organisations, but also among the widest possible diversity of actors because they are committed to promoting public engagement on local and regional levels. IKOSZ is also a member of the TCI network which provides international visibility and cooperation opportunities for open innovation activities.

Mr. Volford emphasised the importance of education by cooperation with the university in Szeged and with the Chamber of Commerce of Csongrád-Csanád county. The cluster that he leads has already created the Digital Platform for Construction sector that promotes education for new technologies as the construction sector is lagging behind in digitalisation. Consequently, science education shall not be constrained to university level and the secondary level education shall integrate digital technologies within the construction sector, as well.

Ms. Nagy, as TetRRIS expert, has reflected to the stated opinions of the workshop participant about the role of key RRI areas that Mr. Gyulai presented in the first part of the workshop. She therefore highlighted some of the relevant experiences and successfully implemented actions in the West region of Romania which could offer good practices and inspiring models for innovation development with RRI aspects.

The discussion between the participants of the workshop identified three main solution areas to tackle the challenge of embedding RRI in the region through the DIH-World pilot. These three areas are organised in three sections below that combine to develop a road to vision for the DIH-World. The next section presents cross-border policy approach to innovation where RRI might be able to be addressed. This followed by a road for RRI in the region through Intelligent Cities Challenge (ICC) project. The third possible solution area for embedding RRI into RIS3 innovation policies is in the Csongrad county and the neighbourhood

Cross-border approach to innovation

From regional experience and former projects, we believe that international cooperation, namely cross border cooperation will bring added value to all parties involved. Looking into the region, the main role in fostering innovation will be assumed by the development regions led by Szeged (Hungary), Timisoara (Romania) and Novi Sad (Serbia), working in partnership and cooperate by exchanging best practices, learning from others' mistakes and applying for funding opportunities.

As innovation targets as primary focus the production processes and the improvement of the quality of life in the cities, the partners can develop together innovative and smart solutions, like digitalized fabrication, smart mobility, transport or tourism. During this process, it is crucial to get feedback regarding real working solutions that already demonstrate added value for the others, sharing each other's experiences so as to not repeat mistakes. Another advantage of the cross-border cooperation is that through shared experiences we can stay up to date or even discover interesting ideas otherwise unthought of, that could be replicated in our own regions

In addition, a big asset to international / regional cooperation is the European funds that could bring mutual benefits to all parties involved and, in this way, allow for the implementation of larger research and innovative projects. Meanwhile, we can efficiently disseminate and replicate the innovative solutions and effectively contribute to their sustainability.

The main subjects for cross border cooperation are in the field of innovative energy efficiency solutions, sustainable transportation, renewable energy and digitalization. By involving a larger partnership, such projects can reduce the gap between the stakeholders, companies or public authorities, and the potential investors.

Based on former cooperation between actors from Timișoara, Szeged, Arad (Hungary) and Novi Sad, EU funded projects can be written, won and implemented as joint actions within the framework of Interreg or SEE projects.

Clusters can contribute to cross-border cooperation to a large extent therefore the cluster initiatives in Csongrád county (Hungary) can follow good example when regarding the European visibility that was implemented in the West region of Romania. Tamas Gyulai has been an active partner from Hungary in the cross-border cooperation actions with special emphasis on the model region role of the West region. Consequently, it can be good source of inspiration for RRI in Csongrad county, as well.

Responsible innovation within ICC – Road to RRI for the region

ICC stands for Intelligent Cities Challenge and it is an EU funded project that follows to DCC (Digital Cities Challenge). It was mentioned by Marianna Nagy and recommended for the attention of the participants of the workshop as good example of innovative actions with responsible considerations.

ICC is a European Commission initiative that supports 136 cities in using cutting-edge technologies to lead the intelligent, green and socially responsible recovery. The ICC cities and their local ecosystems will be engines for the recovery of their local economy, create new jobs, and strengthen citizen participation and wellbeing⁶.

ICC helps the cities to implement a digital strategy developed according to the European Green Deal and other EU policies. Through locally applied innovations, the cities are supposed to become more

⁶ <https://www.intelligentcitieschallenge.eu/>

digital, to move towards service-oriented and low-carbon economy, to use the local resources for sustainable development.

The central pillar of the ICC action is the Innovation, understood according to Schumpeter's Theory of Innovation. As ICC is a socio-economic growth oriented and city development action, the responsibility has to be reflected on the whole innovation activity. The workshops, meetings and project planning emphasized that the responsible innovation takes in account the following aspects:

- The subject of innovation: it deals with an improvement targeting the digitalization, the social life and wellbeing of the citizens
- The innovative product must be as harmless as possible for the ecosystem: economic ambient, natural, human and social ambient
- If there are still negative effects that become evident during the implementation or even later, the authors or the beneficiaries must take all the actions to reduce or to avoid the consequences.

Tamas Gyulai has given detailed information about the experience of the town of Timisoara as successful applicant to ICC. He explained the planned actions that Timisoara has been committed to achieve in the period 2019-2021.

Real steps are being made in all directions considered as priority, yet the overall strategy is still not well defined. ICC brings added value through the team of experts that will increase the city capacity to tackle the challenges and outline a solid plan, share decision-relevant knowledge in terms of policy recommendations, guidelines, blueprints, approaches, schemes, and good practices. Being part of a wider European network of cities involved in the ICC will provide Timisoara with access to validated case studies, solutions and know-how.

Timișoara is committed to increasing energy efficiency, energy saving and the development of renewable energy sources, in order to reduce emissions and support the sustainable development of the city. Out of the 952 homeowner's associations that have applied for enrolment in the Local Energy Efficiency Program since 2006, 182 of them obtained European funding. However, the magnitude of energy efficiency savings must increase dramatically in the following years, the sources of energy efficiency savings must diversify, and the persistence of energy efficiency must be ensured and measured in order to reach the EU and Covenant of Mayors greenhouse gas-reduction targets. Timisoara is the European Capital of Culture for 2021 [2], a proved driver for accelerated increase in the number of tourists (1 million expected). Tourist arrivals in the city have already increased between 2011 and 2019 (from 150 000 to 350 000 tourists/year). The challenge of sustainability in the tourism sector as well as concepts like smart hospitality is very actual. It is one of the areas where RRI has significant role.

The city of Timisoara is action-oriented and focused on delivering results, being awarded the "most dynamic city in Romania" five years in a row by Forbes Magazine, in 2014, 2015, 2016, 2017, 2018. Nevertheless, we discovered that not enough time and interest were allocated for detailed strategies put on paper in the smart city sector. The usual approach in the context of intelligent projects involves the situation analysis, outlining a general plan to achieve the objectives, by using mostly human resources within the City Hall of Timisoara. ICC brings net added value through its experts as well as through knowledge transfer facilitated by networking and best practices shared by other cities.

As strong economic node in the geographical proximity of Szeged, it is worth considering Timisoara as a neighbour city that can bring experience to Szeged. Tamas Gyulai has therefore summarised the basic facts and primary economic actors of the agglomeration area as detailed below

Timisoara is the second economic pole of Romania with a strong economic activity in the fields of automotive and IT&C. Timisoara is also the second biggest exporter in Romania, second in Foreign Direct Investments size and first in FDI/capita. In 2017, out of a total of 14 452 companies in Timisoara, most of them were active in the services sector (11 485), followed by constructions (1456), manufacturing (1218), and agriculture 293. In the same year, out of a total of 118 807 employees in Timisoara, most of them worked in the services sector (63 400), followed by manufacturing (46 075), constructions (7567), and agriculture (1765). In Timisoara, more than 30 000 people work in the automotive field and more than 15 000 people work in the IT&C sector. The Top 3 employers in the automotive field are Continental Group - Continental Automotive and Contitech (6500 employees in automotive), Draxlmaier (3900 employees) and Flextronics (3700 employees). The Top 3 employers in the IT&C field are Continental Automotive (3500 employees in IT&C), Nokia Networks (1.800 employees) and ATOS (1500 employees). The population of Timișoara has constantly evolved since the last census in 2011, from 319 279 citizens living in the city to 325 363 in 2020 (1,9% growth rate). At the end of February 2020, there were only 749 people unemployed, the unemployment rate in the last years being below 1%. At the end of 2018, there were 127 404 employed citizens, the employment rate in the last years being approx. 40%. In 2017, the city's GDP was approx. € 4,2 billion, and GDP/capita was about € 12 700. Timișoara is ranked 3rd place in Romania as the city where people desire to live [1]. In the last 6 years, the City of Timișoara has implemented more than 50 EU projects worth over € 200 million, and is currently active in 65 EU projects worth over € 250 million.

Smart City Strategy development is a process currently ongoing in Timisoara which shall produce results by the end of 2021. The process is an excellent example of public engagement because the citizens can participate via online forum and regular workshops complementing the process. The strategy is linked to the Regional Operational Programme 2021-2027 of the West Region because it shall follow the guidelines in the recent supporting document (published in April 2021) that highlights the main axis of the development of Intelligent Cities. Although the supporting document has been developed explicitly for the towns in the West Region, the presented concept can be directly applicable in Hungary, as well.

The intelligent city is defined as the one that uses „smart” services in the everyday life for meeting the needs of the citizens and of the businesses. The smart services are provided through smart technologies - products, equipment or components containing data processing units, sensors, are programmable and have the ability to connect to the Internet or other data networks, being used for the purpose of collecting data from the environment, fulfilling received orders, transmitting and receiving data and interaction with humans or other systems or equipment.

The smart city is a result of implementing intelligent solutions in all the sectors of human life. According to the European Commission⁷, the six pillars of a smart city are: Smart People, Smart Environment, Smart Economy, Smart Governance, Smart Mobility and Smart Living.

⁷ Mapping Smart Cities in EU, Directorate-General for Internal Policies of the Union (European Parliament)

The course of action planned by the City of Timisoara in order to be “smart” is described in the Support document (draft) for the Regional Operational Programme 2021-2027 of the West Region. In this context, Timisoara intends:

- To create smart governance: easy access to public data, online payments, management of public consultation processes, applications for the city administration; cloud storage services, various tourism applications; coordination and relationship applications for the real estate owners' associations. Mainly, the city will use Big Data and geo-spatial technologies (like GIS) for supporting the public decision and will put in operation a virtual public servant. Application will be created to offer useful information on sites for fun and relaxation, city sights, restaurants, public transportation routes, parking possibilities, non-stop pharmacies, ATMs, etc.
- To create smart economy: applications for issuing documents online; ensuring interoperability and security of applications; support applications for pooling resources. It will include also virtual platforms containing GIS information for investors regarding available spaces and lands.
- To create a smart environment: smart recycle bins connected to apps in order to monitor how full they are; platforms for encouraging the circular economy by involving relevant actors. Monitoring and streamlining the operation of the municipal infrastructure (water, waste, gas, electricity) will be performed through a sensor system and GIS databases while Internet of Things (IoT) will be used for smart metering the utilities. Sensors will be placed on the ground and in the air to warn when the pollution threshold is exceeded, sensors and GPS receptors will be used for smart waste bins and for locating the selective collection bins.
- To create an intelligent accessibility and mobility system: an integrated application of the multimodal transport system that recommends the best route to reach the destination by indicating the type of transport, duration, price and environmental impact. The city will implement applications to monitor the charging stations for cars or electric bicycles and scooters, to monitor the parking spaces based on sensors or video cameras. There will be smart parking meters and IT applications which inform about the availability of parking spaces, guidance to the parking place and allows payment by phone or smart watch. The pedestrian traffic will be made more fluent by correlating the traffic lights with the onsite traffic. Public transportation means will use on-board equipment for providing real-time information on panels in vehicles and user stations. Route planner and trip customizer will be available on interactive maps, along with the possibility of paying a ticket or a subscription in the application. The bonuses granted for the use of public transportation will be registered automatically in a mobile application. For all these, statistical data will be generated.
- To create intelligent human resource: raising the overall level of knowledge of the smart technologies thus facilitating towards a smart administration. The city will build and implement applications to encourage the participation of citizens in decision making and the community life by online collecting the opinions, the feedback and ideas of citizens related to the development strategies, urban plans, etc. A lifelong learning platform will be put in operation in order to develop people’s skills related to the new challenges of the city.
- To create a smart living system: face recognition and registration for fighting against criminality, real time emergency applications for citizens, a digital platform for medical services, museum guides on smartphones. The city plans to develop or acquire an e-health and social protection app, to develop an online platform integrated with mobile applications providing information about events, tourist objectives and itineraries, competitions,

gastronomy, weather, etc. Intelligent applications at school level will integrate course schedule, online learning, adaptive learning and counselling. Smart solutions for building security and consumption monitoring will be created.

Timisoara has a strong connection with university partners, which together have more than 70 research institutes and centres. Consequently, this network can bring research results into practical applications. Existing/prior initiatives of the city that represent practical examples of innovative actions with responsible character:

- implementing a smart adaptive traffic management system equipping 134 intersections, 230 new surveillance equipment, as well as software to control all major intersections remotely;
- the first Smart Parking solution in Romania implemented in the city centre;
- recently the Municipality of Timișoara received government funding and will install 16 fast charging stations for electric vehicles;
- 21 new modern large capacity trams specially built for Timisoara purchased with European funding with a capacity to run autonomously on batteries for 63 km;
- 44 new large capacity electric buses, 15 fast and 44 regular charging stations in tender with European funding;
- Timișoara City Hall has publicly assumed its objective to fully digitise local public services by 2022;
- The Municipality of Timișoara implemented a Smart Lighting pilot where 50 LED lamps and controllers were installed making it possible for the local authority to control them remotely. They are scaling up the project with European funding with a new remote management system and 25 major streets and parks;
- Timișoara accessed European funding for energy efficiency of 182 buildings;
- Timișoara was awarded the title of European Capital of Culture and expects 1 million tourists in 2021;
- in 2017, the Municipality of Timișoara, in a joint partnership with Continental Automotive and Orange, installed a Smart Wi-Fi in the city centre. The Smart Wi-Fi, besides offering free internet access, is capable to create a traffic map, as well as count all passing by visitors. The Romanian Smart City Association awarded this project the title of “Best Smart City Project of the Year.”;

Timișoara implemented the CH4ALLENGE (<http://www.sump-challenges.eu>) project, addressing key challenges of sustainable urban mobility planning, financed by Intelligent Energy Europe.

Innovation in RIS3

Focusing on Csongrad county and the neighbourhood, we can find a Regional Innovation Strategy (RIS3) for the West Region of Romania, a Smart Specialisation Strategy under approval in Serbia, an S3 and several innovation-oriented organizations in Hungary. Moreover, in all the three regions there are strong clusters or cluster associations that can contribute to the development through responsible innovation.

The industrial infrastructure of the region is developed and diverse. It includes IT&C, automotive, machine building, electronic parts, wood processing, chemical and pharmaceutical industries as well as textiles and food. As results from the European Cluster Observatory assessment, there are territorial disparities in industrial concentration, the average turnover, in employment and wages.

The region is an important attractor for Foreign Direct Investments (FDI) due to its existing industrial base, offering a breeding space for research and innovation. There are clear signs of public policies and private efforts but, due to financial constraints, the investments in R&D are still low – there are exceptions like the science and research infrastructure.

The region is considered to have a relatively highly skilled population, due to the existing universities and their specialization in medical science, natural sciences, economics, mathematics, computer science, food engineering and agriculture. The average education level of the workforce converges towards Europe, with accents on the research staff. Universities have started to invest in technology transfer, but such investments are yet in early stages with minor focus on creating new products and processes in firms. Universities and companies have significant gaps in their collaboration, due to multiple reasons such as lack of trust, unclear or inappropriate offer of R&D providers, organisational cultures, timetables and expectations about the curricula.

An important role in the regional innovation landscape is assumed by the clusters. There are smart specialisation clusters in the fields of IT&C, automotive, sustainable construction or energy efficiency, all characterized by different degree of maturity. The IT&C clusters are among the most developed, being close to the high level. That leads to digitalization-oriented innovation emerging in the region.

In this context, one of the challenges is to improve communication between clusters, clusters and public authorities and other players in the ecosystem. Another challenge is to use the innovation power of SMEs and improve their entrepreneurship culture towards responsible innovation. According to RIS3 and regional policy documents, there is a need to speed up the economic development by integrating innovation and knowledge into the public policies and current activity of the enterprises. Due to the economic, structural and organizational prerequisites, the innovation development is and will be based on the traditional industries: IT&C and automotive.

2.4.11 Road to the vision – impact path

The discussion between the participants of the workshop produced several results for both projects TetRRIS and DIH-World therefore the workshop can be considered particularly successful.

- The RRI concept has been introduced to the participants and they were ready to discuss their experience which make it possible to identify areas of potential RRI actions.
- The presented ongoing activities and planned actions of local stakeholders have already some elements of RRI included which can be further developed within the DIH-World project.
- DUTIREG is committed to creating the roadmap for implementing Digital Innovation Hub in Szeged (which is a DIH-World result). It shall follow the open innovation process and public engagement shall be an important element (which is TetRRIS result).

- The participants have learned about the good practices and practical examples from the West region which makes it possible to implement knowledge transfer from the town of Timisoara toward Szeged, including their agglomeration zones.

Based on the proven model of the workshop, further knowledge transfer can be made from Cantabria, Karlsruhe and Tampere toward Szeged in similar way within TetRRIS project actions in the next months.

In order to achieve a road to the vision and an impact path for DIH-World pilot, a whole series of prerequisites have to be created for which currently the first steps are not always apparent in all cases: these include, among other things, the development of cluster potentials along the defined themes, the equipment of the already existing and, if applicable, the emerging clusters with a high-performance cluster management, establishment and support of an intensive networking of the clusters in order to raise the cross-cluster potentials. This is essentially the prerequisite which would allow implementation of the existing strategy using the cluster potentials. To this end, the focus is on the attainment of the regional aims by using clusters as a proven instrument for an active creation, influencing and structuring of regional strategies and their adoption in the field. In the framework of these activities and for their proof and assessment, the region will offer their ecosystem as a test bed in the form of a living lab for new business models and innovative solutions that will promote the smart and sustainable growth of the regional economy in key priority platforms.

1. Creating RRI-related podcasts and video material with easy-to understand key RRI-messages and advantages

Timetable: November 2021 – August 2022

Actors/organizations/networks to be involved: DARINNO in cooperation with regional clusters and local non-profit communication agency

2. DIH-World partner clusters shall distribute information materials about the RRI among their members followed by structured online discussions.

Timetable: Oct.-Dec. 2021 – distribution / Jan.-June 2022 – follow-up online discussions

Actors/organizations/networks to be involved: STEPP, ArchEnerg, Építő-KIT, MIÉNK, IKOSZ member clusters + clusters in West region of Romania

3. DIH-World partner clusters shall be invited to TetRRIS activities in order to continue regional involvement in transnational cooperation

Timetable: from January 2022

Actors/organizations/networks to be involved: STEPP, MIÉNK, AutomotiVest, ICT Regional Cluster (RO)

4. Integrating RRI in regional innovation services by DIH Business Plan (key deliverable in DIH-World)

Timetable: Nov. 2021 – April 2022 partnership with regional stakeholders / May 2022 – Initial start of DIH functions / April 2023 – Review of operation for improvements

Actors/organizations/networks to be involved: DUTIREG in cooperation with regional stakeholders

5. S3 training with RRI in focus – practical online education to cluster managers and economic development professionals

Timetable: from September 2022 – 3-month online training (twice yearly from 2023)

Actors/organizations/networks to be involved: IKOSZ member clusters

6. Integrating RRI in European DIH cooperation between Szeged and Timisoara – cross-border concept and pilot implementation

Timetable: November 2022 – initial agreement / from 2023 – joint projects in Horizon Europe

Actors/organizations/networks to be involved: DARINNO, University of Szeged, Tehimpuls Association, Regional Development Agency of West region

7. RRI community of professionals – supporting RRI with knowledge and experience generated by TetRRIS partners

Timetable: start of networking function from 2023

Actors/organizations/networks to be involved: IKOSZ, EMFIE and other relevant national networks in Hungary

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