EUROPEAN
POLICYBRIEF

LEVERAGING LEADERSHIP FOR **RRI** IN TERRITORIES

RRI
RESPONSIBLE
RESEARCH AND
INNOVATION IN
TERRITORIES
LEADERS

The RRI-LEADERS project explores the application and sustainability of the RRI paradigm within territorial research and innovation systems, with a special emphasis on instrumentalising territorial leadership in the design of policies that are anticipatory, inclusive, reflexive and responsive. The purpose of this policy brief is to address policymakers at the national, territorial and EU levels and report on the interim status of the project. It highlights findings from the first half of the project with the goal of creating a discourse around policy implications beyond the involved territories' contexts. Furthermore, this policy brief features some RRI good practice examples from the territories as supporting evidence for possible policy options.

30. June 2022

INTRODUCTION

The Responsible Research and Innovation (RRI) approach aims to encourage societal actors to work together during the whole research and innovation (R&I) process to better align R&I and its outcomes with the values, needs and expectations of society. Experience shows that strategies and practices based on RRI can open up R&I to all relevant actors, and improve co-operation between science and society, fostering the recruitment of new talent, and pairing scientific excellence with social awareness and responsibility.

Territories have a specific advantage to address the complexity of the challenges set by the interplay between science and society. Indeed, local actors have an intimate knowledge of the physical territorial setting, and local ecology, i.e. the status quo of the complex relationships between cultural, social, economic and political actors, of the local dynamics, history, expectations and requirements as well as specific concerns. Territories can work towards the establishment of self-sustaining R&I ecosystems that are characterised by a high degree of openness, democratic accountability, and responsiveness to need by taking action to promote all parts of RRI (i.e. RRI keys: gender equality, science education, open access/open data, public engagement, and ethics; and AIRR dimensions: anticipation, inclusiveness, responsiveness, and reflexivity).

This requires them to bring relevant R&I actors together, for instance citizens and civil society organisations (CSOs), universities, research institutions, formal and informal education institutions (including primary and secondary schools), governments and public authorities (including regional and local administrations and science policy institutions), businesses (including industry, the service sector and social entrepreneurs) and science mediators. New R&I working methods within and between organisations, including novel and transparent governance relations, would promote greater sustainability and inclusiveness at local, national, EU and global levels.

Consortia are expected to elaborate and implement a more open, transparent and democratic R&I system in their defined territories. Consortia are expected to evaluate their activities and provide evidence of societal, democratic, environmental, economic and scientific impacts. Involvement in the project should have a measurable transformative and opening effect on organisations involved; this should be sustainable (i.e. last beyond the lifetime of funding), for instance through the introduction of new forms of decision making, development of business plans or co-operation agreements, and institutional changes in participating organisations.

EVIDENCE AND ANALYSIS

The project "Leveraging Leadership for Responsible Research and Innovation in Territories" (RRI-LEADERS) explores the relevance of responsible research and innovation to territorial governance in four European territories. RRI-LEADERS involves four territories: municipalities of Sofia (Bulgaria) and Thalwil (Switzerland), region of Western Macedonia (Greece) and city of Sabadell (Catalonia, Spain). The central goal of the project is to elaborate future-oriented outlooks for the future potential of RRI as a guiding framework in territorial R&I governance. Outlooks will be developed through a multi-stage co-creation process including different stakeholders from the participating territories, i.e., academia and research, policymakers, industry and business, and civil society. The following paragraphs outline the most policy-relevant findings of the completed stages of the still ongoing project.

The *Mapping of stakeholder relationships and interdependencies and analysing their needs, interests, power and influence* in respect to RRI was the first step of the RRI-LEADERS project. The partners employed two data collection methods during the mapping: in-depth semi-structured interviews and focus group discussions. The stakeholders participating in the interviews and focus groups covered the entire range of the Quadruple Helix: academia and research institutions, policymakers, industry and business, and civil society. The semi-structured interviews enabled the partners to map stakeholders' experience related to the RRI approach, and to identify opportunities for its integration in the territorial development policies. The objective of the focus groups was to further explore and verify the findings from the analysis of the interviews. Across the four territories, a total of 90 in-depth interviews were conducted, while 49 stakeholders attended the focus groups.

The mapping process resulted in two immediate outputs: 77 stakeholder profiles (presenting the organisations, whose representatives were interviewed or participated in the focus groups) and 19 good practices descriptions. The profiles contain information on the relevance of the RRI-AIRR approach in general and the individual RRI keys and AIRR dimensions in particular for the organisations, as well as about the way in which each stakeholder can contribute to the adoption of keys and dimensions within territorial governance. The 19 RRI-related good practices of the stakeholders were outlined, emphasising the relevance of the RRI-AIRR approach for these practices, as well as the benefits of their implementation for society.

The *review of RRI policy discourses in the involved territories* provided a summary on the findings regarding the embeddedness of the RRI-AIRR approach in the policies of the four participating territories, with a particular focus on the chosen policy areas.

The policy areas of the participating territories are as follows:
■ Region of Western Macedonia: Clean energy; Energy markets; Economic transition towards a low-carbon economy.
■ Sofia municipality: Support to innovation; Digital transition and new skills; Youth employment and entrepreneurship; and Sustainable urban development.
■ Municipality of Thalwil: Energy transition, focused on reducing the use of fossil fuels, the greenhouse gas emissions, and the total energy consumption on the territory of the municipality.
■ City of Sabadell: Building an inclusive innovation ecosystem through different methodologies which will improve the territorial specialisation in design applied to industry in a sustainable scope.

A total of 30 strategic policy documents were examined in the four territorial units in Bulgaria, Greece, Switzerland and Spain (Catalonia). Evaluating the embeddedness of RRI keys in these documents, the dominance of open access, public engagement and science education approaches was evident. The RRI key of open access was very prominent in Bulgaria, Switzerland and Greece, while public engagement appears very often in the strategic documents in Greece. These findings indicate a general compliance of public policy actors with the contemporary need of citizens to freely access critical information. Furthermore, they reflect a high degree of public commitment to implementing RRI elements in territorial policies.

In general, the RRI-AIRR approach is considered particularly important for the policy discourse in all four territories. It has also been found that while most participating stakeholders are not necessarily aware of the RRI approach as a whole, they are familiar with its individual elements. However, its embeddedness into the existing policy documents lags behind. With regarding to the RRI keys and dimensions, the document analysis showed that public engagement appears in most documents, although it was stated that the voice of civil society needs to be strengthened. Open access also appears in all four territories, but a lack of knowledge on the available sources is mentioned as well as a lack of data evaluation by citizens. Science education shows up mostly in the municipalities of Sofia and Thalwil while gender balance mostly in Sabadell. Ethics is a key which has not been formally integrated in any of the four territories. Regarding AIRR dimensions, there is a familiarity with all four dimensions, however, anticipatory governance and inclusiveness are the ones embedded to the highest degree.

Subsequently, the year-long work to assess the relevance of the RRI-AIRR approach for territorial governance in the four territories culminated with the *territorial RRI audits*. The audits have identified the RRI-relevant policy goals and targets, analysed strengths, weaknesses, threats and opportunities of applying the RRI-AIRR approach in the territorial governance, mapped the relevant stakeholders, identified strategic policy priorities and offered a list of recommendations for a meaningful uptake of RRI-AIRR approach as a guiding framework in territorial governance of research and innovation.

The audits established that differences in practices and perceptions regarding the RRI-AIRR implementation are more pronounced between different Quadruple Helix stakeholder groups than between territories. Overall, the RRI-AIRR terminology is largely unfamiliar and RRI keys and AIRR dimensions are rarely formally included in policy documents and procedures. The only stakeholders well-versed in this field are researchers with experience of working on EU-funded research projects.

This however does not mean that RRI related practices are non-existent, and principles comparable to RRI keys and AIRR dimensions are easy to find not just in policy documents and plans, but also in the way territorial stakeholders operate.

The most prominent elements of the RRI-AIRR approach in the four territories (incl. some examples):

- Western Macedonia: public engagement (e.g. public consultations), inclusiveness, open access (e.g. e-government actions related to open data) and anticipatory governance.
- Sofia: public engagement (e.g. citizen consultations), open access, gender equality, inclusiveness (e.g. internal codes of procedure), anticipation and responsiveness (e.g. long-term city development masterplan).
- Thalwil: anticipation (e.g. advisory commissions at municipal level), inclusiveness (e.g. integrating community perspectives into legislative goals) and open access.
- Sabadell: gender equality, ethics (e.g. ethics committees in academics), and science education (e.g. support for creation of an "Agreement for the Knowledge Society" by local administration).

In contrast, science education, ethics and reflexivity are not practiced on a satisfactory level in Sofia, science education and reflexivity could be given more attention in Western Macedonia and Thalwil, while in Sabadell, the benefits of public engagement and inclusiveness have not yet been fully exploited. The unsatisfactory application of reflexive governance can be noted as a common feature of all four territories.

The Quadruple Helix stakeholders differ considerably in terms of their knowledge of the RRI keys and AIRR dimensions. Ethics is the most important RRI key in the research and academic sector but is also a crucial aspect for the business community. Public engagement is the most important RRI key for territorial authorities and public bodies in general, often perceived as a social contract between institutions and citizens. Open access to data and information is supported by most Quadruple Helix stakeholders in all four territories, despite the perennial dilemma whether to give priority to open access or to protection of intellectual property rights. Gender equality is hardly considered as relevant in some policy areas, and as very important in others, but in general it is seen as too narrow a term and instead the notions of diversity and inclusion of all groups in society were brought to the fore. Science education is seen as exceptionally important, but all stakeholder groups look at the research and academic sector as being responsible for planning, organisation and delivery of science education.

In parallel to the RRI territorial audit, *Delphi survey rounds* were conducted. This is a structured survey method in which experts are questioned on a topic over several rounds and, after each round, receive anonymised feedback on the results of the preceding round, thus influencing their decision-making. The goal of this survey was to build consensus among experts on solutions, barriers, best practices, and the importance of the integration of the RRI-AIRR concept in the context of the respective policy area.

The results of the survey were analysed along the RRI keys and AIRR dimensions. In the region of Western Macedonia, most statements reached consensus. With its focus on the transition towards a post-coal economy, open access, science education, and public engagement were emphasized. On the other hand, ethics and gender equality found little resonance in the present context. In the Swiss municipality of Thalwil, which is also concerned with the topic of energy transition, the experts also highlighted the importance of science education, public engagement, and open access as particularly important. Gender equality and ethics were mentioned rarely. In the city of Sabadell, with a focus on active ageing, public engagement and science education were highlighted as particularly important, while gender equality was barely mentioned, which may be explained by the fact that this key is

already embedded in law there. In the municipality of Sofia, focusing on social issues such as youth employment, digital transition and new skills, the Delphi survey identified open access, public engagement and science education as important. However, in this region, gender equality as well as ethics were also rated as important.

Across all four territories, it can be stated that public engagement and scientific education are considered important regardless of the policy area, while the RRI-keys gender equality and ethics were predominantly mentioned in the regions with a more social policy focus. As for the AIRR dimensions, inclusiveness and responsiveness were most often mentioned by the experts in the different territories.

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POLICY IMPLICATIONS AND RECOMMENDATIONS

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This section outlines the policy implications of the findings and depicts initial recommendations on this basis.

The *mapping on stakeholder relationships and interdependencies and report on stakeholder needs, interests, power and influence* provided a summary of the findings from the in-depth mapping of the four participating territories from the perspective of RRI-AIRR approach. Below the policy implications and recommendations are summarised.

- Open access is a very important key that drives change. There is a need to improve community access to public data. Sharing of data and information accelerates progress and innovation.
- Public engagement should have a major role in setting the educational and research agenda of the universities and research institutes, but it remains largely limited to research projects that require engagement with specific societal groups. Public engagement is key to facilitate the progress of the policy development and implementation of the chosen policy areas. To achieve this, more awareness raising and involvement of the population in various measures for policy implementation is required.
- Science education is an important element for the development of the economy and the research and innovation eco-system, and a collaborative environment with research and academia and with the actors of the Quadruple Helix must be established.
- Regarding collaboration/networking/interdependencies, an active participation of businesses as well as an increase in the degree of connection between research results with the needs of the private sector is essential.
- Alignment of local policies with the EU and global standards is crucial, as well as the creation of networking and synergies with other parts of Europe that have comparable policy areas with the territories of the project.

The analytical report on RRI policy discourses in the involved territories summarises the findings regarding the embeddedness of the RRI-AIRR approach in the territorial policies, with a particular focus on the chosen policy areas. These are the main policy recommendations:

- RRI should be more effectively communicated to the key actors committed to anchoring research and innovation in societal needs. Seen in this respect, RRI policy should be understood as a process of social justice and development.
- The application of open access and public engagement is challenging for technical and/or economical motives as well as for lack of culture and proper official guidelines. In this sense the involvement of regional and local public administrations must be regarded as a basic element.

Making data available to the public in a transparent manner and based on open-access criteria is vital.

■ Anticipatory governance and thus planning over long periods is a necessity, following an approach of responsive and accountable governance.

■ In terms of monitoring policy implementation, "social and economic impact policy assessment (besides ecological impact) for sustainable urban development" needs to be introduced.

■ Strengthening and promoting entrepreneurship as well as re-skilling of human resources to combat the unemployment that will arise in the post-lignite era. The research produced must be applied and should follow the responsiveness of the local markets and vice versa, local businesses must respond to the new trends and the new needs of the markets to survive in the new globalised market model.

The *territorial RRI audits* brought forth the following policy conclusions and recommendations:

■ RRI-AIRR approach has been identified by many stakeholders as a potentially effective solution to address a variety of societal challenges in the post-COVID society, a chance to restore the public confidence in science and innovation, and a novel way for policymakers to argue the case for responsible, anticipatory and transparent governance.

■ Some of the RRI-AIRR keys and dimensions are already implemented in practice and included in various policy documents (albeit not necessarily using the same terms) in the four territories, though to different degrees, depending on the characteristics of the different Quadruple Helix stakeholders. It is crucial to disseminate the RRI keys and AIRR dimensions to reinforce cooperation, exchange and sharing of previous experiences and results, as well as the mobilisation and involvement of citizens, embracing inclusiveness in the broadest way possible. The most efficient strategy would consist of building on the existing initiatives and tools to speed up the application of the RRI-AIRR approach.

■ Practical guidelines and information should be disseminated among the Quadruple Helix stakeholders through formal and informal meetings, activities or other events for exchange and sharing of experiences and good practices linked to the RRI-AIRR approach.

■ Those RRI-AIRR keys and dimensions that are less commonly applied need to be promoted and boosted through different capacity-building initiatives.

■ Embedding RRI-AIRR principles into territorial policies is not a one-way and linear process but requires careful orchestration of the trajectories of multiple actors and governance levels.

■ RRI-AIRR and science-based policymaking need to be included in the organisational standards and practices of all structures of the territorial administration and to cover all the aspects of governance (procedures, structures, norms, culture, motivations, strategic planning, investment), otherwise there is a risk of reducing their transformative capacity and making them only a tick-in-a-box procedure.

■ Evaluation criteria and mechanisms adaptable to the specific conditions in which the RRI-AIRR framework is or will be used should be integrated into the governance framework.

Valuable conclusions could also be drawn, and recommendations derived from the compound analysis of the *Delphi survey rounds*:

■ The importance and prevalence of the RRI keys and dimensions varies across regions.

■ The importance of the different RRI elements is context dependent. This makes it difficult to make generalized, context-independent statements regarding keys and dimensions and suggests that recommendations should be made at the territorial level.

■ Valuable patterns can be identified from the surveys, which can be of relevance for territorial

policy and the design of R&I processes. As an example, the RRI keys scientific education and public engagement are of high importance in all territories examined, while ethics, for example, was only considered important in the territories with a more social policy area.

■ The Delphi method has proven itself as a method for strengthening consensus in all territories and can therefore be considered for further applications to other territories and policy foci.

SUSTAINABILITY AND LEGACY

The experiences made during the first half of the RRI-LEADERS project are published in project deliverables and thus available for other projects or stakeholders. The most noteworthy publications are: (1) Map on Stakeholder Relationships and Interdependencies and Report on Stakeholder Need, Interest, Power and Influence presents the findings of the in-depth mapping from an RRI perspective of the four territories, (2) the Report on the RRI Policy Discourse in the Involved Territories examines the embeddedness of RRI-AIRR approach in the territorial policies, and (3) the RRI Audit Reports, which consist of the individual RRI audit reports of the involved territories.

Beyond these project outputs, the positive effects of the applied multi-stage co-creation process can be highlighted. Through the large number of interviews, focus group discussions, workshops, Delphi surveys etc. conducted in the course of the project, several hundred (!) stakeholders across all stakeholder groups have already come into in-depth contact with RRI. Not only has a remarkable RRI-promoting network been created within and across the involved territories, but awareness of the approach has also been widely disseminated as a result and will thus have an impact beyond the duration of the project.

PROJECT OBJECTIVES AND METHODOLOGY

RRI-LEADERS explores the relevance of RRI to territorial governance in four European territories, representing different cultural and socio-economic backgrounds, different scope of territorial oversight, different institutional and decision-making infrastructures, different R&I landscapes, and different dynamics among territorial actors. The project objectives are: (1) to facilitate the adoption of RRI principles within territorial governance; (2) to promote innovative, inclusive, and responsive multi-actor approach to the development of policies on issues related to science and innovation; and (3) to provide an evolutionary perspective on the future of RRI in territorial policy and governance.

The final project output are future-oriented strategy and action plans, or territorial outlooks, for the future potential of RRI as a guiding framework in territorial R&I governance. These outlooks are developed through a multi-stage co-creation process with the participation of all stakeholder groups of the Quadruple Helix.

The first stage of the co-creation process provides for RRI Audits to establish a clear baseline of existing RRI practices and policy developments in the territories. Subsequently, a Delphi study is applied to assess dissensus and barriers, and to develop consensus about possible and feasible pathways for a better RRI-AIRR integration for each territory. The next step is the development of RRI-AIRR transformative outlooks. They are the final product of the multi-stage, multi-actor and multi-disciplinary co-creation process and can be considered action plans with a focus on the specific policy areas of the territories and the related challenges.

PROJECT IDENTITY

PROJECT NAME

Leveraging Leadership for Responsible Research and Innovation in Territories (RRI-LEADERS).

COORDINATOR

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CONSORTIUM

- Applied Research and Communication Fund
  Sofia, Bulgaria
- University of Western Macedonia
  Kozáni, Greece
- The Danish Board of Technology
  Hvidovre, Denmark
- The Catalan Foundation for Research and Innovation
  Barcelona, Spain
- Zurich University of Applied Sciences
  Winterthur, Switzerland
- Regional Association of Local Government of Western Macedonia
  Kozáni, Greece
- Sofia Development Association
  Sofia, Bulgaria
- Municipality of Thalwil
  Thalwil, Switzerland
- Economic Development Agency of Sabadell City Council
  Sabadell, Spain

FUNDING SCHEME

Horizon 2020: SwafS-14-2018-2019-2020: Supporting the development of territorial Responsible Research and Innovation

DURATION

January 2021 – December 2023 (36 months).

BUDGET

EU contribution: 1 999 855 €.

WEBSITE

www.rri-leaders.eu.

FOR MORE INFORMATION

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FURTHER READING

- [Map on stakeholder relationships and interdependencies and report on stakeholder need, interest, power and influence](#)
- [Initial Delphi Questionnaire](#)
- [Report on the RRI policy discourse in the involved territories](#)
- [Territorial RRI Audit Report](#)
- Report on results of Delphi survey per policy area and per RRI key
- Conference paper: [The quality and depth of responsible innovation anchoring in communities : a Swiss case study](#)

The Municipality of Thalwil is a town with more than 18,000 inhabitants located at the lake Zurich in Switzerland. It set itself the goal decades ago of being a pioneer in sustainability. Principles of sustainability have subsequently been implemented in the municipal code and organisational requirement rules. First measures to reduce greenhouse gas emissions were introduced as early as 2004. In 2010 Thalwil was granted with the European Energy Awards and continues to strive to fulfill its leading role as a sustainable municipality.

This good practice is about the composite heating system of Gattikon - a district of Thalwil - which was completed a few years ago. Thanks to local authorities monitoring of the heating systems in the community, it became clear that all the heating systems in an area, where buildings were built at the same time, will have to be replaced in the foreseeable future due to their lifespan coming to an end. The future-oriented planning of the municipality has made it possible to work out a concrete heating concept ahead of time (anticipation). After a study, it became clear that a woodchip heating system was feasible and reasonable. From an environmental sustainability perspective, this heating system has advantages over fossil fuel heating systems. For example, the wood chips are sourced regionally and from sustainable forestry – no forests are cleared, which is checked annually by the municipality. This procedure has made it possible to approach the eligible homeowners in a timely and proactive manner regarding heating system replacement.

It is worth mentioning that in addition to this heat network, an energy network with lake water collection is currently being implemented in the municipality of Thalwil. In this case, too, the municipal administration, with its anticipatory and citizen-oriented approach, has played a major role in making the overall concept possible. The heating system has advantages on various levels: it contributes to climate protection, minimises the workload for homeowners, makes costs easier to plan, and enhances the value of buildings.

The composite heating system of Gattikon can be considered a good practice from an energy transition and RRI perspective. Of the RRI keys, public engagement (active information of citizens, dialogue with homeowners), science education and open access can be highlighted as relevant and were crucial for the project's success. Moreover, high relevance can also be attributed to the AIRR dimension anticipation, as the whole good practice is made possible by the anticipatory attitude of the local authorities. The other dimensions are not negligible either. The municipality demonstrates its responsiveness to the challenges posed by climate change and reflects on the past in order to learn for the future (e.g. new energy network).

Sofia is the capital of Bulgaria and the largest city in the country, with over 1.3 million residents. It is also the country's political, economic, cultural, and education centre. Naturally, building a smart, innovative, and resilient city requires a policymaking process that relies on broad political and stakeholder support, where inclusiveness and public engagement are embedded in all levels of governance.

A success story that exemplifies the city's dedication to responsible leadership through citizen participation in policy dialogue is the making of *Vision for Sofia 2050* – a strategy for the development of Sofia Municipality until 2050. The entire process was coordinated by Sofiaplan, a municipal enterprise in charge of spatial planning and strategic urban design in Sofia. The collaborative work on the *Vision*, which engaged nearly 10,000 citizens, took over four years of planning and implementation. The backbone of the process, public engagement, was open, transparent, and inclusive, enabling a wide range of local stakeholders to co-create and test scenarios for the city's future in all sectoral policies. Over 400 meetings with experts and citizens were held, which brought together city officials, researchers and policymakers, representatives of civil society, and the business. During the four years, a huge amount of data was collected, analysed and visualised, and a data repository was made publicly available (open access). The process dimensions that are regarded as central to the RRI-AIRR approach, namely, anticipation and reflexivity, responsiveness and adaptation, characterised each step of the *Vision's* elaboration (and were duly documented, on paper and in multimedia): from stocktaking and critical analysis to goal setting and policy modeling, formulation of actions and measures for implementation. More than twenty thematic working groups with experts and scientists from various Quadruple Helix organizations took part in public discussions, online surveys, hackathons, co-design seminars. Prior to submitting the document to the Municipal Council for approval, the coordinating team carried out a city-wide information and activation campaign, reaching out to citizens through outdoor advertising, live broadcasts of events, a special *Podcast for Sofia*, and much more.

At the end of 2021, the new *Integrated Urban Development Plan for Sofia Municipality 2021-2027* was voted in the city parliament. The RRI good practice of *Vision for Sofia* shows how the values, guiding principles and requirements of RRI-AIRR can help society address grand challenges in a holistic and engaging manner. While not formally guided by an RRI-AIRR approach (RRI is not embedded in city strategic documents), the team behind the *Vision* demonstrated proactive, forward-looking leadership, successfully mobilising the research community, business innovators, and civil society to put forth a governance agenda that cuts across political partialities and promotes inclusive, socially responsible, and sustainable territorial development.

The region of Western Macedonia – being the prime energy producing area of Greece - has been experiencing dramatic changes over the recent years. These changes are mostly related to the energy transition to a coal-free new paradigm, which is an important policy area in Western Macedonia. The transition is assessed further through the development of a stakeholder engagement strategy within the course of the post-coal transition road map, the strengthening of the current policy-making systems involving different modes of territorial governance, and the development of a methodology aiming at a smooth and innovative energy transition.

The RRI good practice of the region is about the creation of the public body of waste management of Western Macedonia, an innovative project that completely transformed the waste management sector in both the region and the country. The public municipal company of DIADYMA S.A. was the first inter-municipal enterprise in Greece that implemented a sorting system of this kind, using four different types of bins for the waste materials. Until then, all collection and the temporary storage of waste materials had been done in one-for-all baskets and the sorting of materials (plastic, metal, paper, and glass) was later done in the recycling factory. This has led to a low production of recycled materials, which were also of low quality ('mixed' waste). DIADYMA S.A. initiated an innovative collection process using four different colors for waste bins, for each one of the four types of recyclable materials (plastic, metal, paper, glass). This allowed the company to effectively process the waste of the whole region, by processing "clear" raw materials and allowing the company to produce high quality recyclable materials and fully take advantage of the waste. This practice has been recently extended to the use of a fifth color for biowaste materials, allowing the company to enter this particular recycling sector too. The innovative practice of DIADYMA S.A. was quickly adopted by the public waste-companies of all Municipalities in Greece, as a totally innovative practice that practically promotes environmental protection and sustainable development.

The waste management introduced by DIADYMA S.A. can be considered a successful RRI good practice. Public engagement has been highly implemented since citizens of the region have not only been informed for the benefits of such a waste management, but they will also be more actively involved in implementing and, above all, enforcing the new system. Open Access is also critical since the company makes all information public (daily activities, public tenders, research studies) and is open for citizens submitting requests, proposals, or complaints. Regarding the AIRR dimensions, anticipation can be considered relevant since the public local authorities showed an effective attitude towards fulfilling key sustainable development goals such as recycling and environmental protection.

RRI GOOD PRACTICE – CITY OF SABADELL (CATALONIA, SPAIN)

The policy focus of Sabadell municipality seeks to promote the territorial innovation ecosystem, paying special attention to the Active Ageing topic. In order to progress in this policy area, RRI appears as an important working framework to involve society and making research and innovation processes more inclusive and better aligned with societal needs.

The Covadonga Urban Lab is an interesting RRI good practice of experimentation, co-creation and collective innovation developed by the Universitat Autònoma de Barcelona (UAB). As an urban laboratory, it was conceived as an open space for citizens and different urban and social agents who wanted to collectively imagine, create, test and implement solutions to face the main social, urban and environmental challenges of the Covadonga neighbourhood and the city of Sabadell in general.

Covadonga neighbourhood is attached to the city centre but separated by the most important traffic artery of the city. Despite being mainly a residential neighbourhood, it hosts a large industrial area with part of its industrial buildings derelict. In the neighbourhood there are also important city/region facilities like the Club Natació Sabadell (swimming club), la Fira de Sabadell (trade fair building), UAB university grounds and very close to the Parc Taulí Hospital (and its research institute). This structural situation has at the same time high potential for urban transformation. Arising from these premises, the Urban Lab was created with the main objective of attracting various Quadruple Helix stakeholders and working together on neighbour urban challenges and co-create solutions (public engagement). Since its creation in 2019, more than 50 activities have been organised and four strategic areas have been identified: Innovation, knowledge and culture; Sustainable mobility and promotion of healthy lifestyles; Ecological and energy transition; Social equity and territorial justice. The identification of these four areas helped to define the strategic challenges, priorities and lines of action behind the project and a future-oriented planning of actions (reflexivity and anticipation). At the same time, the process allowed access to a large amount of information (science education and open access) and was relevant for stakeholders' decision making.

As a response, in October 2021 Sabadell City council signed an agreement with the UAB, the Corporació Sanitària Parc Taulí and the Fundació FUNDIT- ESDi for the creation of the Urban Campus of Life and Health Sciences. All four institutions agreed to launch a large-scale project that includes a set of training, research, innovation and business creation actions. Among the projects that will be carried out, the old Artèxtil factory will host a large part of the UAB degree in Nursing, as well as new studies and complementary services (responsiveness).

This good practice shows how the inclusion of RRI keys like public engagement, science education and open access contribute to create more acceptable and accountable innovation solutions. Moreover, AIRR dimensions like reflexivity, anticipation and responsiveness are also present as can be seen in the way local authorities interact with the stakeholders of the area. They enable a transformation of the neighbourhood into a vibrant and innovative ecosystem.