



Deliverable 2.4: Regional Responsible Research and Innovation (RRI) Maps



TRANSFORM

Deliverable description

Deliverable:

D2.4: Regional Responsible Research and Innovation (RRI) Maps

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Science for Change

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Summary.

Chapter 1 describes the task 2.2 to which the deliverable is related.

Chapter 2 defines the objectives of the analysis, which are essentially to analyse the elements of citizen participation present in the R&I governance structure of the three regions in order to show (in a subsequent analysis at the end of the project) how the activities carried out in TRANSFORM have introduced changes in it towards a greater deepening of RRI and citizen participation.

Chapter 3 describes the methodology used for the analysis, which is based on a keyword search of key R&I planning documents in each region (in addition to other complementary documents and data sources). This methodology has a limitation in that it only includes the elements that are formally reflected in these documents (possible informal elements that may be present and that have not been documented have not been analysed).

Chapters 4, 5 and 6 elaborate on the mapping of RRI elements and public participation in each region. For each region the analysis starts with a reflection on the current status of the different part of the governance structure on which each region is working within TRANSFORM; it is complemented secondly by an analysis of other parts of the governance structure on which the region is not particularly working within TRANSFORM but which can benefit from mutual learning.

Chapter 7 presents the conclusions of the analysis and the possibilities for mutual learning in the regions.

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1. Task description

DURATION: M1-M34 TASK LEADER: SfC; PARTICIPANTS: All partners.

Activities of all regional clusters involved in TRANSFORM start with mapping of their current territorial R&I ecosystem. The mapping phase takes into account specific regional information, such as sociodemographic variables, and complement existing mapping exercises such as the Smart Specialisation Platform (S3), the European Cluster Observatory, the Regional Innovation Scoreboard and the MARIE Interregional RRI Mapping. Besides data already available, TRANSFORM clusters will map and measure the level of openness, democratic accountability, and responsiveness to need of their R&I ecosystems, paying particular attention to RRI indicators on gender equality, science education, open access/open data, public engagement, and ethics. This exercise will result in an enhanced map of regional innovation, the Regional Responsible Research and Innovation (RRI) Map. Regional Responsible Research and Innovation (RRI) Maps will be produced for the three regional clusters involved in the project (D2.4 Regional Responsible Research and Innovation (RRI) Maps). These maps will contribute to showing efforts which TRANSFORM regional R&I ecosystems are performing towards the inclusion of RRI elements within their R&I activities and funding and will serve as an inspiration for existing innovation scoreboards which would benefit from integrating RRI indicators.

2. Objectives of the analysis

The analysis has been based on one of the most important findings of Deliverable 7.1 (WP Monitoring & Evaluation) which is that the TRANSFORM project focuses mainly on the public participation dimension of RRI. This has led us to focus the analysis on this aspect, leaving aside the other dimensions (gender, open science, science education, ethics, governance).

The objectives of the analysis are as follows:

- a. Show how governance structures, instruments and tools in regional R&I policies encourage or allow public engagement in R&I processes and projects;
- b. Show the specific regional methodological approaches;
- c. Show the efforts which TRANSFORM regional clusters are performing towards including and improving public participation within R&I activities and funding (a second mapping will be performed at the end of TRANSFORM);
- d. Discover improvement opportunities and needs with the aim of improving how the regional R&I governance structures, its instruments and tools encourage public participation;
- e. Find differences and commonalities between clusters that could inform the mutual learning and capacity building process within TRANSFORM.

3. Methodology of analysis

3.1 Keyword analysis

The present report is based on the analysis of the formal aspects cited in the planning and implementation documents of R&I policies in the three TRANSFORM regions. Specifically, a keyword analysis has been carried out, i.e. a search and evaluation of the concepts related to RRI and public participation throughout the mentioned planning and implementation documents.

This approach has a relevant limitation in that it does not capture processes that may occur at the informal level or through channels not specifically listed in the documents.

3.1.1 Inventory

For each region, an inventory of the R&I governance structure has been performed, aimed at clarifying the key elements and main actors of the R&I ecosystem and identifying the specific documents on which to carry out the analysis (the list of documents used for the analysis can be found in the specific chapters for each region). The inventory was then reviewed and improved by the cluster members, especially the governmental partners.

3.1.2 Keyword analysis

On this basis, a keyword analysis was carried out. The analysis consisted in a search for and evaluation of concepts related to RRI and public participation throughout the documents.

The analysis consisted of searching for and counting the frequency of occurrence of terms related to RRI, especially citizen participation. For this search, the computer search tool was used and the results were collected in a specific document (Excel format): the frequency of occurrence of the word or group of words was reflected in it, as well as the paragraphs in which the words appeared, in order to facilitate their subsequent analysis.

In order to select the keywords to be searched for, a brainstorming exercise was first carried out. The first search for words led to the conclusion that there were concepts that in themselves referred to a profound notion of citizen participation; others, despite being related to it, could refer to citizenship as a recipient or as an ultimate goal but without necessarily referring to including their participation in the processes. This led to the need to classify the words into 3 main categories:

- **High relevance:** key concepts of RRI and public participation, which in themselves imply a high level of power and depth.

Public engagement, public participation, RRI, AREA framework, bottom-up, quadruple helix

- **Medium relevance:** concepts that are related to RRI and public participation but imply a medium level of strength. A further analysis of the sentence is needed to extract to what extent the concepts are indeed making reference to a strong and profound notion of citizen participation.

Stakeholder engagement, co-design, co-creation, social innovation

- **Low relevance:** concepts that include notions of RRI and public participation, but not in a strong way.

Societal challenges, social cohesion, social inclusion, public consultation, citizens, citizenship

- **Region-specific concepts:** other strong concepts that each region uses to develop RRI and public participation.

Catalonia: shared agendas

Brussels-capital: social innovation

Lombardy: Open Innovation



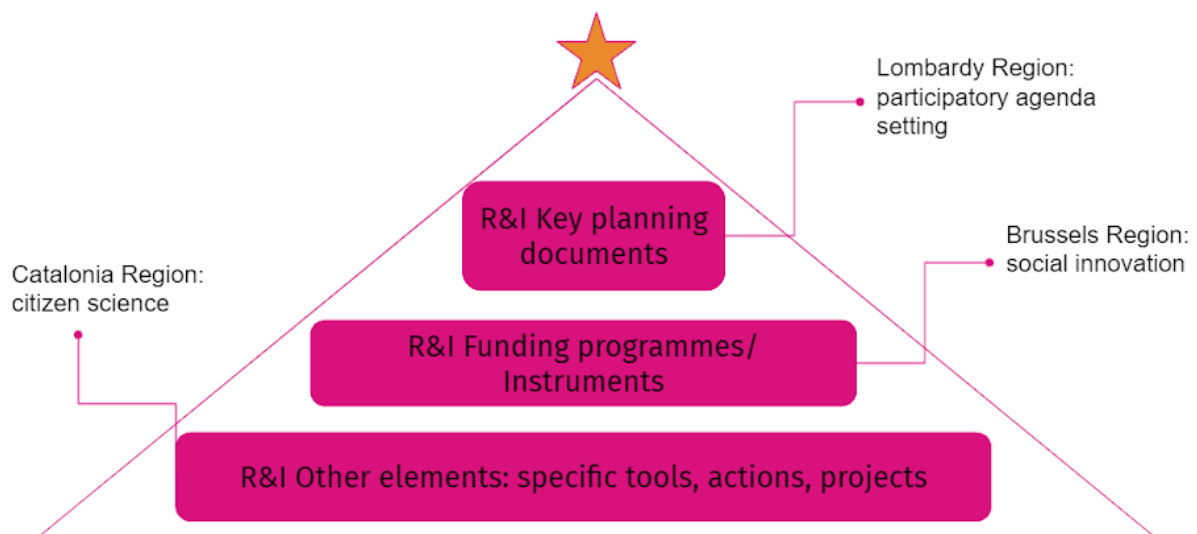
3.2 Time horizon

As the objective of this exercise is primarily to show the efforts which TRANSFORM regional clusters are performing towards including and improving public participation within R&I activities, the present analysis refers to the state of R&I before TRANSFORM (until 2020 or in some cases 2021). A second analysis at the end of the project (2022) will show what changes TRANSFORM has effectively brought about in the R&I governance structure.

3.3 Analysis structure

Each region in TRANSFORM is experimenting with a different participatory methodology and, as shown in the picture below, aims to influence a different element of the governance structure (the planning documents, the implementation phase through instruments or funding programmes, etc.).

For each region, an analysis of this dimension has first been carried out. This means that the pre-TRANSFORM state of the particular element of the governance structure chosen by each region is analysed first.



Secondly TRANSFORM is interested in knowing to what extent the whole R&I governance structure effectively encourages public participation, i.e. to what extent public participation

is contemplated and encouraged in the key documents and the different practical planning implementation instruments, programs, specific tools, actions, etc.

4. Lombardy region RRI mapping

4.1 Lombardy cluster

The Lombardy cluster within TRANSFORM is composed by three institutions:

Fondazione Giannino Bassetti: Coordinator of the TRANSFORM project and cluster leader for Lombardy.

FGB was founded in 1994 and has promoted responsibility in innovation within the technosciences, entrepreneurship and governance since more than 25 years, acting as a pioneer CSO in fostering the concept and the practice of RRI. Mobilizing and consolidating communities of practice, Fondazione Giannino Bassetti promotes cooperation between the drivers of innovation, weaving networks between research sites, industrial players, civil society and institutions, creating transverse and cutting-edge relationships.

Since 2017 Bassetti Foundation coordinates the activities of the Lombardy Region Forum on Research and Innovation, introduced by Regional Law 29/2016, and composed of 10 highly qualified experts in the relationship between science and society, selected through an international public procedure. Fostering the concept and the practice of RRI, FGB is contributing to shape the R&I policies towards a more open, inclusive and responsible approach, both at the local and the international level.

Lombardy Region (LR) - Directorate General for Research, Innovation, University, Export and Internationalization of Enterprises

The Directorate supports research in emerging sectors, promoting the transfer of results to the market, and supporting innovation throughout LR, to increase the well-being of citizens and the competitiveness of the economic-social system.

The initiatives and interventions are part of the framework designed by Regional Law no. 29 of 23 November 2016 "Lombardy is Research and Innovation", which structures the governance of the regional research system (through the Three-year Strategic Program for Research, Innovation and Technology Transfer), tracing the priority development lines in this area, identifying the enabling factors to strengthen the innovative capacity of the territory and strengthening the research and innovation infrastructures for technology and

knowledge transfer, in connection with national and European policies. A continuous dialogue with the local actors of the R&I process (companies, citizens, universities and research centers, technological clusters, etc.) is central in Lombardy R&I policies.

Lombardy Region participates actively in different interregional networking activities such as the Vanguard Initiative, the political network of European regions committed to promote the implementation of the Smart Specialisation Strategy and S3 Thematic Platforms launched by European Commission. Lombardy Region takes also part in other interregional networks.

Finanziaria per lo Sviluppo della Lombardia - Finlombarda SpA

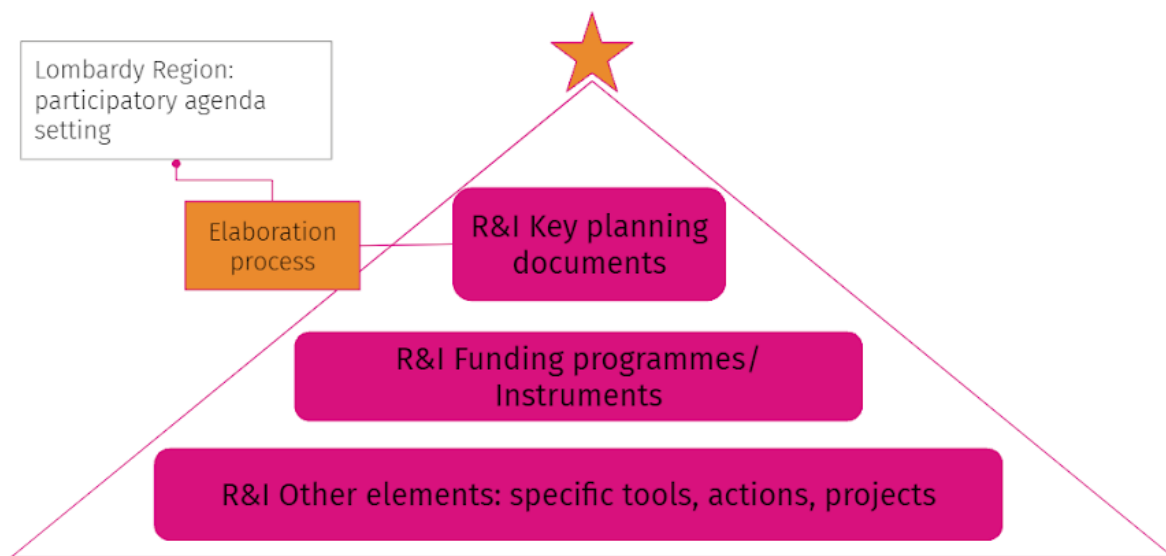
Finlombarda – Finanziaria per lo Sviluppo della Lombardia S.p.A. - is a financial company fully-owned by Regione Lombardia. The company is in charge of structuring and implementing innovative financial initiatives of public finance on behalf of the Region, through the deployment of regional and EU resources as well as through its own resources. Finlombarda S.p.A. promotes competitiveness, growth, innovation, co-operation and internationalization of Lombardy's entrepreneurship through regional and European fund management, business services (Enterprise Europe Network services) and territorial development support.

Finlombarda acts as main advisor of Lombardy Region for setting-up regional Research, Innovation and Competitiveness policies.

Thus, from 2012, Finlombarda supports the main DGs (DG Research, Innovation, University, Export and Internationalization of Enterprises DG Economic Development) to design, implement and update strategic regional programmes and plan such as the Smart Specialisation Strategy (S3) and the Strategic Three-Year Programme for Research, Innovation and Technology Transfer, taking into account the specific territorial peculiarities. In particular, Finlombarda has supported Lombardy Region to involve territorial stakeholders during the S3 design and implementation phase.

4.2 General approach to the mapping exercise for the Lombardy region

Within TRANSFORM, Lombardy region is working on co-designing the “Strategic Three-Year Programme for Research, Innovation and Technology Transfer” (from now on Strategic Programme for R&I) together with citizens and local stakeholders. The specific regional approach is participatory research agenda setting; thus, regarding governance structure, the specific focus is at the elaboration process of the key planning documents (see picture below), specifically the Three Years’ Strategic Plan for research, innovation and technology transfer.



The specific regional approach leads us to focus the analysis in two main aspects:

- a) **The change in R&I key planning document elaboration practices (the specific part of the R&I governance structure in which Lombardy is working within TRANSFORM).** to show (in a further analysis) how the participation in TRANSFORM has modified them through the introduction or improvement of innovative public participation methodologies.
- b) On the other hand, an **analysis of the R&I governance structure in general** is carried out to assess to what extent public participation is contemplated and encouraged in the **key planning documents** themselves and the different implementation **instruments and programmes**.

4.3 Lombardy specific regional approach in TRANSFORM: Public participation in key planning documents elaboration

The Lombardy Regional government sets the strategic research and innovation policy priorities mainly through two planning documents: the Smart Specialisation Strategy (S3) and the Strategic Programme for R&I.

4.3.1 Coming from the past: the elaboration process of “The 2014-2020 S3”, “The 2021-2027 S3” & “The 2018-2020 Strategic Programme for R&I”

The 2014-2020 S3: LR developed its first S3 for the programming period 2014-2020. The design phase was run through a process of stakeholders’ consultation which entailed:

- the involvement of specific regional stakeholders (the so-called Regional Technology Clusters, representatives of large companies, SMEs, Universities, etc.) in *ad hoc* meetings.
- an online public consultation (survey) in 2013, other consultations were then organized for the S3 updates. Indeed, stakeholders such as the Regional Technology Clusters, the representatives of large companies, SMEs, social partners, and citizens (according to the Quadruple Helix approach) were invited to take part in the consultation to identify themes of technological development.

The 2021-2027 S3: the process was characterized as open, inclusive, transparent and democratic, in line with the modalities of responsible research and innovation, and was developed in three phases: the first one related to the SWOT analysis, the second one initiated the entrepreneurial discovery process (EDOP) and the third one focused on the strategy action plan.

The internal and external participatory process of defining the S3 2021-27 involved, on the one hand, the organization of a public consultation and, on the other, a calendar of meetings with local stakeholders (citizens, trade associations, Lombardy technology clusters, etc.) and with those of the regional system (the General Directorates, agencies and companies of the system) using new formats and models of remote collaboration, exploiting the potential of technology.

The public consultation opened from July to September 2020 on the Open Innovation Platform gained the participation of more than 650 SMEs, economic operators, research centers and professionals, citizens (52% individual citizen, 25% companies, 14% intermediary that supports SMEs in the innovation process - research organizations, universities, etc., and 9% professionals and consultants) who have expressed their views on obstacles, opportunities and new challenges to the process of dissemination of innovation and competitive growth of the territory.

The 2018-2020 Strategic Programme for R&I: The process developed for the Strategic programme for R&I consisted in a process promoted by the regional government and implemented mainly thanks to the Open Innovation Platform. Two stakeholders' consultations were launched in 2017 and in 2018 and involved 1500 participants. In 2017 the consultation provided elements and priorities to the regional government to prepare the guidelines to prepare the Strategic Programme. The second public consultation process for the drafting of the Program started on 30 March 2018 and concluded on 30 April 2018. In this round, the Lombardy Region turned to the players in the supply chain and the citizens to ask them for contributions to the drafting of the Program. The results helped the Region to refine the priorities for action in research, innovation and technology transfer: therefore, to build a long-term look, to carry out targeted, shared and above all actions built on the needs of people and the specificities of the territory. The Regional Forum for Research and Innovation was involved in the draft specially to insert RRI as a founding principle.

As an important element, it should be noted that the public consultation showed that 78.7% of participants believed that citizens should be involved in co-design, in the choice of the ecosystems and in the drafting of the subsequent 3-year Strategic Programme (2021-2023).

4.3.2 The expected future: Participatory agenda-setting in the 3 Years' Strategic Programme for R&I 2021-2023

TRANSFORM played a relevant role in the co-design of the 3 Years' Strategic Programme for R&I 2021-2023. In fact, the aim of TRANSFORM in the Lombardy cluster was to set-up and carry-out a multi-stakeholder engagement process through participatory research agenda setting approach to include concrete suggestions, visions and opinions from citizens and local stakeholders in the next Lombardy Region Three Years R&I Strategic Plan, to be also

aligned with the new regional S3. The concrete result of a careful planning of the TRANSFORM activities was to focus on the research and innovation needs of Lombardy citizens'. To achieve this target, a mix of quantitative (a telephone and web-based survey engaging around 1000 citizens of Lombardy Region) and qualitative methods (a deliberative online workshop involving a small group of Lombardy citizens) was selected as participatory approach for the regional research agenda setting.

4.4 General overview: public participation in the Lombardy region R&I governance structure

4.4.1 Public participation elements in R&I legislation and key planning documents

This section analyzes the extent to which RRI (especially concepts related to public participation) is reflected in the following planning documents:

- [Regional law no. 29 of 23 November 2016 "Lombardy Is Research and Innovation"](#): the legislation document that aims to foster, support and promote the Research and Innovation ecosystem of the Lombardy Region.
- [2014-2020 S3](#): key planning document that defines the framework from which the Government develops the actions and R&I programs for the period 2014-2020
- [2021-2027 S3](#): key planning document that defines the framework from which the Government develops the actions and R&I programs for the period 2021-2027
- [2018-2020 Strategic Programme for R&I](#): key planning document that specifies all the regional interventions foreseen for the 2018-2020 period.

The RRI concept is specifically mentioned in three of the four key planning documents (Regional law no. 29 of 23 November 2016 "Lombardy Is Research and Innovation; 2018-2020 Strategic Programme for R&I) and extensively developed in the last one.

The Regional law no. 29/2016 introduced both a new form of regional innovation governance and related strategic support tools into the regional system of research and innovation. Responsible Research and Innovation (RRI) has been enshrined in the Law as one of the funding principles. Indeed, the law specifically mentions the will to promote "the

culture of research and responsible innovation, including through the dissemination of knowledge in the Lombardy business fabric, experimentation and dissemination of innovative methods and processes aimed at optimizing the production capacity of companies operating in traditional sectors”.

Comparing the S3 documents, it can be seen that the RRI concept did not appear in S3 2014-2020, while it is specifically mentioned in S3 2021-2027 (16 times). It’s a key element in the “Regional R&I governance” chapter and is also considered as one of the transversal priorities of the Strategy and one of the main Actions to develop. Enabling action to strengthen the Lombardy research and innovation system through the RRI and Open Innovation paradigms; The TRANSFORM project is mentioned as an example of the region's efforts to include citizens in the R&I decision-making process.

The 2018-2020 Strategic Programme for R&I mentions RRI at least 11 times and does so in key parts of the document (introduction, summary, methodological approach and governance, etc.) which shows that this is a key element on which the practical development of all planning is intended to be based. It is worth noting that “consolidating the system of governance and responsible innovation” is defined as one of the immaterial enabling factors of R&I in the region. On the other hand, “Technology and knowledge transfer, RRI and relations between universities, enterprises, research centers and citizens” is one of the 5 major development areas defined in the document.

FATTORI ABILITANTI	INFRASTRUTTURE MATERIALI	INFRASTRUTTURE DI CONNETTIVITÀ	Copertura territoriale di banda larga e reti per telefonia mobile, banche dati e piattaforme di aggregazione, infrastrutture per sistemi di cloud computing, sistemi di data storage, supercomputing
		INFRASTRUTTURE DI MOBILITÀ	Infrastrutture logistiche, connessioni aeree, alta velocità ferroviaria, trasporto locale e intermodale
		INFRASTRUTTURE DI SISTEMA	Investimenti nella modernizzazione della PA
	FATTORI IMMATERIALI	MODELLO DI TRASFERIMENTO TECNOLOGICO	Poli di tecnologia e innovazione, laboratori congiunti università imprese, incubatori verticali
		CONTESTO LEGISLATIVO, FISCALE E FINANZIARIO	Struttura regionale di cofinanziamento e portale delle opportunità di finanziamento
		SVILUPPO DEL CAPITALE UMANO E SOCIALE	Incentivi fiscali per corporate venture, investimenti in università e start-up, aree di contaminazione
		SISTEMA DI GOVERNANCE ED INNOVAZIONE RESPONSABILE	Programmi di innovazione e imprenditorialità nelle scuole, formazione continua degli adulti, borse di studio per l'attrazione di talenti specializzati
		Rafforzamento di percorsi e strumenti di coinvolgimento attivo di cittadini e attori del territorio in tema di innovazione	

Figura 5. Schema riassuntivo dei fattori abilitanti dell'innovazione, materiali e immateriali, declinati in base all'ambito di azione, con le relative direzioni di intervento. Fonte: elaborazione TEH-A, 2018

Another concept that is highly relevant in the region is Open Innovation. It appears 10 times in the 2014-2020 S3, 4 times in the 2018-2020 Strategic Programme for R&I (22 when reference is made to the Open Innovation Platform which, as we shall see, is a tool set up by Lombardy Region to strengthen its governance capacity) and 4 times in the S3 2021-2027 (30 when reference is made to the Open Innovation Platform). In the 2018-2020 Strategic Programme for R&I, Open Innovation is one of the 5 major areas of development to which to anchor the Lombardy Region's vision of the future:

“The transfer of technology and knowledge and relations between universities, businesses, research centers, citizens and public administration. In this respect, a context of lively technological and knowledge exchange supported by the availability of capital and skills, according to the Open Innovation model, is essential to encourage private investment in innovative technology start-ups, including High Tech Social Enterprises and Social Tech more generally”

4.4.2 Public participation elements in specific funding programmes & instruments



This section analyzes which specific R&I programmes/instruments embed RRI and public participation elements.

The 2018-2020 Strategic Programme for R&I 2018-2020 defined two lines of action to stimulate R&I in the region.

a. invest in experiments and strategic projects on disruptive innovations: the experiments and strategic projects (SPS) represent driving initiatives for the development of the Lombardy system in specific development areas. They are a key element at the strategic level. They do not represent financing instruments directly aimed at beneficiaries, but upstream structures from which the specific actions to be developed are defined.

b. invest in actions and tools that contribute transversally to the development of local development of the territory's ecosystems: in addition to experimentation and strategic projects supporting individual Development Areas, the Lombardy Region provides transversal support to the ecosystems active in the territory through specific actions and tools that represent the central element of the ERDF POR.

4.4.2.1 Experiments and strategic projects

The 2018-2020 Strategic Programme for R&I defines 12 SPSs, of which 2 are particularly framed in the perspective of social impact, public participation and alignment of policies with social needs.

Technology and knowledge transfer, RRI and relations between universities, businesses, research centers and citizens	
<i>SPS1 - Regional Innovation Academies</i>	They are informal groupings of actors to develop innovative proposals for community, social and economic development. The Academies bring together a plurality of subjects, knowledge and skills in an informal and unstructured environment, with the aim of developing innovative proposals on sensitive areas for the public.
<i>SPS2 -Regional support pathway to RRI: Enhancement of research &</i>	Starting from tools already implemented (e.g., Open Innovation platform), enhancing others being implemented (e.g., Data Analytics platforms) and further

<p><i>innovation initiatives, increasing the transparency of PA and participation of society in programmatic choices</i></p>	<p>enhancing the role of the Forum for Research and Innovation, the Region intends to enhance initiatives in the field of research and innovation, increasing transparency in the work of the public administration and the participation of citizens and society as a whole in planning decisions.</p>
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4.4.2.2 Actions

<p><i>Action I.1.B.2.1: Concertation platforms and national networks of technological Specialisation</i></p>	<p>The resolution approves the 2016-2018 three-year program of initiatives that see in-house assignments to the regional companies Finlombarda spa and Lispa spa to continue the development initiatives of the regional Open innovation platform</p>
<p><i>Action I.1.B.1.3: Strategic Projects Line for the strengthening of the Lombard Ecosystems - Call HUB</i></p>	<p>It promotes strategic industrial research and / or experimental development projects (as defined in EU Regulation no. 651/2014) of particular added value and relevance in terms of strengthening the competitive and attractive capacity of the territory.</p> <p>The main strategic objectives of the initiative, to which the project proposals must contribute, are:</p> <ol style="list-style-type: none"> 1) facilitate relations between universities, companies, research centers and citizens and the systematization of strategic skills and excellence present in the area, in order to promote technology transfer and the use of new technologies to support the innovation process; 2) promote territorial hubs of knowledge, research and innovation with an international projection - understood as evolved forms of partnership which on the one hand integrate the three elements of the knowledge triangle (research, innovation, education) and on the other provide forms of involvement of end users (e.g., living lab) - favoring their strengthening and



	<p>their participation in international initiatives also with a view to mutual project collaborations;</p> <p>3) promoting long-lasting and sustainable development and competitive growth through the strengthening of the material, intangible and infrastructural endowments of research and innovation for technological maturation and the transfer of technology and knowledge."</p>
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4.4.2.3 Other specific tools

<p><i>Forum for Research and Innovation</i></p>	<p>One of the major innovations that has been introduced by Regional Law 29/2016 "Lombardy Is Research" was the establishment of the Forum for Research and Innovation to advise on, stimulate and support the responsible governance of regional Research and Innovation.</p> <p>The Forum is composed of 10 highly qualified experts in science, innovation and society relationship, selected through an international public procedure. The Forum has been serving for three years, from 2019 to the end of 2021.</p> <p>The Forum plays an important dual role: on the one hand, it contributes to fertilize the discussion on the regional governance of R&I policy with respect to changes in society, identifying new challenges for growth and anticipating the emerging needs of society to develop timely responses, and on the other hand it reflects on and develop new strategies to engage citizens in planning and implementing research and innovation at regional level, relying on experiences and evidences from Responsible Research and Innovation, Technology Assessment, Public Engagement, Open Innovation, Open Data, Social Innovation and Bio- and Data-Ethics.</p>
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<p><i>Open Innovation Platform</i></p>	<p>Is a collaborative Platform facilitating participation, sharing and collaboration of all actors of the innovation process in industry, research and society.</p> <p>Open Innovation Lombardia was founded with the aim of proposing a new regional innovation policy model within the ROP ERDF 2007-2013 and it was improved through the 2014-2020 ROP ERDF. It has been built so that “Government, industry, academia and civil participants can work together to co-create the future and drive structural changes far beyond the scope of what any one organization or person could do alone”. The Platform contains a set of tools and methodologies to support the creation of innovation ecosystems around strategic topics, it is "open" and inclusive, with very low entry barriers while ensuring a good quality of transactions through a methodology that relies on "facilitators" and "community managers".</p>
<p><i>Open Lombardia</i></p>	<p>The Lombardy Region, in order to support the identification of new needs imposed by the economic and social crisis triggered by Covid-19 launched during the year the initiative OPEN LOMBARDIA by opening up a shared discussion space on the regional Open Innovation platform, open to authoritative experts and the involvement of citizens, with the aim of identifying priorities, proposals and lines of action to respond appropriately to the new economic, social and technological context. In order to respond to the post-Covid-19 challenges, the Lombardy system researches and analyses good practices and models of excellence at international level, which can offer elements of inspiration and debate at local level.</p>



5. Brussels-Capital RRI Mapping

5.1 Brussels-capital cluster

The Brussels-capital cluster within TRANSFORM is composed by three institutions:

BE participation is the Belgian platform for citizen participation and the cluster leader.

Created in 2011, BE participation (BEpart) is a non-profit association based in Brussels. Grounded in a complex neighborhood in one of the most populated areas of Brussels, BEpart aims at fostering empowerment processes which enable disadvantaged inhabitants to be active and responsible citizens. BEpart offers lifelong learning opportunities, training activities as well as enables participatory processes with local policy makers and other associations.

Innoviris - the Brussels Institute for Research and Innovation –

It is the regional RDI agency founded in 2003 by the Government of Brussels Capital Region. The agency implements the Brussels-Capital Region's R&I policy and offers funding to help universities, research centers, private companies, local authorities, public sector, and non-economic actors in developing new products and services. Innoviris funds scientific research and technological innovation. Businesses, universities, colleges, research centers, local authorities, public sector, and non-economic actors in the Brussels-Capital Region can apply for financial support for research and innovation projects on economic or non-economic purposes. As regional administration in charge of innovation, Innoviris contributes to the regional R&I policymaking process (at the local, national, and European level) and works alongside with other R&I regional partners.

UCLouvain's 'Earth and Life Institute' (ELI-UCLouvain)

It is one of the research institutes of the Université Catholique de Louvain (UCLouvain) in Belgium. It engages over 300 researchers, covering a broad spectrum of scientific disciplines related with earth and life sciences. Their common aim is to achieve a deeper understanding of the basic processes of the Earth & Life system at different scales and to design sustainable solutions addressing some of the major challenges of our societies.

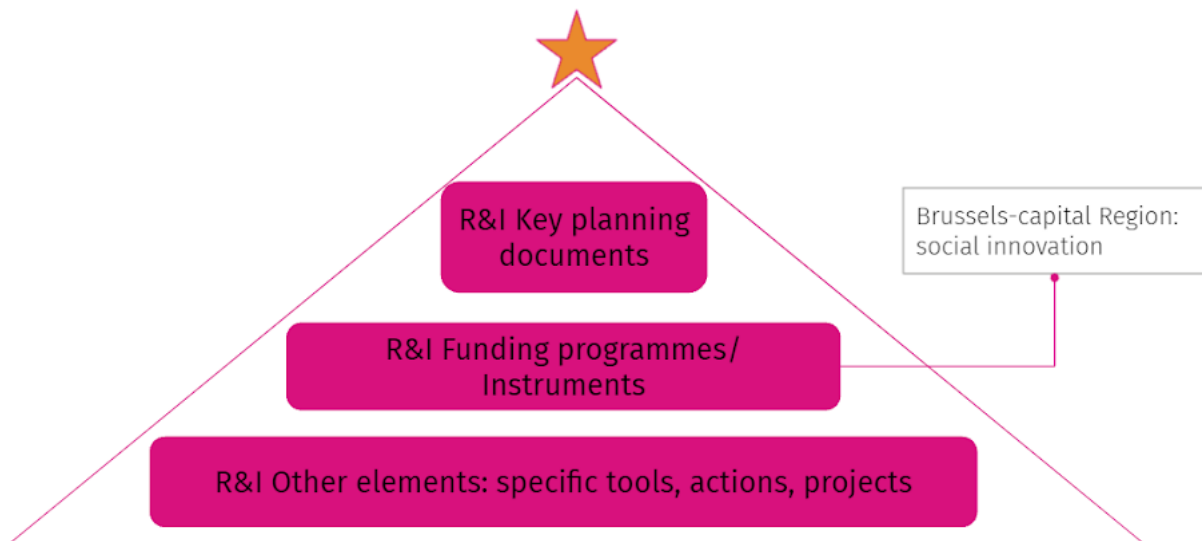
Expertise in Design Thinking applied to Social Innovation: ELI-UCLouvain focusses among other topics on technological and social innovation and the transition to an economy based on renewable natural resources and biodiversity into cluster activities. ELI-UCLouvain will develop the application of Design Thinking to the various phases of the pilot activities foreseen in the Brussels cluster, guaranteeing a high level of efficiency and social acceptability. ELI-UCLouvain takes the lead in the application of the Design Thinking approach to the social innovation processes that are being chosen to be at the heart of the pilot activities of the Brussels Cluster of TRANSFORM.

5.2 General approach to the mapping exercise for the Brussels-Capital region

The TRANSFORM cluster for Brussels-Capital region focuses on one key priority of the Brussels Region's territorial development: green economy, and more particularly, social innovations in Circular Economy.

The objective of Brussels cluster in TRANSFORM is to experiment with participatory methodologies and demonstrate their potential, so that they can be presented as case studies for other R&I programmes and tools in a cross-cutting manner.

The Brussels-Capital region cluster used the Design-Thinking methodology to define their pilot structure for social innovation in the circular economy: *Spheres* – Collective Intelligence in Innovation. The aim of the pilot is to experiment multi-stakeholders' participation practices, in science, R&I in the circular economy to influence policies in the matter, with a special focus on citizen participation. Thus, regarding governance structure, the specific focus of Brussels-capital is at the level of programmes and instruments.



The specific regional approach leads us to focus the analysis **on two main aspects**:

- a) **The integration of public participation elements in R&I instruments and programmes (the specific part of the governance structure in which Brussels-capital is working within TRANSFORM).** The aim is to show (in a further analysis) how participation in TRANSFORM has provided cases and tools to inspire more public participation and collective intelligence in R&I initiatives promoted by the region. At the Brussels-Capital region level, while applied research is managed only at regional level (Innoviris for Brussels), fundamental research is supported at the level of the Wallonia-Brussels Federation (FNRS) and at regional level (Innoviris). In addition to research policy in the strict sense of the word, with Innoviris as the main institution, there are other regional institutions that contribute to the R&I ecosystem: [Finance.brussels](#), the Regional Investment Company for Brussels, invests in Brussels businesses; [Citydev](#) offers hosting and incubation structures and ; [Hub.brussels](#) supports companies and stimulates the ecosystem through various sectoral clusters. The regional R&D policy of the Brussels-Capital Region is supported and implemented by Innoviris, the institute for the support of scientific R&I, founded in 2003 by the Government of the Brussels-Capital Region. The analysis will focus **on R&I instruments developed by Innoviris**, and not on other possible institutions funding or promoting additional R&I projects.
- b. On the other hand, an **analysis of the R&I governance structure in general will be carried out** to assess to what extent public participation is contemplated and

encouraged in the key planning documents elaboration process and in the key planning documents themselves.

5.3 Brussels-capital specific regional approach in TRANSFORM: Public participation in R&I programmes & instruments

5.3.1 Coming from the past: public participation elements in R&I funding programmes until 2021

The mapping exercise highlighted the fact that a number of RRI dimensions like citizen engagement, the ethics considerations, gender equality and the link with STEM education were present in programmes integrated in the previous PRI 2016-2020, but were not widely integrated across all programmes.

From the 23 main funding programmes of INNOVIRIS active in 2021, there are 4 clearly integrating RRI elements:

- [Co-create](#): since 2015 Innoviris has supported, through the Co-Creation action, the exploration, experimentation and production of co-created knowledge for urban resilience. It hosts over 24 small projects ranging from urban agriculture to fight for equality to energy management practices and presents a platform to connect, search for resources or present ideas.
- [Coopcity](#) aspires to become a key player in social entrepreneurship in Brussels and thus to promote another model of society based on viable, inclusive and participatory businesses at the service of citizens.
- [Prospective research programmes](#): projects within this programme question the urban complexity of Brussels and aim to exploit the results of research for the benefit of society. Although the calls do not include specific public participation elements, the programme focuses on social urban challenges, including evaluation criteria on social & environmental impact.
- [Experimental Platforms](#): this programme enables participating platforms to experiment and propose innovative solutions to help Brussels on its way to a sustainable future. The call is targeted at companies, non-profit organizations, research institutions and administrative authorities. Innoviris wishes to enable innovators to develop, experiment and test their products, solutions, concepts with end users. This action targets applied R&I projects carried out within living labs involving researchers, users and a user platform.

- [Prove your social innovation](#): The programme proposes validating the feasibility and viability of a new socially innovative product, process or service that meets a clearly identified social need.

4.3.2 The expected future: mainstreaming public participation in R&I funding programmes to boost social innovation

The new PRI 2021-2027 opens up ample opportunities for the inclusion of public participation in different R&I instruments and actions. Special emphasis is placed on social innovation as one of the tools for making R&I work to tackle social challenges.

The aim of TRANSFORM activities is to provide real cases and tools to inspire the region to integrate collective intelligence more widely in R&I initiatives promoted by the region. The Brussels-Capital region cluster used the Design-Thinking methodology to define their pilot structure for social innovation in the circular economy: *Spheres – Collective Intelligence in Innovation*. The aim of the pilot is to experiment multi-stakeholders' participation practices, in science, R&I in the circular economy to influence policies in the matter, with a special focus on citizen participation.

The pilot was designed to implement open and inclusive processes to better connect local research and innovation to societal needs. TRANSFORM partners in the Brussels-Capital region are doing so by selecting innovations (from technological and social innovations, to basic research) to be assessed through quadruple-helix engagement in a fast and agile way. The selected actors are invited to analyze, make suggestions and bring new forms of legitimate knowledge related to these innovations from their own perspectives.

The aim is to show that collective intelligence (quadruple helix involvement, cocreation, etc..) can bring new forms of legitimate knowledge to R&I, provide an opportunity to deepen into transversalities linked with the R&I, including potential unexpected uses of their R&I outcomes. The cluster will experiment multi-stakeholders' participation practices, in R&I in the circular economy with a special focus on citizen participation.

5.4 General overview: RRI & public participation in the Brussels-capital region R&I governance structure

5.4.1 Public participation in the elaboration process of the PRI 2016-2020 & 2021-2027

The PRI 2016-2020 was developed by the consulting office Technopolis together with the State secretary and Innoviris within 8 months. Firstly, documentary research was carried out, followed by a context analysis, SWOT analysis and then quantitative analysis. To the final development of the plan 70 persons were consulted in 49 interviews, accompanied by six workgroups with overall 142 participants. However, within this process, the focus was set not primarily on the citizens but on triple helix stakeholders (enterprises, universities, regional public institutions).

The PRI 2021-2027, has included a broad consultative component. To formulate the new PRI and RIS3, Innoviris built a steering Committee formed of various stakeholders and organizations representing different sectors (construction, finance, universities, environment, statistics). It has mobilized the known players of the Brussels innovation system (triple helix), but also new players less visible in this system (quadruple helix). This consultation has helped to forge a detailed understanding of the specificities of the Brussels field and guarantees the selection of DIS (Strategic Innovation Domains) deeply rooted in the broader R&I ecosystem.

These processes led to a map of Strategic Innovation Domains to prioritize. The purpose was to build a flexible and agile RIS3, having the capacity to transform the current sectors, taking into account the bottom-up needs as well as the top-down priorities.

Especially relevant for the TRANSFORM analysis is the fact that the DIS were “co-constructed” in an Innovation Camp by working groups: Around 60 participants from each part of the quadruple helix exchanged online for half a day.

The Innovation Camp led to a first proposal of 8 DIS and 3 transversal levers. Feedback from the participants as well as discussions within the Steering Committee helped to reduce the long list to 4 thematic DIS and 2 transversal DIS. Especially relevant is the DIS focused on the “social innovation, public innovation and social inclusion”.

5.4.2 Public participation elements in the key planning documents

This section analyzes the extent to which RRI (especially concepts related to public participation) is reflected in Brussels-capital’s key R&I planning documents.

The documents analysed are:

- [The Regional Innovation Plan \(PRI\) 2016-2020](#): Regional Innovation Strategy for Smart Specialisation that constitutes the reference framework for research policy as a lever for socio-economic development and well-being for the people of Brussels.
- [The Regional Innovation Plan \(PRI\) 2021-2027](#): new RIS3 for the period 2021-2027.
- [Memorandum Innoviris 2019-2024](#): document by Innoviris (not of a legal nature) that formulates concrete proposals to improve public governance. These clear proposals are based on the practical experience of Innoviris and aim to increase the economic and societal impact of research & innovation in Brussels.
- [Brussels Innovation Insights 2019](#) report on context, input and outcomes of the RDI (research, development and innovation) system
- [Innoviris activity report 2020](#) summary of the actions taken within Brussels capital by Innoviris in 2020
- [Parlons Chiffre \(2020\)](#) This document lists the projects funded by Innoviris in 2020 with the budget allocated to each initiative, (the document is analysed in the part above, "RRI elements in R&I funding programmes until 2021")

The Regional Plan for Innovation 2016-2020 already included some key-concepts concerning public participation, such as "bottom-up approach" (2 times) and "participative approach" (3 times). However, these concepts were not a central element throughout the document.

Regarding the PRI 2021-2027, the first element to highlight is that it emphasizes the alignment of R&I with societal challenges and impacts, which constitutes the key objective of RRI. In this respect, the new PRI has been defined as 'mission-oriented', also aligning itself with the European Framework Programme for Research and Innovation Horizon Europe 2021- 2027.

A strong evolution towards a greater regional commitment to public participation can be seen. This is demonstrated by the fact that, even if the concepts of RRI and public participation are not specifically mentioned, the concept "participative governance" appears 9 times throughout the document and does so in key parts (governance, monitoring). Indeed, the creation of an "inclusive and participatory society" is one of the "Six societal challenges" identified in the document. In this section, democratic and

participatory governance is mentioned as one of the keys to fight precariousness, polarization and the risk of social exclusion, and is therefore a central axis to be developed in R&I. The generation of a “social, cooperative and democratic economy and entrepreneurship” is also considered as a vector of socio-economic transition. Another key concept that also appears 9 times throughout the document is the “quadruple helix”. The mention of the ‘fourth helix’ aka the civil society shows that the region has a strong commitment to multistakeholder engagement, especially the inclusion of citizen participation within the R&I governance structure.

Other concepts such as open science, citizen science, living labs and co-creation are mentioned in another key document, the Memorandum Innoviris 2019-2024. These elements are all pointing towards more public participation and an opening of science towards the citizens. In fact, the Memorandum aims to formulate concrete proposals to improve the public governance of R&I. Of the 44 propositions included, many are specifically about public participation.

As mentioned above, the PRI 2021-2027 opens up ample opportunities for the inclusion of public participation in different R&I instruments and actions. Specifically, one of the actions planned to be funded is “Social Innovation, public innovation and social inclusion” which includes several lines of action to democratize R&I (see table below), with a special focus on the integration of underrepresented groups in the R&I governance structure.

<p>1.5.1 <i>Thematic calls for projects in the DIS "Inclusive society"</i></p>	<p>Encouraging and stimulating innovation through thematic calls for projects in the strategic innovation area "Social Innovation, Public Innovation and inclusion".</p>
<p>1.5.2 <i>The implementation of an equal opportunities policy for support for R&I.</i></p>	<p>Innoviris contributes to a structural change around the over/under-representation of certain social groups in R&D&I fields and sectors. In addition to addressing the structural challenges by strengthening the supply side, other areas of work can be identified: (i) monitoring diversity in expert panels and juries, in project teams, (ii) increased attention to equal opportunity funding modalities, (iii) the distribution of social groups in</p>

	<p>R&D&I participation, and (iv) the social gradient and diversity in end-user participation.</p> <p>In collaboration with other innovation agencies and international experts, Innoviris is examining the possibility of targeted measures in the areas of gender, equal opportunities and ethics. Based on the results of this project, Innoviris will consider appropriate measures to ensure an equal opportunities policy in support of R&D&I that is fair, ethical and scientifically sound.</p>
<p>1.5.3 New methods for involving stakeholders in programme development, evaluation and in the formulation of strategies</p>	<p>Within the PRO-Ethics project, Innoviris, under the guidance of experts and in mutual coordination with other international innovation funding agencies, will experiment with new methods to involve stakeholders in the definition of thematic calls and/or strategies.</p> <p>A specific example is the strengthening and evaluation of the possibility of extending the participation and mobilization tool of the citizens' jury.</p>
<p>1.5.4 Removing disincentives to participation in innovation support programmes for public, social and voluntary sector actors</p>	<p>With a view to facilitating access to and encouraging the participation of actors in this sector in innovation support programmes, the Brussels-Capital Region will explore the obstacles they encounter and the methods best suited to stimulating their participation. This will include a reflection on the legal structures (for example, how to include Makers or entrepreneurs hosted in activity cooperatives), on the most suitable funding intensities, both in terms of percentage of intervention and amount, the notions of intellectual property and dissemination of results, as well as the exploration of alternatives to the GBER framework.</p> <p>Innoviris will also identify the obstacles to the participation of public actors in R&I and will propose solutions to enable them to participate in R&I projects</p>



	and encourage them to participate in the development of new technologies. research projects and encourage them to participate.
1.5.5 Joint support for tech innovation and impact innovation	To develop synergies between the technological sectors and the field of social innovation by bringing together, around societal challenges, organizations that are in contact with Brussels innovation actors (companies, research centers, non-profit research centers, non-profit organizations, citizens).
1.5.6 Support pathway for all actors in the framework of their Social Innovation (ESD, etc.)	Creation of a support pathway for social innovations developed and carried by all actors in order to respond to their specificities (collaborative and cooperative approach, organizational innovation approach, citizen and approach, societal purpose rather than purely private profit private profit, economic viability).

Another line of work related to RRI is 4.3.1 "Impact and ethics" which includes future developments in the field of Open Science and ethics.

6. Catalonia region RRI mapping

6.1 Catalonia region cluster

Science for Change (SfC), the Catalan platform for citizen science, the cluster leader

Science for Change is a SME born from the will to tackle societal and environmental challenges affecting communities using innovative solutions. SfC specializes in developing user-centered, innovative services and products based on citizen science, participatory strategies, community engagement and co-creation processes to facilitate social innovation. It uses a methodology based on a quadruple helix model of stakeholder engagement, to promote dialogue, increase transparency, and to co-design innovative solutions that are relevant to all the stakeholders involved. The identified stakeholders are involved in every step of the process: from the co-design of the research question, to the definition and the data gathering strategy, to its validation, analysis and co-design of solutions. SfC empower communities using a bottom-up approach to co-design local solutions while promoting the participation of citizens in decision-making processes that affect their quality of life.

The General Directorate of Economic Promotion and Regulation (GDPECR). Policy maker

The General Directorate of Economic Promotion and Regulation (GDPECR) is the unit in the Catalan Government responsible for the coordination and the monitoring of Catalonia's Smart Specialisation Strategy (RIS3CAT). Within this framework of action, we work on integration RRI dimensions (Anticipation, Reflexivity, Inclusion and Responsiveness) in RIS3CAT through:

- The entrepreneurial discovery process: bottom-up approaches in which government, companies, the universities, research and innovation players and civil society (hereafter referred to quadruple-helix players) identify areas of Specialisation in the territory and then design and implement programmes, actions and projects to promote them.
- Shared agendas for sustainability and social change: to articulate the collective action of various stakeholders aimed at addressing a common complex challenge

and the problems that this challenge may generate. Shared agendas are articulated in three steps:

- Understand systemic challenges and prepare the basis for collective action.
- Co-design, test and disseminate new solutions to the problems identified through multi-stakeholder transformative-shared agendas.
- Reproduce and amplify the solutions tested to transform the system.

In the new programming period (2021-2027), the aim of GDPECR is to go a step further by integrating the RRI dimensions in the RIS3CAT, with a strong focus on shared agendas.

Opensystems, the research group expert in citizen science

OpenSystems is a multidisciplinary group founded in 2012 at the University of Barcelona (UB) that focuses on public participation as a core element of the way of doing science. The group is a leading research group in Spain, Catalonia and Barcelona contexts on the emerging field of Citizen Science. The group also belongs to the Universitat de Barcelona Institute of Complex Systems (UBICS) and the Complexity Lab Barcelona. OpenSystems works together with many actors and builds tailored-made research collectives to address concerns mostly grounded in urban contexts. The group has expertise in co-creating citizen science projects, in the subsequent data gathering, data interpretation and data analysis processes especially when it includes human behavior and social issues. Citizen science main issues of UB lie within the so-called citizen social science and within the scopes of data science, complex systems science and social science.

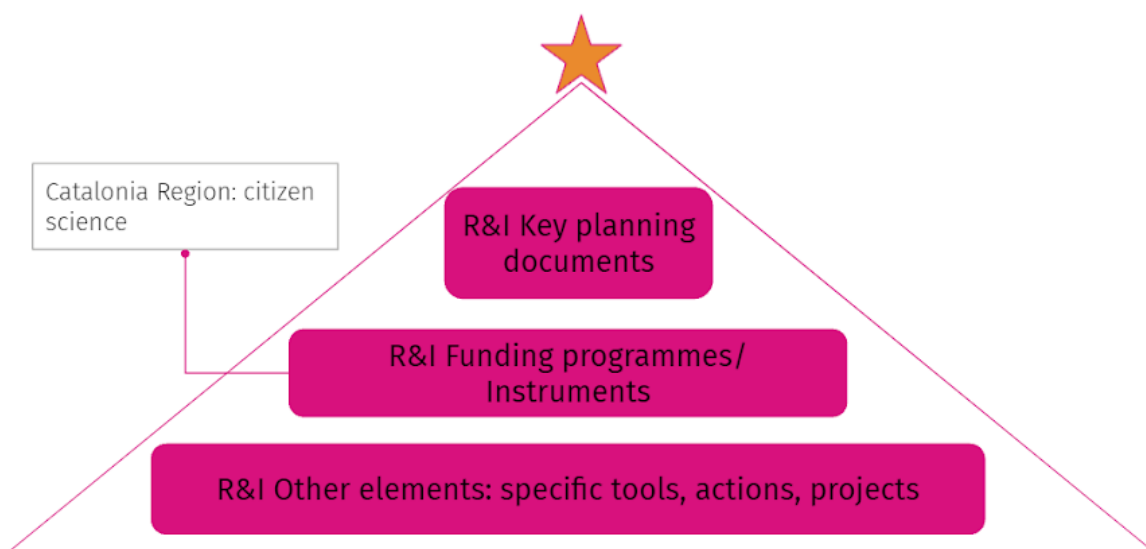
6.2 General approach to the mapping exercise for the Catalonia region

The current Smart Specialisation Strategy (RIS3CAT 2014-2020) structures the region's R&I development: it combines traditional instruments for supporting research and innovation with innovative mechanisms aimed at promoting new forms of stakeholder's cooperation to co-create public policies and innovative solutions to address societal challenges.

The aim of the Catalonia Region in TRANSFORM is to incorporate citizen science as a means of integrating RRI into Catalonia's RIS3CAT 2021-2027, its instruments and the actors of the

Catalan R&I ecosystem. TRANSFORM offers an experimentation space that allows the Catalan Government to explore how citizen science could be integrated in RIS3CAT.

For this purpose, Catalonia Region is developing two citizen science pilot projects in the fields of waste and health. In addition to the pilot projects, the Catalan cluster is developing participatory webinars with the members of the Think Tank with the aim of increasing knowledge about RRI and citizen science and boost the generation of future new projects based on a collaborative framework between stakeholders.



The specific regional approach leads us to **focus the analysis on two main aspects:**

- a) **the integration of public participation elements in R&I programmes & instruments (the specific part of the governance structure in which Catalonia is working within TRANSFORM).** to show (in a further analysis) how participation in TRANSFORM has succeeded in integrating citizen science in the new RIS3CAT.
- b) On the other hand, **an analysis of the R&I governance structure in general** will be carried out to assess to what extent public participation is contemplated and encouraged in the **key planning documents elaboration process and in the key planning documents themselves.** At the planning level, the region of Catalonia is currently drafting its next RIS3CAT 2021-2027. Therefore, this analysis will focus on the existing planning documents and

the governance structure derived from them (the analysis of the RIS3CAT 2021-2027 will be carried out by the end of 2022).

6.3 Catalonia specific regional approach in TRANSFORM: public participation in programmes & instruments

6.3.1 Coming from the past: RRI elements in R&I funding programmes until 2021

RIS3CAT combines traditional instruments for supporting research and innovation with more innovative mechanisms aimed at promoting new forms of cooperation between people and organizations to co-create public policies and innovative solutions that will enable the formulation of effective responses to the great challenges that face our society.

Within the [Action Plan of RIS3CAT 2015-2020](#), 5 important instruments could be found that were related to the integration of public participation:

1. [PECT](#): Territorial Specialisation and competitiveness projects are innovative projects promoted by local authorities in cooperation with research and innovation players and other actors in the territory with a view to responding to challenges of a territorial nature.
2. [Catlabs](#): The Catlabs program supports collaborative open social innovation and focuses on methodological aspects. It aims to increase the involvement of universities, teaching centers, technology and research centers and other innovation agents, with the challenges of the territory and the citizens.
3. [Collaborative projects in the field of advanced digital technologies](#): Competitive calls for grants for collaborative R&I projects in advanced digital technologies that promote the collaboration of the agents of the quadruple helix (R+D+I system, companies, administrations and users) in the development of innovative solutions that respond to society's challenges.
4. [Public Administration innovation projects framed in the open innovation and science paradigm](#): Innovation projects focused on the transformation of the public administration's relationship model with the citizenry and the agents of the R&I system, which allow progress towards a model of open innovation and science.

5. [Public procurement of innovation \(PPI\)](#) to develop and implement new solutions to societal challenges through the acquisition of new processes or services. In this program, some elements of public participation are integrated in the requirements of the calls for proposals.

Besides this, since the beginning of the previous RIS3CAT period, the region of Catalonia started a process of experimentation with new methodologies to deepen into the aspects of citizen participation, quadruple helix and RRI. This new approach is documented in a section of the RIS3CAT website called [“social and collaborative innovation”](#), where different documents reflecting the process and the results of these initiatives can be found.

Based on PECT, Catlabs and innovation projects instruments, the Catalan Government has developed the instrument of RRI-driven shared agendas. These agendas are promoted by coalitions of stakeholders wanting to align their efforts towards a shared vision related to a territorial challenge.

The main shared agendas pilots are the following.

[The B-30 shared agenda on zero waste](#)

In SeeRRI, the Catalan Government and the Universitat Autònoma de Barcelona (UAB) have worked with regional stakeholders to co-design a pilot project in the B-30 territory, which includes the twenty-three municipalities located from Martorell to Roca del Vallès from east to west and from Castellar del Vallès to Sant Cugat del Vallès from north to south. The pilot project implemented in 2019 and 2021 has attempted to answer two questions:

- How can RIS3 promote RRI as a way to better address the Sustainable Development Goals and promote pathways for a more sustainable, inclusive and fair development?
- How can the UAB contribute to a research and innovation ecosystem more responsible and sustainable, which addresses the SDGs and promotes pathways for a more sustainable, inclusive and fair development?

[Terres de Lleida shared agenda](#)

Terres de Lleida is a rural territory in Catalonia. The shared agenda is promoted by a coalition of farmers, livestock breeders, local and regional authorities and researchers that are aligning efforts to move the territory towards a bioeconomy. Together they analyze challenges and opportunities, discuss possible pathways to advance towards the bioeconomy, discussing technologies, resources, investments, funding opportunities, changing the narratives about their territory and promoting a portfolio of transformative actions, empowering its people to decide about their own future taking responsibility for the consequences of their decisions. The shared agenda has become the key driver of the economic transformation of this territory.

The Bages shared agenda

The Bages county and its capital, Manresa, face two major demographic challenges: ageing population and increased migration to the capital. The response to these great challenges by the main stakeholders in the territory is articulated through a shared agenda based on collaborative and transformative research and innovation.

In the Bages territory, universities and health institutions, together with civil associations, companies and local authorities are promoting a shared agenda addressing the challenge of dependent persons from the perspective of their interaction with the health and the social ecosystem. Technology-based solutions play a very relevant role in this agenda, the solutions (on 3D, robotics, telemedicine or telecare) are co-designed and tested by researchers and businesses with the users (health and social workers, families of the dependent persons). The developed solutions are opening new business opportunities in the territory generating new economic and social value, since the solutions contribute to its competitiveness and also to improve the quality of life of people living in the territory.

6.3.2 The expected future: mainstreaming citizen science in RIS3CAT funding programmes

The aim of the Catalonia Region in TRANSFORM is to incorporate citizen science as a means of integrating RRI into Catalonia's RIS3CAT 2021-2027, its instruments and the actors of the Catalan R&I ecosystem. Citizen science challenges the separation of science from society and, therefore, is a powerful tool to articulate new forms of collaboration among academia,

public administrations, companies and civil society to address the challenges that matter to society more effectively.

By its nature, citizen science has a place in the implementation phase of RIS3CAT instruments and programmes (in addition to other strategies developed by key actors in the R&I ecosystem).

For this purpose, Catalonia Region is developing two citizen science pilot projects in the fields of waste and health.

Pilot 1 Waste: Citizen science for the co-creation and implementation of an “interactive waste game”: the aim is improving municipal waste collection in the municipality of Mollet del Vallès and the project is integrated in the specific Project for Territorial Specialisation and Competitiveness (PECT) towards Zero Waste of the municipality (within the Shared Agenda B-30). During the pilot, various agents of the quadruple helix will be involved in a co-creation process to generate an innovative tool based on citizen science. Then, the waste game will be implemented to both increase the level of public knowledge and awareness on waste and also collect information on their expectations, preferences, needs and barriers to the implementation of innovative waste collection systems. The results will inform the new plan of the municipality for the implementation of innovative waste collection systems. The project has the collaboration of the TRANSFORM cluster, the municipality of Mollet del Vallès and the Autonomous University of Barcelona.

Pilot 2 Health. Endometriosis in the first person: participatory research on experiences, assessments and needs of women with endometriosis: the aim is improving diagnostic, care and support services for the disease. During the pilot, women with endometriosis will be invited to participate in the research, both as the originators of the information and active participants in the data analysis and the drafting of the recommendations report. The results are expected to inform the new Protocol for endometriosis care of Catalonia. The project has the collaboration of the Catalan cluster, the Hospital de Sant Pau and the Catalan Agency for Health Quality and Assessment (AQuAS). The learnings from this pilot, as well as generating possible collaborative projects to deepen some relevant results, are expected to serve as inspiration for the Shared agenda of Bages, as its stakeholders are very interested in the citizen science methodology.

In the two TRANSFORM pilot projects the engagement of public administrations and public service providers is very relevant, since Catalan administrations are very interested in exploring new forms of collaboration with universities and with citizens through citizen science, in order to more effectively address the challenges that really matter to society. The learnings of the two pilot projects are key to promote this kind of debates within public administrations and among territorial stakeholders (public administrations, academia, companies, civil society).

In addition to the pilot projects, the Catalan cluster is developing participatory webinars with the members of the Think Tank (approximately 55 representatives of different organizations of the triple helix linked to R&I) with the aims of increasing knowledge about RRI and citizen science and of discussing and reflecting about how citizen science can contribute to address the Sustainable Development Goals more effectively (with a strong focus on public policies).

6.4 General overview: RRI & public participation in the Catalonia R&I governance structure

6.4.1 Public participation in key planning documents elaboration

This analysis is based on the document [RIS3CAT elaboration process](#) which helps to understand the process of elaborating RIS3CAT 2014-2020.

In 2013, when the RIS3CAT was developed, a group of experts was created and consulted, consisting among others of universities, trade schools, technology centers, businesses, public administrations and civil society organizations. From the end of July to the end of September 2013, a first version of the RIS3CAT strategy document was put out for public consultation by means of an online questionnaire. The responses obtained came from actors of the triple helix. There were 176 contributions to the public consultation considered valid. Most of them come from the university, but there was also a notable volume of contributions from the business world and research centers. In the other group there are mainly clusters, Connect-EU groups and other representative entities or associations, such as the chambers of commerce.

The analysis on the process of elaboration of the new RIS3CAT (not yet approved) will be made in the next review at the end of 2022.

6.4.2 RRI & public participation elements in the key planning documents

This section analyzes the extent to which RRI (especially concepts related to public participation) is reflected in Catalonia's key R&I planning documents.

The documents analysed are:

- [The Smart Specialisation Strategy \(RIS3CAT\) 2014-2020](#): it defines the framework from which the Government develops the actions and R&I programs for the period 2014-2020 and supports the generation and development of innovative projects. The new RIS3CAT is not yet approved.
- [Action Plan RIS3CAT 2015-2020](#): This document describes the actions that make up the RIS3CAT Action Plan and how these are financed with the Operational Program of the ERDF of Catalonia 2014-2020. The Action Plan is updated periodically.
- [RIS3CAT monitoring system 2019](#): This document from February 2019 aims to describe the monitoring system within the RIS3CAT. The main objectives of the monitoring system are the implementation and evaluation of the RIS3CAT and the provision of information to the concerned agents. A short chapter describes the impact on smart Specialisation, public policies and quadruple helix collaboration (6.3). The following documents are part of the monitoring process:
 - [Shared agendas towards sustainability and social change](#): This document from January 2020 has the objective to contribute thoughts and recommendations to promote the articulation of shared agendas for sustainability and social change that can help to develop more effective, innovative responses to the challenges facing the territory and to meet the ambitious targets that the European Community has established for the coming years.
 - [RIS3CAT lessons learned](#): This document was released in April 2020, when the RIS3CAT 2020 had already been in its last phase. It elaborates on the management and participation of the calls and on the expected improvements in the RIS3CAT 2021-2027.
 - [The potential of public procurement of innovation to respond to the society's major challenges](#): this document analyses 4 public procurement of



innovation initiatives that show how public services and the model of collaboration between public administrations and other agents can be transformed to provide more effective and efficient responses to societal challenges.

- The document [Educational environment and shared agendas oriented to the SDGs](#) : the document provides a series of guidelines for involving the world of education with shared agendas that address challenges within their geographical environments. In addition to these guidelines, the document also contains five annexes presenting case studies of the involvement of centers of education (one vocational training school and three universities) in shared agendas in the territory.

The key document Smart Specialisation Strategy (RIS3CAT) 2014-2020 contains a high number of relevant keywords: despite “RRI” is not mentioned specifically, the “quadruple helix” is mentioned 17 times throughout the entire document, constituting a specific section within the chapter "governance". Bottom-up, which is another highly relevant concept, appears 2 times in different chapters. Furthermore, open innovation (3) and social innovation (7) are also mentioned. In the Plan of Action RIS3CAT 2015-2020, the concept of participation is mentioned several times, however, it refers more to the participation of enterprises and “local agents” than the agents of the quadruple helix.

Of particular interest for this analysis are the documents that form part of the RIS3CAT monitoring system, in which the region reflects, experiments and gives concrete examples of how to transform R&I policies towards collaborative models that provide better responses to social challenges. These new approaches, in which citizen participation is fundamental, constitute the basis on which the future RIS3CAT will be developed. In three specific documents of the monitoring system (which represent a preview of the perspective that the next RIS3CAT will take) citizen participation plays a leading role. These are the “RIS3CAT lessons learned”, “The potential of public procurement of innovation to respond to the society's major challenges” and the “Shared agendas towards sustainability and social change”.

The [RIS3CAT lessons learned](#) contains an important paragraph about the Civil Society (2.2.4) and another about the shared agendas (3.2.5.), which both describe how society is included into the government decision making. It is the key document in which the RRI concept

appears for the first time (17 times), showing the region's new effort to transform public policies along more responsible lines, including citizen participation. Project SeeRRI, PECT and TRANSFORM are mentioned as examples.

The document [The potential of public procurement of innovation to respond to the society's major challenges](#) presents four initiatives that exemplify the potential of EU funding to incentivize public procurement as an instrument of innovation and transformation that increases the efficiency and effectiveness of government and public policy responses to society's challenges. These four initiatives also demonstrate the great potential of public procurement to move towards the paradigm of open innovation and open science.

The [Shared agendas towards sustainability and social change](#) is the document with most concrete approaches towards public participation. Besides depicting the theoretical framework, it mentions the implemented pilot projects in the region, that are serving the region as experiments for future institutionalization as RIS3CAT instruments.

Another key document is "[Educational environment and shared agendas oriented to the SDGs](#)" in which the role of the education world within the shared agendas is explored. Experimentation and the search for innovative solutions that can generate shared value for the territory are central elements and it is precisely in this area that the role of centers of education in territorial shared agendas is considered key. Through their involvement in shared agendas, teachers and students can cooperate with other stakeholders engaged in addressing challenges (whether environmental, social or technological) in the territory by proposing possible solutions and developing and testing them in prototypes, taking into account both economic feasibility and social and environmental impact.

All these documents convey that there is a strong will to incorporate innovative participation methodologies within the R&I decision-making process and show the willingness of the region to institutionalize sound participatory methodologies. As described in the documents, the RIS3CAT 2021-2027 will be inspired by the theoretical framework of the transformative innovation policy of the Transformative Innovation Policy Consortium (TIPC) and by the need for Responsible Research and Innovation.

7. Conclusions and mutual learning opportunities

The elaboration process of the key R&I documents in the three regions

Different regions use different methods of public consultation in the elaboration of the documents. It should be noted that public consultation, specifically in the methodology designed by the European Commission to develop regional S3s, is mandatory. However, there are differences in how each region carries out this procedure.

In all cases, different methods of involvement of relevant regional stakeholders (expert group in Catalonia, steering committee in Brussels-Capital and ad hoc meetings in Lombardy) have been carried out, prior to a survey open to the public. In all three cases, the stakeholders included were from the quadruple helix, involving citizens either directly (Lombardy) or through civil society organizations (Catalonia and Brussels). All three regions subsequently conducted open public surveys (receiving varying levels of response) but the Brussels region introduced an innovative element by holding an Innovation Camp in which different stakeholders were invited to discuss and define priorities. Another noteworthy element is the Open Innovation Platform of Lombardy, for its use as a tool to promote participation, sharing and collaboration of all actors of the innovation process in industry, research and society.

Regarding the process of elaboration of the key R&I planning documents, two opportunities for mutual learning can be observed:

- 1) the Open Innovation Platform of Lombardy
- 2) the Innovation camp methodology developed by the Brussels-capital region
- 3) the innovations introduced by the Lombardy region within TRANSFORM

The key R&I documents in the three regions

References to concepts related to citizen participation can be found in all three regions. In the case of Lombardy, the concept of RRI is widely developed in all three documents analysed (including the new S3, which is already approved and published): RRI constitutes a key element that is expected to guide all planning and implementation of the strategy. In the case of Brussels, a strong evolution towards a greater regional commitment to public participation can be seen if one compares the previous S3 with the new one: although no specific references to RRI are found, the concepts of "quadruple helix" and "participatory governance" are highly represented and in key sections of the document. In the case of Catalonia, the strongest concept in the previous S3 is "quadruple helix", which is highly represented throughout the document and constitutes, in fact, a specific chapter on governance. However, pending the approval of the new S3, the monitoring documents provide relevant information on the commitment that the region will adopt in relation to public participation and RRI. These documents put a special emphasis on the development of concrete strategies for quadruple helix involvement.

The R&I instruments and programmes in the three regions

the commitment to citizen participation shown by the regions at the planning level is translated into specific instruments when it comes to implementation. Citizen participation is not a cross-cutting element in all instruments, but all regions have defined concrete funding programmes that foster the integration of citizens in the processes, the increase of transparency and the alignment of R&I with social needs.

In the case of Lombardy, 2 of the 12 experiments and strategic projects (SPSs) are specifically dedicated to increasing citizen participation in decision-making processes and in proposing R&I work streams that benefit society; 2 concrete actions are aimed at increasing transparency and collaboration between stakeholders of the R&I ecosystem (including citizens in the profile of end users).

In the case of Brussels-Capital, 5 out of 23 funding programmes have a strong element of public participation, generally related to social innovation or innovations aimed at generating social or environmental benefit.

In the case of Catalonia, 5 instruments coming from the previous RIS3CAT contained a strong element of quadruple helix citizen participation; in addition, the region has been

experimenting with a new instrument (shared agendas) that is expected to have a strong impact on the next RIS3CAT.

Regarding the instruments, an opportunity for mutual learning emerges:

4) a showcase of instruments and funding programmes from the different regions to inspire each other



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